BULLETIN OF

TEXAS TECH UNIVERSITY

UNDERGRADUATE CATALOG

2002 - 2003

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Texas Tech University

UNDERGRADUATE CATALOG 2002 - 2003

The *Undergraduate Catalog* provides the procedures and policies in effect at the time of printing. Although the information is subject to change, the published program requirements for students who enter Texas Tech University during the 2002–2003 school year must be satisfied by the student for the successful completion of any program.

This catalog should be retained permanently since future program revisions will generally not apply to students already enrolled. Furthermore, the course descriptions provided herein may be valuable to potential employers reviewing a student's completed course work.

While every attempt has been made to ensure accuracy in reporting programs, policies, fees, and other statements within this publication, the university reserves the right to make changes at any time without notice.

President's Welcome

All of us who are currently members of the Texas Tech family wish to extend to you a cordial invitation to join us on our beautiful campus in Lubbock, Texas. An exciting and rewarding educational experience awaits you.

Texas Tech has long been able to boast of its outstanding faculty, many of whom are world-renowned scholars. We take great pride in our recruiting efforts. Among our students are some of the country's highest academic achievers.

Texas Tech is a fully accredited institution with a wonderful complement of degree offerings and research initiatives. Degree programs are available at the baccalaureate, master's, doctoral, and professional levels.

If you have already chosen to attend Texas Tech to continue your education, then you are to be congratulated for your judgment and insight. If you are still considering Texas Tech, then I encourage you to look more closely at our program offerings and other information contained in this catalog. New students at Texas Tech should take time to read the policies and regulations published herein and keep the catalog as a ready reference for the future. It is designed to alert you to the common difficulties students encounter as well as introduce you to the many special services and opportunities Texas Tech offers.

The faculty, staff, students, alumni, and administration of Texas Tech share a common bond. We believe in the strength of our university community and we believe in fostering diversity and supporting access, equity, and opportunity for all members of our community. Please join our campus family at Texas Tech.

Sincerely,

David J. Schmidly
President

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Administration

Board of Regents

Officers

J. Robert Brown, Chair
Dr. Nancy E. Jones, Vice Chair
Ben W. Lock, Secretary
Lucy Lanotte, Executive Secretary

Members

Term Expires January 31, 2003
John W. Jones ..... Brady
Dr. Nancy E. Jones ..... Abilene
J. Michael Weiss ..... Lubbock

Term Expires January 31, 2005
Carin Barth ..... Houston
E.R. Brooks ..... Dallas
Brian C. Newby ..... Austin

Term Expires January 31, 2007
C. Robert Black ..... Horseshoe Bay
J. Robert Brown ..... El Paso
David R. Lopez ..... Austin

Administrative Officers

(Date following rank indicates calendar year of initial appointment to Texas Tech.)

Office of the Chancellor

Chancellor David R. Smith, Professor of Pediatrics and President of the Texas Tech University Health Sciences Center, 1996. B.A., Cornell, 1976; M.D., Cincinnati, 1980

Deputy Chancellor for System Operations Elizabeth G. Haley, Professor of Human Development and Family Studies, 1981. B.S., Louisiana Tech, 1966; M.S., Florida State, 1968; Ph.D., 1972

Chief Financial Officer Jim Brunjes, 1991. B.A., Texas A&M, 1969; M.Stat., 1972

Executive Assistant to the Chancellor and the Board of Regents Ben W. Lock, 1996. B.B.A., Texas (Austin), 1981; M.B.A., 1984

Vice Chancellor for Community and Multicultural Affairs Cathy H. Allen, 1996. B.B.A., Stephen F. Austin State, 1981; M.Ed., 1989

Vice Chancellor and General Counsel Pat Campbell, 1981. B.S., Texas Tech, 1968; J.D., 1971

Vice Chancellor for Facilities Planning and Construction Michael A. Ellicott, 1999. B.S., Lafayette, 1968; M.S., Missouri (Rolla), 1976; P.E., 1977

Vice Chancellor for News and Information Cynthia R. Rugeley, 1998. B.A., Texas Christian, 1978; M.A., Midwestern State, 1984

Vice Chancellor for Governmental Relations John Michael Sanders, 1969. B.A., Abilene Christian, 1966; J.D., Texas Tech, 1970

Vice Chancellor for Institutional Advancement William G. Wehner, 1990. B.A., Oklahoma State, 1963

Office of the President

President David J. Schmidly, Professor of Biological Sciences, 1996. B.S., Texas Tech, 1966; M.S., 1968; Ph.D., Illinois (Champaign–Urbana), 1971

Provost John Burns, Professor of Biological Sciences, 1969. B.S., New Mexico State, 1963; M.S., 1966; Ph.D., Indiana, 1969

Vice President for Enrollment Management Michael R. Heintze, 1998. B.A., Texas Lutheran, 1972; M.A., Southwest Texas State, 1974; Ph.D., Texas Tech, 1981

Vice President for Fiscal Affairs Lynda Gilbert, 2001. B.S., Texas A&M, 1975; M.S., 1983; Ph.D., 1998

Vice President for Information Technology Gary L. Wiggins, 1989. B.S., Texas Tech, 1971; M.S., 1973; Ph.D., 1978

Vice President for Institutional Advancement Robert L. Streibich, 2001. B.A., Knox, 1965

Vice President for Operations Maximilliano Hinojosa III, 2001. B.S., Texas A&M, 1977; BED, 1977

Vice President for Student Affairs Michael D. Shonrock, Associate Professor in Educational Psychology and Leadership, 1990. B.S., Western Illinois, 1979; M.S., 1981; Ed.S., Pittsburgh State, 1987; Ph.D., Kansas, 1991

Vice President for Research, Graduate Studies, and Technology Transfer Robert M. Sweazy, Professor of Civil Engineering, 1970. B.A., Wichita State, 1962; M.S., 1966; Ph.D., Oklahoma, 1970; Reg. Prof. Engr. (Texas)

University Calendar 2002–2003

Summer 2002

Intersession at Junction

May 9-23 – Classes held at Junction Center campus for Intersession

First Term

May 27 – Residence halls open at noon.

May 28 – Registration for new students. Last day to register without penalty. First meal (breakfast) served in residence halls.

May 29 – Classes begin.

May 29-30 – Student-initiated drop-add online.

June 3 – Last day to drop course, receive refund.

June 5 – Last day for graduate degree candidates to file statement of intention to graduate with the Graduate School.

June 13 – Last day to declare pass-fail intentions. Last day to drop a course and receive an automatic W.

June 14 – Last day for degree candidates and faculty to order invitations and academic regalia at the bookstore.

June 25 – Last day to drop a course, transfer between colleges, or withdraw.

June 27 – Last day of classes.

June 28-29 – Final examinations for first term.

June 29 – First summer term ends.

June 30 – Students without room reservations for the second term must vacate residence hall rooms by 10 a.m.

July 2 – Final grade rolls due in the Registrar's Office at 9 a.m. Last day for graduate degree candidates to pay binding fee at Student Business Services. Last day for graduate degree candidates to defend theses/dissertations.

July 3 – Last day for graduate degree candidates to remove grades of I, PR, or CR and to submit final comprehensive examination and defense reports.

Second Term

July 8 – Residence halls open to new occupants at 10 a.m. Registration for new students. Last day to register without penalty.

July 9 – Classes begin. Last day for graduate degree candidates to submit official version of theses and dissertations to Graduate School.

July 9-10 – Student-initiated drop-add online.

July 12 – Last day to drop a course and receive a refund.

July 24 – Last day to declare pass-fail intentions. Last day to drop a course and receive an automatic W.

August 5 – Last day to drop a course, transfer between colleges, or withdraw from university.

August 7 – Last day of classes. Last day for graduate degree candidates to submit to the Graduate School the final (corrected) copies of theses and dissertations.

August 8-9 – Final examinations for second term. Last meal served in residence halls Thursday evening. Second summer term ends Friday.

August 10 – Commencement. Residence halls close at 10 a.m.

August 12 – Final grade rolls due at 9 a.m. in the Registrar's Office.

Fall Semester 2002

August 18 – Residence halls open for occupancy at 10 a.m.

August 19 – Faculty on duty.

August 21-23 – Registration for new students.

August 22 – First meal (breakfast) served in residence halls.

August 23 – Last day to register without penalty.

August 26 – Classes begin.

August 26-29 – Student-initiated drop-add online.

September 2 – Labor Day. University holiday.

September 6 – Last day for graduate degree candidates to file statement of intention to graduate with the Graduate School.

September 11 – Last day to drop course and receive refund.

September 23 – Last day to withdraw from the university and receive a partial refund.

October 2 – Last day for graduate degree candidates to pay binding fee at Student Business Services.

October 7 – Last day to declare pass-fail intentions. Last day to drop a course and receive an automatic W.

October 21 – Midsemester grade rolls due at 5 p.m. in the Registrar's Office. Last day for degree candidates and faculty to order invitations and academic regalia at bookstore.

November 4-19 – Advance registration (currently enrolled students) for spring semester.

November 5 – Last day for graduate degree candidates to defend theses/dissertations.

November 6 – Last day for graduate degree candidates to submit final defense reports to the Graduate School.

November 11 – Last day for graduate degree candidates to remove grades of I, PR, or CR and for master's candidates to submit final comprehensive examination reports. Last day for graduate degree candidates to submit their official version of theses and dissertations to the Graduate School.

November 20 – Open registration begins.

November 27-December 1 – Thanksgiving.

December 2 – Classes resume.

November 25-December 4 – Period of no examinations except for make-up exams or scheduled lab exams.

November 26 – Last day to drop a course, transfer between colleges, or withdraw from the university. Last day for undergraduate degree candidates to remove grades of I and PR and to complete final examinations in correspondence courses.

December 4 – Last day of classes.

December 5 – Individual study day.

December 6-11 – Final examinations.

December 11 – Last day for graduate degree candidates to submit to the Graduate School the final (corrected) copies of theses and dissertations. Fall semester ends.

December 12 – Last meal, breakfast, served in residence halls. Residence halls close at 10 a.m. Grade rolls for graduating students due at noon in the Registrar's Office.

December 14 – Commencement. Degree candidates may occupy rooms until noon.

December 16 – Final grade rolls due at noon in the Registrar's Office.

Spring Semester 2003

January 12 – Residence halls open for occupancy at 10 a.m.

January 13 – Faculty on duty.

January 13-14 – Registration for new students.

January 14 – Last day to register without penalty. First meal (breakfast) served in residence halls.

January 15 – Classes begin.

January 15-21 – Student-initiated drop-add online.

January 20 – Holiday. Martin Luther King Jr. Day.

January 31 – Last day to drop course and receive refund. Last day for graduate degree candidates to file statement of intention to graduate with the Graduate School.

February 12 – Last day to withdraw from the university and receive a partial refund.

February 24 – Last day for graduate degree candidates to pay binding fee at Student Business Services.

February 26 – Last day to declare pass-fail intentions. Last day to drop a course and receive an automatic W.

March 12 – Midsemester grade rolls due at 5 p.m. in the Registrar's Office. Last day for degree candidates and faculty to order invitations and academic regalia at the bookstore.

March 15 – Spring vacation; dismiss at noon.

March 24 – Classes resume.

April 3-18 – Advance registration (currently enrolled students) for summer and fall.

April 9 – Last day for graduate degree candidates to submit their final defense reports to the Graduate School.

April 14 – Last day for graduate degree candidates to remove grades of I, PR, or CR and for master's candidates to submit final comprehensive examination reports. Last day for graduate degree candidates to submit their official version of theses and dissertations to the Graduate School.

April 21 – No classes.

April 22 – Open registration begins.

April 29-May 5 – No examinations except for make-up exams or scheduled lab exams.

May 2 – Last day to drop a course, transfer between colleges, or withdraw. Last day for undergraduate degree candidates to remove grades of I and PR and complete final examinations in correspondence courses.

May 5 – Last day of classes.

May 6-7 – Individual study days.

May 8-14 – Final examinations.

May 14 – Last day for graduate degree candidates to submit to the Graduate School the final (corrected) copies of theses and dissertations. Spring semester ends.

May 15 – Last meal (breakfast) served in residence halls. Residence halls close at 10 a.m. Degree candidates may occupy rooms until Saturday, May 17. Grade rolls for graduating students due at noon in the Registrar's Office.

May 17 – Commencement.

May 19 – Final grade rolls due at noon in the Registrar's Office.

Summer 2003

Intersession at Junction

May 15-27 – Classes held at Junction Center campus for Intersession

First Term

May 27 – Residence halls open for occupancy at noon.

May 28 – Registration for new students. Last day to register without penalty. First meal (breakfast) served in residence halls.

May 29 – Classes begin.

May 29-30 – Student-initiated drop-add online.

June 3 – Last day to drop course and receive refund.

June 5 – Last day for graduate degree candidates to file statement of intention to graduate with the Graduate School.

June 13 – Last day to declare pass-fail intentions. Last day to drop a course and receive an automatic W. Last day for degree candidates and faculty to order invitations and academic regalia at the bookstore.

June 25 – Last day to drop a course, transfer between colleges, or withdraw from the University.

June 27 – Last day of classes.

June 30-July 1 – Final examinations.

July 1 – First summer term ends.

July 2 – Students without room reservations for the second term must vacate residence hall rooms by 10 a.m.

July 2 – Last day for graduate degree candidates to defend theses/dissertations.

July 3 – Final grade rolls due in the Registrar's Office at 9 a.m. Last day for graduate degree candidates to pay binding fee at Student Business Services. Last day for graduate degree candidates to remove grades of I, PR, or CR and to submit final comprehensive examination and defense reports.

Second Term

July 7 – Residence halls open to new occupants at 10 a.m. Registration for new students. Last day to register without penalty.

July 8 – Classes begin. Last day for graduate degree candidates to submit official version of theses and dissertations to Graduate School.

July 8-9 – Student-initiated drop-add online.

July 11 – Last day to drop a course and receive a refund.

July 23 – Last day to declare pass-fail intentions. Last day to drop a course and receive an automatic W.

August 4 – Last day to drop a course, transfer between colleges, or withdraw from university.

August 6 – Last day of classes. Last day for graduate degree candidates to submit to the Graduate School the final (corrected) copies of theses and dissertations.

August 7-8 – Final examinations for second term. Last meal served in residence halls Thursday evening. Second summer term ends Friday.

August 9 – Commencement. Residence halls close at 10 a.m.

August 11 – Final grade rolls due at 9 a.m. in the Registrar's Office.

General Information

Using This Catalog

This catalog is an official publication of Texas Tech University and contains the policies, regulations, procedures, and fees in effect as the document went to press. Published in the summer, its provisions apply during the following school year, September through August. However, a student who registers for the first time in the university during a summer session is subject to the degree requirements set forth in the catalog effective for the fall semester immediately following initial enrollment. The university reserves the right to make changes at any time to reflect board policies, administrative regulations and procedures, state law amendments, and fee changes.

Students should study the contents of this catalog carefully, because each student is responsible for knowing and following the academic rules, regulations, guidelines, and timelines of the university and the appropriate academic degree. Faculty, academic advisors, and staff members assist students with this responsibility.

Courses to be offered during any semester or summer term are announced prior to the registration period for that semester or term in the form of class schedules that can be found on the web site of the Office of Official Publications (www.ttu.edu/catalogs). Both the *Undergraduate Catalo*g and the *Graduate Catalo*g, as well as other official university documents, are available online.

Mission of the University

As a comprehensive public research university, Texas Tech University is committed to teaching and the advancement of knowledge by providing the highest standards of excellence in higher education, fostering intellectual and personal development, and stimulating meaningful research and service to humankind.

Campuses

Nearly 26,000 students attend classes in Lubbock on the 1,839-acre university campus. The university also operates the Research Center–East Campus (Lubbock); Texas Tech University Farm at Pantex, an agricultural research farm of approximately 16,000 acres in the Texas Panhandle; and the Texas Tech University Campus at Junction, an educational facility consisting of 411 acres in the Texas Hill Country.

Location

Lubbock, with a population of more than 200,000, is located on top of the caprock on the South Plains of Texas. The climate is excellent, with over 3,550 hours of sunshine every year. Winters are dry and moderate (average annual rainfall is 18 inches) while the summer heat is tempered by very little humidity. An average annual temperature of 60 degrees coupled with the average noon humidity of 46 percent combine to make Lubbock comfortable year round. The city lies 320 miles west of Dallas and 320 miles southeast of Albuquerque, New Mexico. Several airlines and an interstate bus line serve the city, as well as four U.S. highways, including an interstate highway.

History

Created by legislative action on February 10, 1923, Texas Technological College was located in Lubbock. Texas Tech opened in the fall of 1925 with six buildings and an enrollment of 910. The subdivisions for instruction—called “colleges” of Liberal Arts, Household Economics, Agriculture, and Engineering in the Preliminary Announcement of the *First Annual Catalogue 1925-1926*—became “schools” before the opening date for instruction in 1925 and “Household” became “Home Economics.” In 1933 these units became, in this order, the “divisions” of Agriculture, Engineering, Home Economics, and Arts and Sciences. In 1944 the designation reverted to “schools.”

Graduate instruction was begun in the fall of 1927 within the School of Liberal Arts. In 1935 a "Division of Graduate Studies" was established; in 1954 it became the Graduate School. The Division of Commerce, created in 1942, became the Division of Business Administration in 1947 and the School of Business Administration in 1956. Both the School of Law, provided for in 1965, and the School of Education, organized in 1966, began instruction in 1967. The School of Agriculture became the School of Agricultural Sciences in 1968.

By action of the Texas State Legislature, Texas Technological College formally became Texas Tech University on September 1, 1969. At that time the schools of Agricultural Sciences, Arts and Sciences, Business Administration, Education, Engineering, and Home Economics also became known as "colleges." Architecture became a college in 1986. Two colleges changed their names in 1993 to reflect the broadening fields each serves: the College of Agricultural Sciences became the College of Agricultural Sciences and Natural Resources and the College of Home Economics became the College of Human Sciences. The Honors College was established in the fall of 1998. The College of Visual and Performing Arts opens in the fall of 2002.

Texas Tech was first accredited by the Southern Association of Colleges and Schools in 1928 and has been accredited continuously since that time. The university is classified as a Research University Extensive by the Carnegie Foundation, making it one of the top 125 universities in the nation. Texas Tech University is a member of the Big 12 Conference. An International Cultural Center provides a unique approach to international education and contributes to ongoing efforts to diversify the campus and foster diversity among students.

Although Texas Tech is one of the youngest major universities in the nation, a spirit of intellectual growth pervades the campus. Many of the special facilities for research are described in this catalog. The library is one of the finest in the Southwest, with strong collections in the humanities and in biological and physical sciences.

The presidents of Texas Tech have been Paul Whitfield Horn (1925–1932), Bradford Knapp (1932–1938), Clifford Bartlett Jones (1938–1944), William Marvin Whyburn (1944–1948), Dossie Marion Wiggins (1948–1952), Edward Newlon Jones (1952–1959), Robert Cabaniss Goodwin (1960–1966), Grover Elmer Murray (1966–1976), Maurice Cecil Mackey, Jr., (1976–1979), Lauro Fred Cavazos (1980–1988), Robert W. Lawless (1989–1996), and Donald R. Haragan (1996–2000). David J. Schmidly became president on August 1, 2000.

Financial Support

The university receives the major share of its operating funds from appropriations by the Legislature and student fees. For the construction and renovation of academic and general buildings, funds are made available from the Higher Education Assistance Fund (HEAF), institutional tuition, and federal matching funds. State-appropriated funds are not used to support the residence halls, intercollegiate athletics, bookstore, student publications, health service, or Student Union.

The Texas Tech Foundation is a nonprofit corporation that receives and distributes gifts to the university. Gifts and grants received through the foundation supplement state funds in supporting research, establishing scholarships and fellowships, and helping to provide physical facilities and educational materials.

Organizational Structure

Texas Tech University is governed by a nine-member Board of Regents who also govern the Texas Tech University Health Sciences Center, which is a separate institution by legislative mandate. The Regents are appointed to six-year terms by the Governor of the State of Texas. The terms of office of three Regents expire every two years. The government, control, and direction of the university are vested in the Regents who in turn appoint a Chancellor to carry out the policies of the system as determined by the Regents. The Chancellor appoints a President of Texas Tech University and a President of Texas Tech University Health Sciences Center. The presidents

are chief executive officers of their respective institutions and responsible for the strategic operation of each institution. The President of Texas Tech University is supported by a Provost who oversees the educational programs of the university; a Vice President for Fiscal Affairs who is responsible for the fiscal operations of the university; a Vice President for Student Affairs who is concerned with the general welfare of the students of the university; a Vice President for Research, Graduate Studies, and Technology Transfer who directs the research efforts and graduate education of the university; a Vice President for Enrollment Management who is in charge of recruiting students and overseeing financial aid; a Vice President for Operations who manages the physical plant of the university; a Vice President for Institutional Advancement who is responsible for developing private giving to the university; and a Vice President for Information Technology who is responsible for electronic communications and computer systems for the university.

Texas Tech University consists of the Colleges of Agricultural Sciences and Natural Resources, Architecture, Arts and Sciences, Business Administration, Education, Engineering, Human Sciences, Visual and Performing Arts; the Honors College; the School of Law; and the Graduate School. Each college is administered by a dean and consists of a number of instructional departments or areas.

Equal Opportunity Policy

Texas Tech University is open to all persons eligible for admission as students regardless of race, color, religion, sex, age, national origin, or disability. All students admitted to the university are treated without discrimination in regard to their participation in university educational programs or activities. The university is an equal opportunity employer and no applicant or employee will be discriminated against because of race, color, religion, sex, age, national origin, or disability in regard to employment or during the course of employment in the institution. The university does not discriminate on the basis of sex or disability in its educational programs. Any student inquiries or complaints concerning Section 504 of the Rehabilitation Act of 1973 (504) or the Americans With Disabilities Act (ADA) of 1990 should be referred to the ACCESS TECH Office, 214 West Hall, (806) 742-3674, or the Center for Campus Life, 250 West Hall, (806) 742-2192.

Accrediting Organizations

- AACSB–The International Assn. for Management Education
- Accreditation Board for Engineering and Technology
- Accreditation Commission for Dietetics Education
- Accrediting Commission for Education for Health Services Administration
- Accrediting Commission for Programs in Hospitality Administration
- Accrediting Council for Education in Journalism and Mass Communications
- American Assn. of Colleges for Teacher Education
- American Assn. of Family and Consumer Sciences
- American Association of Law Schools
- American Association of Museums
- American Assn. of Petroleum Land Management
- American Bar Association
- American Chemical Society
- American Nurses Credentialing Center
- American Occupational Therapy Association
- American Physical Therapy Association
- American Psychological Association
- American Society of Landscape Architects
- American Society of Mammalogists
- American Speech-Language-Hearing Association
- Association for Access Merit and Accreditation of Laboratory Animal Care, Intl.
- Association of American Law Schools
- Board of Nurse Examiners for the State of Texas
- The Certified Financial Planner Board of Standards, Inc.
- Commission on Accreditation for Marriage and Family Therapy Education
- Commission on Accreditation of Allied Health Education Programs
- Commission on Collegiate Nursing Education
- Council for Exceptional Children
- Council for the Accreditation of Counseling and Related Educational Programs
- Council on Rehabilitation Education
- Council on Social Work Education
- Foundation for Interior Design Education Research
- Intl. Assn. for the Education of Young Children
- Joint Review Committee on Educational Programs for the EMT Paramedic
- Landscape Architectural Accrediting Board
- Natl. Accrediting Agency for Clinical Laboratory Sciences
- Natl. Architectural Accrediting Board
- Natl. Assn. for the Education of Young Children
- Natl. Assn. of Schools of Art and Design
- Natl. Assn. of Schools of Music
- Natl. Assn. of Schools of Public Affairs and Administration
- Natl. Council for the Accreditation of Teacher Education
- Natl. Collegiate Athletic Association
- Natl. League for Nursing Accrediting Commission
- Society for Range Management
- Southern Assn. of Colleges and Schools
- State Board for Educator Certification
- Supreme Court of Texas
- Texas Educational Theatre Assn.
- Texas State Board of Nurse Examiners

Facilities and Services

Alumni Association

Started in 1927 by the first graduating class, the Texas Tech Alumni Association has grown to a membership of 25,000 graduates, former students, current students, and friends of Texas Tech. Located in the Merket Alumni Center, which is part of the original President's Home, the association provides academic support to the university through scholarships, professorships, and faculty and staff awards, as well as by sponsoring Red Raider Camp for entering freshmen and the high school counselor's conference each summer. In addition, the organization sponsors many on-campus activities, including class reunions and homecoming events. A chapter network across the state helps members stay in touch with the school. The association publishes the bimonthly *Texas Techsan Magazine*, hosts ceremonies for The Official Texas Tech Alumni Association Class Ring, and provides commencement pins to all graduates.

Parent Relations Office and the Texas Tech Association of Parents

The mission of the Parent Relations Office is to provide programs and services designed to enhance support and retention of students by meeting the educational, informational, and involvement needs of their parents and families. As home to the Texas Tech Association of Parents, the office serves all parents and families of Texas Tech students.

The purpose and mission of the association is to build bridges of mutual support and serve as a network for parents to share their concerns. One of the most significant activities of the association is the annual awarding of 55 scholarships made possible by contributions and memberships to the association. Applications are available to all students after January 1 and are due by March 1.

As an incorporated non-profit organization, the association provides such valuable programs and services as a toll-free hotline and e-mail for parent questions and concerns, the Parents' Page web site, transition programs for parents at new student orientation and publication of *The Parent's Guide*, move-in program week for parents, publication of *Your Campus Letter* newsletter for parents, "Road Raiders" Safe Travel Parent Network to promote student safety and serve as an emergency network, Family Weekend in the fall, Spring Scholarship Weekend, faculty awards for excellence, 10 annual student academic-citizenship awards, a Distinguished Visiting Professor program to bring Nobel Laureates to campus, Junior Raiders for family members 12 and under, summer area/chapter Red Raider Rally send-offs for Texas Tech students, and the Annual Tuition Draw.

Contact information: 244 West Hall, (806) 742-3630, toll free (888) 888-7409, fax (806) 742-0330, e-mail parent@ttu.edu, www.ttu.edu/parent.

Texas Tech University — Hill Country

Texas Tech University—Hill Country operates in the Hill Country Region of Central Texas to extend Texas Tech programs and activities to that popular region. Created in 2001, Texas Tech University—Hill Country has two major subdivisions:

Texas Tech University Junction Campus. This campus encompasses 411 acres on the South Llano River in the Texas Hill Country. It consists of two academic buildings, a large lecture hall and dining area, four classroom and living quarter study areas, a two-story laboratory and faculty housing unit, and two combination seminar and housing units. Within these structures are 12 classrooms, four wet labs, a darkroom, a library, and offices. The accommodations can provide for up to 120 people while an additional 100 can be housed in 10 screened cabins that share two large bathhouses. Full meal service is available year round for groups of 20 or more. Technical resources include a state-of-the-art

multimedia conferencing system, an interactive distance learning classroom, a computer lab with 12 PCs, and a 10-station Mac computer graphics lab. Also available are multiple Internet ports in classrooms and some housing units.

The campus offers regular, full-credit undergraduate and graduate courses in intensive format over three-week periods during May through July. These courses ordinarily include art, biology, botany, zoology, geography, photography, education, and foreign languages. In addition, classes from the Texas Tech Hill Country University Center also may be available to the Junction campus during long semesters. The center is available to Texas Tech student organizations, faculty groups, and researchers and can be used for workshops, retreats, and other special activities. This campus is home to the Red Raider Camp that operates from mid to late summer. Recreational opportunities include river activities, hiking, a nature trail, a sand volleyball court, and a large swimming pool. **Contact information:** Academic Director of the Junction Campus, (806) 742-1621, M.S. 2019, www3.tltc.ttu.edu/junction.

Texas Tech Hill Country University Center. This campus is located in Fredericksburg and has a mission to provide academic, research, and support programs while simultaneously expanding educational, economic, and cultural opportunities throughout the Hill Country region. HCUC offers undergraduate and graduate degrees as well as continuing education programs at three sites: Junction, Fredericksburg, and Marble Falls. As student demand increases, additional Hill Country sites may be developed. Texas Tech students may enroll in university courses offered at this campus during the summer with instruction provided by faculty in traditional face-to-face instruction, as well as by interactive video, Internet, and correspondence. Several partner institutions also are involved in offering degree programs at this campus. **Contact information:** www.hillcountry.ttu.edu, (830) 990-2717 or (888) GOTECH2.

Texas Tech University Farm at Pantex

The university operates the Texas Tech University Farm at Pantex, located 12 miles east of Amarillo. This farm consists of 5,822 acres of deeded land and an agricultural use permit on an additional 5,304 acres controlled by the Department of Energy. The farm serves as a valuable resource for agricultural research and education, adding strength, flexibility, and prestige to the academic programs at Texas Tech.

Office of Community and Multicultural Affairs

The mission of the Office of Community and Multicultural Affairs, a division of the Texas Tech University System Chancellor's Office, is to promote and foster an inclusive climate that values and respects students, faculty and staff, and the communities that they serve.

Short and long-range plans include collaborating and partnering with the institutions in creating a campus climate that values diversity; partnering with and/or assisting the university to recruit and retain a diverse faculty and staff across all levels and areas; providing training or professional development opportunities that assist personnel, students, and local communities in understanding their own and other cultures; assisting the institutions in promoting a user-friendly campus in which all campus citizens—students as well as employees—feel welcome and appreciated; assisting with student support activities that facilitate an environment of success; and promoting and enhancing community involvement whereby students, faculty, and staff are encouraged to participate in community activities. **Contact information:** Office of Community and Multicultural Affairs, (806) 742-8671.

Office of International Affairs

The Office of International Affairs (OIA) is composed of a division of immigration services and student advisement; an Overseas Resource Center for study abroad, international sponsored student

recruitment, and alumni development; the International Center for Arid and Semiarid Land Studies (ICASALS); the Division of Public Education for K–12 students; the International Cultural Center; and several support units. OIA facilitates programs that bring an international dimension to the university's roles in teaching, research, and public service. OIA works with and assists the various units of the university, coordinating international activities at Texas Tech.

The immigration division provides information, counseling, and advisement to international students and scholars on all noncurricular issues including immigration regulations, financial issues, personal concerns, and general American academic questions. The office also coordinates cross-cultural programming and other extracurricular activities with campus- and community-based organizations to facilitate development of cross-cultural understanding. OIA offers customized services to sponsoring agencies and students. Services to sponsoring agencies include monitoring of placement, customized billing procedures, timely reports, special program design, and maintenance of communications. Special counseling and advising, orientation, and administrative services are provided to sponsored students. An administrative fee of at least $250 per semester and $125 per summer term enrolled is charged for sponsored international students. See also the Overseas Resource Center section in this catalog for information on Texas Tech opportunities for study abroad. The public education division, funded through the university with the support of an external organization, provides an outreach program of an international dimension for K–12 students. ICASALS provides special research and sustainable development projects for faculty, staff, and students. See the ICASALS entry for additional information. The International Cultural Center houses all units of the Office of International Affairs; a library featuring specialized publications, videotapes, and CD-ROMs; the CNN World Report Television Archive; and the area studies programs of the university. It offers attractive facilities for all types of meetings, conferences, and special events and represents Texas Tech's commitment to internationalization.

Overseas Opportunities Resource Center

A period of time spent studying abroad is of more importance today than ever before. Students in almost any field will be more competitive in the globalized job market if they have studied abroad. For example, pre-med students will be more competitive when applying to a medical school if they have studied abroad. The reason for this is that study abroad offers a kind of education that can be obtained in no other way than through the experience of living in another culture for in this situation one is afforded the opportunity to view one's own culture through the eyes of another culture. This opportunity broadens one's perception of the world and enables one to gain skills in working cooperatively with people from other cultures. The experience obviously offers the opportunity to improve facility in other languages, to study problems and approaches to problems that are specific to other areas, and to gain a new understanding of oneself and one's own culture.

Many of the foreign language areas and other departments offer their own programs in the summer. Additionally, the Overseas Resources Center, a unit of the Office of International Affairs, coordinates reciprocal student exchanges with institutions in Eastern and Western Europe, Scandinavia, Turkey, and Central and South America. This type of exchange allows qualified Texas Tech students to trade places with students from other countries for a year or semester and to receive credit and grades for their academic work. The cost of these exchanges is usually much less than that of many other education abroad programs, and participants remain eligible for financial aid and scholarships through Texas Tech University.

There are also affiliated study abroad programs in which Texas Tech students pay tuition to another institution or program with which the university has an affiliation agreement. Through the center, participants in these programs remain registered in a nontuition-bearing registration while they are away so that they are not required to reapply for admission upon return to the United States. They also remain eligible for

financial aid and scholarships through Texas Tech. Transfer credit is earned for academic work completed on these programs. Students can travel almost anywhere in the world on these programs—Eastern and Western Europe, Asia, Africa, South America, and Australia.

In addition to coordinating programs, the center maintains a reference library of catalogs and announcements of overseas educational, work abroad, internships, and volunteer programs. These programs include those offered by Texas Tech departments as well as those sponsored by other institutions. The staff of the center helps students clarify their objectives for overseas opportunities and assists them in identifying educationally sound programs. The staff assists students throughout the application process including an all-day orientation program to prepare students for their international experience, and, upon their return, the awarding of credit for academic work completed while abroad. Students wishing to study abroad are advised to begin planning at least one year in advance of their departure.

International Center for Arid and Semiarid Land Studies

ICASALS, a division of the Office of International Affairs, was created in 1966 to promote the university's special mission—the interdisciplinary study of arid and semiarid environments and the human relationships and problems of those areas, which encompass about one-third of the earth's land surface.

The purpose of ICASALS is to stimulate, coordinate, and implement teaching, research, and public service activities related to all aspects of the world's arid and semiarid areas. In regions where low productivity and low rainfall significantly affect the inhabitants and economies, ICASALS brings together the sciences, technologies, humanities, and arts. ICASALS serves as a contracting unit of the university for international sustainable development programs.

A special emphasis on arid and semiarid environments is available in the interdisciplinary doctoral program in Land-Use Planning, Management, and Design. Students also may take a master's degree in interdisciplinary studies of arid lands.

Approximately 150 Texas Tech faculty have been designated "ICASALS Associates" and provide a broad base of expertise for the numerous and varied functions of the center. ICASALS disseminates information about arid lands research and development and publishes a newsletter with international readership. In addition to supporting and facilitating publications resulting from symposia, research, and professional meetings, ICASALS operates an international data exchange and coordinates research and consultations for international scholars, government officials, and students coming to Texas Tech for scholarly purposes.

Museum of Texas Tech

The Museum of Texas Tech University is located on the campus at Fourth Street and Indiana. Its mission is to collect, preserve, interpret, and disseminate knowledge about natural and cultural material from Texas, the Southwest, and other regions related by natural history, heritage, and climate.

The building, completed in 1970, contains over 206,000 square feet of galleries, research facilities, classrooms, work areas, and storage space. The museum complex includes the main museum building, Moody Planetarium, Natural Science Research Laboratory, Diamond M Fine Art Gallery, Helen DeVitt Jones Auditorium and Sculpture Court, Lubbock Lake Landmark facilities, and a 92-acre natural science and archaeological site in Val Verde County. A 40-foot mural, created in India ink by Peter Rogers, dominates the lobby. Exhibits include permanent and temporary displays drawn from the museum's own collections as well as traveling exhibits.

The Moody Planetarium, an 82-seat auditorium with a Spitz A4 projector, has daily programs for the public. These programs are at 3:30 p.m. Tuesday through Friday, 7:30 p.m. Thursday evening, and 2 and 3:30 p.m. Saturday and Sunday.

A Master of Arts degree in Museum Science and a Master of Science in Heritage Management are offered as academic components of the museum.

Although the chief source of funding for the museum staff and facilities is legislative appropriation, additional support for programs and exhibitions comes from the Museum of Texas Tech University Association and granting agencies. Membership in the support association is open to all persons interested in the Museum.

The education division of the museum conducts tours and programs throughout the year, including curriculum-based tours for public schools, public workshops and lectures, special events, and opening activities for major exhibitions. Volunteers from the community and Texas Tech are always needed and welcome.

The museum is closed on Monday but open from 10 a.m. to 5 p.m. Tuesday through Saturday (Thursday evening until 8:30 p.m.) and 1 to 5 p.m. Sunday.

Lubbock Lake Landmark

The Lubbock Lake Landmark, a renowned archaeological and natural history preserve, contains a complete cultural record from the Clovis Period (12,000 years ago) through historic times, making Lubbock one of the oldest communities in the world. The museum offers tours, outreach, and programs related to the archaeological and natural history research that is on-going at the Landmark. Community and student volunteers assist in much of the educational programming offered at the site. The Landmark is closed on Monday but open from 9 a.m. to 5 p.m. Tuesday through Saturday and 1 to 5 p.m. Sunday.

National Ranching Heritage Center

The NRHC is a 16-acre outdoor museum of 35 historic structures that have been moved to the site from locations throughout the state and date from the late 1780s to the early 1930s. The structures—which include a bunk house, one-room school house, half-dugout, train depot, blacksmith shop, barns, windmills, and more—have been authentically restored and illustrate the development of the ranching industry in the Southwest. Dedicated on July 4, 1976, the NRHC hosts Ranch Day each fall and Candlelight at the Ranch in December. Community and student volunteers who comprise the Ranch Host organization help with these events and others at the National Ranching Heritage Center, which is open to the public free of charge from 10 a.m. to 5 p.m. Monday through Friday and 1 to 5 p.m. Sunday.

Landmark Arts Galleries

The mission of Landmark Arts: The Galleries of Texas Tech University is to promote fine arts development in the Lubbock community through a comprehensive program of exhibitions, symposia and workshops, publications, and hands-on experience with working artists. A component of the School of Art, the program integrates academic and professional experience.

The six galleries of Landmark Arts are Landmark Gallery, Studio Gallery, Folio, South Gallery, SRO-Photo, and Sculpture Alternative. The Landmark Gallery exhibits contemporary art by professional artists. Typically, exhibitions will feature residencies by artists with national and international reputations. The gallery hosts programs that engage campus and Lubbock community participation. Folio Gallery is a works-on-paper venue that displays prints, photographs, and drawings by professional artists and provides a study venue for the School of Art ColorPrint collection of prints. The Studio Gallery and South Gallery offer student-driven exhibitions such as the capstone exhibitions of the M.F.A., B.F.A., and Art Teachers Certificate programs, the annual undergraduate juried competition, as well as work by alumni. SRO-Photo Gallery presents the viewer with wide-ranging exhibitions of fine art photography by professional artists. Sculpture Alternative functions as an experimental art laboratory for projects in sculpture and electronic media. Exhibitions are experimental installations produced by students and visiting artists. The galleries are open from 10 a.m. to 5 p.m. weekdays and 10 a.m. to 2 p.m. on Saturday.

Libraries

The latest technology is integrated into library search and retrieval systems to strengthen both undergraduate and graduate programs. In addition to providing on and off-campus access to many full-text, bibliographic, and electronic journals and databases covering a range of subjects, the library Web site (www.lib.ttu.edu) offers information about library services and provides access not only to library catalogs of libraries on campus, including the Health Sciences Center library, Vietnam Archive, and Southwest Collection, but also catalogs of research libraries worldwide.

The 2.1 million volumes in the collection provide rich and timely support for the humanities, social sciences, and science-technology programs of the university. Nearly 2 million microforms hold images of many specialized collections such as Western Americana, Wright's American Fiction, and Early American Imprints. Periodicals and other serial formats total over 20,000 titles, including those in electronic format.

The University Library is a Patent and Trademark depository and is one of two regional depositories for United States government documents in Texas.

The interlibrary loan service can obtain books and articles from periodicals not owned by the Texas Tech libraries, with the exception of rare books, reference materials, textbooks, and some dissertations from other libraries. Service counters are located on most floors of the University Library, and librarians and trained staff provide a supportive environment for students, including a 1-credit hour course on how to do effective library research. The course covers a wide range of library research strategies such as using abstracts, indexes, encyclopedias, and other library research tools to find books and articles in journals, newspapers, and magazines for a research paper or class project. Reciprocal borrowing agreements allow Texas Tech students to use libraries at other Texas public colleges and universities, as well as some private institutions. The University Library is open more than 100 hours a week during each semester and provides extended hours during final exam periods.

Southwest Collection

The Southwest Collection/Special Collections Library research collections include Rare Books, the University Archive, the Archive of Turkish Oral Narratives, and the Southwest Collection. The Southwest Collection is the regional repository for historical information pertaining to West Texas and the Southwest. It has collected and makes available for research more than 1,700 collections of personal papers and more than 4,000 hours of oral history interviews, noncurrent business and institutional records, as well as a noncirculating library of Texana, Western Americana, maps, periodicals, photographs, newspapers, taped interviews, films, videotapes, and microfilm. It also houses one of the nation's most important collections on the Literature of Place—the James Sowell Collection in Literature, Community, and the Natural World.

All materials may be used by both the university community and the general public for research or reference. The Southwest Collection is located in the new Southwest Collection/Special Collections Library Building north of the University Library. Service is provided from 9 a.m. to 5 p.m. Monday, Wednesday, and Friday; 9 a.m. to 7 p.m. Tuesday and Thursday; and 10 a.m. to 5 p.m. on Saturday. Inquiries and donations are welcomed. Tours are available.

Lubbock Municipal Auditorium/Coliseum

The Municipal Auditorium–Coliseum, located on the north edge of the campus near Jones Stadium, is operated by the City of Lubbock. Its facilities are frequently rented by the university for convocations, registration, graduation exercises, cultural events, rodeos, and other special events. Seating capacity is about 3,200 persons in the auditorium and 10,000 in the coliseum. Rental arrangements are made through the City of Lubbock.

Athletic Facilities, NCAA Programs

As a member of the National Collegiate Athletic Association and the Big 12 Conference, Texas Tech provides intercollegiate athletic programs for men and women. Both programs operate under NCAA and Big 12 rules and regulations as well as under the auspices of the Texas Tech Athletic Council whose membership represents the faculty, the student body, the Alumni Association, and a member-at-large appointed by the university president. Athletic activities are organized under the Director of Athletics with head coaches in each of the sports responsible to the director. Texas Tech began competing in the Big 12 Conference in 1996 after a 35-year membership in the former Southwest Conference.

Women athletes currently compete in intercollegiate volleyball, soccer, cross country, basketball, golf, tennis, softball, and track and field. The program has grown rapidly since 1974 with teams participating in state, regional, and national competitions. In 1993 the Lady Raider basketball team claimed the school's first NCAA National Championship. The men's program includes football, basketball, cross country, track, baseball, golf, and tennis.

Clifford B. and Audrey Jones Stadium, named for Texas Tech's late President Emeritus and his wife who provided the initial funds to permit its construction, was built in 1947. Renovations have expanded seating to the present capacity of 50,500 seats. Athletic Department offices in the south end of the stadium underwent refurbishing in 1988. The stadium is currently undergoing a $90 million renovation process.

Baseball is played at Dan Law Field where a modern lighting system permits nighttime use for the added enjoyment of both athletes and fans. Additional permanent seating recently brought the capacity to 5,614. The infield was recently resurfaced with Astroturf.

Track and soccer events are held at the R.P. "Bob" Fuller Track Complex, and basketball games tip off in the new 15,098-seat United Spirit Arena, one of the finest on-campus basketball-volleyball facilities in the nation.

A state-of-the-art Academic Services Building located within the athletic complex near Jones Stadium is scheduled to be open soon. The facility will feature classrooms, a computer lab, a resource library, tutoring rooms, private study areas, and administrative offices.

During inclement weather, Texas Tech athletes can practice in the spacious Athletic Training Center, located just south of Jones Stadium. The facility contains over 3 million cubic feet of space, making it the largest full-circle membrane structure in the world for use by people. All sports may prepare for competition in the two-level complex. One of its main features is an artificial turf football field that can be rolled out to a maximum length of 60 yards. Other features include a full-sized wooden basketball court, four tennis or volleyball courts, nets for pitching and hitting baseballs and golf balls, a 250-yard long circular track with six lanes, and 10,000 square feet of weight training facilities.

Recreational Sports

The Department of Recreational Sports serves the leisure needs of Texas Tech students through its eight main divisions: intramurals, open recreation, sport clubs, aquatics, clinics and classes, special events, fitness, and outdoor pursuits.

Through the intramural program, competition is offered in many coed, men's, and women's sports activities. These competitive activities include individual, dual, and team competition organized for residence halls, clubs, fraternities, sororities, and for unaffiliated students in an "open" division. A campus community (CC) program has also been developed to provide competition for graduate students, faculty, and staff.

Open recreation provides an opportunity for informal, nonscheduled activities for students, faculty, and staff at the various campus recreational facilities. The Robert H. Ewalt Student Recreation Center has 242,000 square feet of activity and recreational space, making it one of the largest

student recreation centers in the nation. The building includes seven basketball/volleyball courts; an indoor soccer arena; a 6,500-square-foot Olympic weight room; more than 10,000 square feet of cardiovascular machines and selectorized weight machines; and a four-lane, 1/8 mile elevated jogging track. Also available are two aerobic/dance studios, a 52 foot high climbing center, 12 racquetball courts, a fitness/wellness center, locker rooms, an outdoor pursuits center, and an indoor/outdoor Olympic-size swimming pool. The program also provides equipment checkout for a variety of sports and reservation opportunities for tennis courts, fitness equipment, and racquetball courts.

Sport clubs offer a unique diversion from academic life through instruction and extramural or intercollegiate athletic competition on a club basis. Organized clubs include soccer, rugby, bowling, wrestling, lacrosse, water ski, aikido, kendo, racquetball, swimming, polo, judo, volleyball, cycling, rifle, pistol, fencing, and tae kwon do—all of which receive some funding from the Department of Recreational Sports.

Texas Tech's indoor/outdoor aquatic facility, which adjoins the Student Recreation Center, offers a wide range of water sports and activities to students. This facility is one of the most unusual in the nation, with a removable bubble top that allows participants to enjoy an outdoor facility during warm-weather months. The aquatic facilities and programs are available to students daily throughout the year.

The clinic and class program includes noncredit instruction in weight training, racquetball, squash, tennis, and other recreation-related activities. Fitness activities include a wide range of aerobics, fitness testing, individual analysis, and exercise prescription.

The special event program includes weekend tournaments, fun runs, triathlons, international olympics, and various other wild and zany recreational activities. Information on special rules and dates of activities can be obtained from the office on the upper level of the Student Recreation Center.

The outdoor pursuits center provides a unique service for students, faculty, and staff. It includes an outdoor equipment rental shop, regularly scheduled trip outings, and a resource area with information on outdoor activities. Students may reserve a variety of equipment ranging from canoes to lanterns. The outdoor pursuits center is located near the main entrance to the Student Recreation Center.

International Textile Center

The ITC is a complete research and education facility equipped and staffed to conduct research and development activities ranging from small-scale testing through large-scale manufacturing. Activities revolve around researching, testing, and evaluating cotton, wool, mohair, cashmere, other plant and animal fibers, and diverse man-made fibers; production and evaluation of yarns and fabrics; alternative textile processing systems; dyeing and finishing; and special yarn and fabric treatments. A fundamental objective is to foster greater use of the natural fibers and increase textile manufacturing in Texas.

ITC occupies 110,000 square feet of space allowing the center to perform research, testing, and evaluation from raw fibers through the finished textile products. ITC facilities include a classroom, conference room and library, Materials Evaluation Laboratory, Short Staple Spinning Laboratory, Long Staple Spinning Laboratory, Weaving and Knitting Laboratory, Nonwoven Laboratory, Chemical Finishing Laboratory, Chemical Processing Laboratory, Chemical Properties Laboratory, and Fabric Care Laboratory.

The ITC is an integral part of the university's academic programs. It is used by the colleges of Engineering, Agricultural Sciences and Natural Resources, and Human Sciences for advanced degree programs and special problems courses as well as for augmenting course curricula. In addition, scholars from throughout the world conduct post-graduate research at the center.

More than 4,000 persons visit the ITC annually. Activities include the Texas International Cotton School, which is sponsored

twice a year by the Lubbock Cotton Exchange. Companies, organizations, and associations can schedule short courses, conferences, and seminars at the facilities, and special tours may be arranged by appointment.

Computing Services

The Information Technology Division (www.infotech.ttu.edu) provides a wide range of computing resources, services, and support for students, faculty, and staff. Some of the key services are student labs, free short courses, Web hosting, personal Web pages, e-mail, aliases, dial-up (RAS) access, Help Desk, desktop support, teleconference room, server hosting, administration, and consulting. The most recent addition to these services is the student portal "RaiderLink" (www.raiderlink.ttu.edu). Most online services will be accessible via the use of an eRaider account provided by the IT Division.

Technology Support (www.itts.ttu.edu) provides quality user services and operates the Advanced Technology Learning Center (ATLC) in the west basement of the University Library. The 25,000-square-foot ATLC facility provides leading-edge computing technology to the university community. The Technology Support staff provides such services as free short courses, Web hosting, consulting, documentation, and computing labs at the ATLC and several remote locations.

IT Help Desk (http://helpdesk.ttu.edu) is an excellent service that provides students, faculty, and staff with a friendly "front line" to meet their technology support needs. It is the primary point of contact for those needing assistance regarding a technology issue. The Help Desk is structured to escalate questions, problems, and concerns from the user community to the proper IT staff member staff member and track the incident until it is resolved. Their 742-HELP phone number is easy to remember.

Telecommunications (www.net.ttu.edu) provides Texas Tech with a data and video network, TTUnet, and wide-area Internet and Internet2 connections. Telecommunications directly supports education, research, and public service by planning and administering the development, acquisition, repair, maintenance, and delivery of network services.

Technology Operations and Systems Management (www.tosm.ttu.edu) staff are available to answer questions about server administration, management, or support; properly backing up data on the server; and distributed mainframe print. In addition to hosting the IBM 9672-R26 mainframe system supporting administrative, instructional, and research activities, this division also offers such services as general purpose computation, optical scanning, and large-scale laser printing.

High Performance Computing Center (www.hpcc.ttu.edu) houses an SGI/Cray Origin 2000 supercomputer containing 56 R12000 processors with 56GB of common memory in a single-image system. The supercomputer has .8TB RAID storage with 8.8TB of robotic tape storage. These engines can drive a 3 Megapixel display, which provides an immersive experience. A 32-node Beowulf cluster based on IA32 architecture is currently being installed. Faculty and researchers are welcome to take advantage of these services.

Communication Services (www.itcs.ttu.edu) assists in providing new office or cellular phones, additional phone lines, voice mail, telephone repair, and individual campus phone numbers.

Institutional Research and Information Management (www.irs.ttu.edu) provides precise statistical and management information of all units of the university, regulators, and others. This information includes statistics on students, faculty, semester credit hours, and course evaluations.

Information Systems (www.itis.ttu.edu/ismain.htm) develops and supports legacy, intranet, and online systems for student information, human resources, payroll, accounting, budget, housing, and communication services.

Radio and TV Stations

KTXT–FM and KOHM-FM. KTXT–FM operates on a frequency of 88.1 Mhz with a power of 35,000 watts (ERP) and provides a service of music, news, and special programs of interest to the campus community. It also provides a channel of communication within the Texas Tech community and from the university to the Lubbock community. Another university-owned radio station, KOHM-FM, is a division of the Office of the Provost and operates with a professional staff on a frequency of 89.1 Mhz with a power of 50,000 watts (ERP). An affiliate of National Public Radio (NPR) and Public Radio International (PRI), the station also provides classical music and fine arts programming to the South Plains.

KTXT–TV. A noncommercial educational television station, KTXT–TV (Channel 5) is licensed by the Federal Communications Commission to the university's Board of Regents and operates as a division within the Office of the Provost. The broadcast operation includes a cable system capable of feeding a signal to various rooms throughout the campus and a multiterminal telecommunications receive-only earth station.

Channel 5's office, studio, production, master-control, transmitter and engineering facilities, and its 817-foot antenna-tower are located on the southwestern campus triangle west of Indiana Avenue. From this location the station broadcasts about 90 hours of diverse programming each week. The signal coverage zone encompasses the geographical area within a 60-mile radius of Lubbock and serves a population of about 380,000.

KTXT–TV is a member of the Public Broadcasting Service (PBS), a noncommercial network of 349 television stations interconnected by satellite. The station is staffed by professional personnel who produce programming to satisfy broadcasting and nonbroadcasting needs of the university and the community.

Much of the regular programming is available for use in the classroom. In addition, the station purchases, produces, or otherwise acquires instructional television series designed as college-credit courses or as less formal noncredit courses to broadcast on special schedules as a bonus service to the university and Channel 5's viewers.

Texas Tech University Theatre

A regular schedule of major dramatic productions is presented each academic year under the direction of professionally qualified members of the theatre arts faculty. Plays are chosen so that each student generation has an opportunity to see a representative selection of the great plays of the past as well as works by modern playwrights. These plays are presented on the main stage of the Charles E. Maedgen, Jr., Theatre, which seats 395 patrons in a comfortable, continental arrangement.

A program of contemporary and original student-directed productions and a summer repertory season are presented in the Maedgen's Laboratory Theatre, an intimate, thrust-stage performance space. All Texas Tech students are eligible to audition for roles in TTUT plays or to work on production crews.

Child Development Research Center

The Department of Human Development and Family Studies in the College of Human Sciences operates a Child Development Research Center (CDRC) that offers a full-day program for children from birth to 6 years old. These laboratories provide varied opportunities for university students to acquire information and skills regarding the development and guidance of young children. The CDRC research components include investigations of child behavior and family interactions as well as generation of innovative strategies for promoting human development and family studies across the life span. Enrollment is open to children of any race, creed, or nationality. Applications should be made through the Child Development Research Center Office, 742-3016.

Check Cashing Services

For convenience of the student, personal checks printed with magnetic ink characters may be cashed for limited amounts at the Student Union upon presentation of a current student identification card and a valid driver's license. Checks returned by the bank may subject the student to suspension of check cashing privileges and/or disciplinary action.

The Student Union also has several automatic teller machines available for students' use. Anyone having ATM access cards honored by financial institutions may use these machines for a variety of transactions. The ATMs are normally accessible 24 hours a day in the northeast lobby.

The Texas Tech Credit Union has free check cashing services for members of the credit union at three on-campus locations: 166 Administration Building; 1A-99 Health Sciences Center; and the main office at 18th and Knoxville (west of Indiana Avenue). ATMs are available 24 hours a day at the main office and the Student Union.

Campus Bus System

The campus bus system, funded by the Student Services Fee, provides transportation throughout the campus and to nearby off-campus residential areas. On-campus routes provide service from the residence halls and commuter parking lots to the interior part of the campus. The Texas Tech Police Department provides shuttle bus service from 5 p.m. until 4 a.m.

Learning Center

Under direction of the Programs for Academic Support Services, the Learning Center provides students with learning assistance in the form of teaching study skills and other special topic presentations as well as providing individual academic skills counseling, in-house and online peer tutoring, and a self-help learning lab. Video and audio tapes, printed materials, and computer software are available in mathematics, English, study skills, history, and other specific subject areas. Test preparation guides are available for the GRE, GMAT, TOEFL, LSAT, and MCAT. Supplemental instruction is also offered in a limited number of subjects, historically targeting difficult courses and providing regularly scheduled modified forms of discussion sessions. Located in 205 West Hall, the Learning Center is free to all Texas Tech students and open during the fall and spring semesters from 8 a.m. to 8 p.m. Monday through Thursday, 8 a.m. to 5 p.m. Friday, and 2 to 6 p.m. Sunday. Summer hours are 8 a.m. to 5 p.m. Monday through Friday.

McNair Scholars Program

The Texas Tech McNair Scholars Program was established to prepare first-generation undergraduate students from low-income families for doctoral study. Twenty outstanding Texas Tech University students participate in the program. Students are chosen in their junior and senior years and continue to participate in the program until they graduate with a baccalaureate degree. The program provides preparation for doctoral study by supplying information, learning assessments, research experiences, academic experiences, cultural experiences, graduate student mentoring, faculty mentoring, and financial assistance. McNair Scholars participate in the program for about four semesters.

Psychology Clinic

The Psychology Clinic, located on the ground floor at the east end of the Psychology Building, was established primarily to provide practicum experience for advanced graduate students in clinical and counseling psychology. Psychological testing and long- and short-term counseling and psychotherapy are available to Texas Tech students and staff and to children and adults in the community. Although clients are often referred to the clinic by other agencies or individuals, no referral is necessary.

Speech–Language and Hearing Clinic

The Speech–Language and Hearing Clinic, with facilities on the east side of the Health Sciences Center, serves as a practicum site for students in the Department of Communication Disorders. Under faculty supervi-

sion, students in speech–language pathology and audiology provide clinical services for the students, faculty, and staff of Texas Tech University and other residents of West Texas and eastern New Mexico. Assessment services and therapy are available for children and adults with hearing problems or disorders in language, voice, stuttering, or articulation. Individuals are accepted by self-referral and upon referral from other professionals. Anyone needing these services should contact the Speech–Language and Hearing Clinic Office at 743-5678.

Transcript Service

Copies of a student's transcript are available free of charge upon written request to the Registrar's Office. Adequate notice is required for transcript processing. To request a transcript, contact the Office of the Registrar, Box 45015, Texas Tech University, Lubbock, Texas 79409-5015. Official transcripts may be withheld from students who have administrative holds on their records until the holds have been released. For information about administrative holds and the status of holds on students' records, refer to the section on "Administrative Holds" in the Undergraduate Academic Information section of this catalog.

Transcripts furnished from other institutions become the property of Texas Tech University.

Texas Tech Police Department

This branch of the university system operations is supervised by the Chief Financial Officer. The department provides police and security services for the entire Texas Tech community, an area much larger and more populated than many towns in Texas. In addition, the police department handles campus traffic and parking problems when the Traffic and Parking Services Office is closed.

Motor Vehicle Regulations

Students are required to register their vehicles and display a Texas Tech parking permit on any vehicle parked on campus from 7 a.m. to 5:30 p.m. Monday through Friday. Students who operate motor vehicles on campus must comply with currently approved and published regulations that can be viewed online (www.ttu.edu/~parking) or obtained at the Traffic and Parking Services Office, 2903 4th St., from 7:30 a.m. to 4 p.m. on weekdays. This office also provides vehicle registration forms and permit purchases.

Admission to the University

Contact Information: Office of Admissions and School Relations, Box 45005, Lubbock, Texas 79409, www.admissions.ttu.edu, telephone (806) 742-1480.

Texas Tech accepts the State of Texas Common Application for Admission to Public Universities. Applications will be sent upon request or can be obtained from the student's high school counseling office or college advisement center. Students may submit an application electronically (www.applytexas.org) or on paper. Essays are not required; however they are recommended.

Applicants may be considered for admission to the undergraduate divisions of the university by graduation from high school, by transfer from an accredited college, or equivalent. Students who meet the stated requirements may reasonably expect to be admitted. Additional factors may be considered in determining the applicant's eligibility for admission.

Students are admitted to a specific college within the university. The university reserves the right to modify its admission requirements in order to manage enrollment in high-demand areas. The colleges may set various requirements for continuance in certain degree programs in addition to the general university minimum requirements.

Admission Requirements

As a state-assisted institution, Texas Tech University recognizes its responsibility to provide excellent educational opportunities for its students. Since experience indicates that prospective students with poor academic records have little chance of successfully completing degrees at Texas Tech, class rank in high school and SAT-I and ACT scores are used to help predict potential academic performance. Other factors that could predict success at Texas Tech may also be considered.

First-Time Freshman Admission. To gain admission for the first time to Texas Tech, an applicant must complete the following:

1. File an application to Texas Tech University and pay an application fee of $50. The application fee may be paid by check, money order, or one of the following credit cards: Visa, MasterCard, American Express, or Discover. If payment of the application fee creates financial hardship, please submit verification or documentation of need for a fee waiver along with your application and supporting documents for admission. Applications will not be complete without either the application fee or fee waiver documentation. No waiver of the international application fee is available.
2. Have an official high school transcript showing class rank sent directly to the Office of Admissions. Senior courses in progress must be provided on the transcript or a grade report or listed on the State of Texas Common Application form. A final transcript showing graduation date will be required following graduation and will become part of the student's permanent record.
3. Have college entrance test scores, either the SAT1 or the ACT, sent from the testing agency at the time the test is taken.

The Admissions Office recommends that applications be on file by March 1 for summer or fall admission; November 1 for spring admission. Students must apply for admission at least 30 days before the beginning of the semester. Falsification or omission of application information will void admission to Texas Tech University.

Because success in college depends on solid preparation in high school, the following courses must be completed before you attend Texas Tech:

High School Subjects	***Units Required***
English	4
*Mathematics	3
Social Science	2-1/2
**Laboratory Science	2
†Foreign Language	2
Electives	3-1/2

* The Colleges of Architecture and Engineering recommend geometry, Algebra II, and trigonometry; the College of Business Administration recommends Algebra II.

** The College of Architecture recommends chemistry *or* physics; the College of Engineering recommends chemistry *and* physics.

† Unless two units of credit in a single foreign language have been received in high school, at least two semesters of a single foreign language are required at the college level.

Assured Admission. Students who graduate from high school or equivalent (including Department of Defense schools) with required course work will be assured admission if they present the combination of class rank and minimum test scores indicated below:

High School Class Rank	*Minimum Test Scores for Assured Admission*	
	ACT	SAT1
Top Ten Percent	No Minimum	
First Quarter (other than top 10%)	25	1140
Second Quarter	28	1230
Lower Half	29	1270

Assured admission will be granted all students who hold scholarships awarded by an official Texas Tech University scholarship committee.

Admission Review. Applicants who do not meet the assured admission criteria will have their records reviewed in a holistic manner. Additional information included on the application will be considered for the purpose of identifying students who can be successful and graduate from the university. Applicants should provide information on the application form regarding high school course work, honors or advanced placement, extracurricular activities, leadership experiences, proposed field of study, civic or other service activities, and any other information they wish to include such as socioeconomic background, family educational background, bilingual proficiency, family affiliation with Texas Tech, and special talents or awards that may be beneficial to the Admissions Committee in assessing a student's potential for success. Although a personal statement or essay is not required, a response to Topic C on the State of Texas Common Application may be helpful in the review process.

Texas Academic Skills Program (TASP). The Texas Academic Skills Program (TASP) was implemented to ensure that students enrolled in Texas public colleges and universities possess the necessary academic skills to succeed. The TASP test—a diagnostic assessment of reading, mathematics, and writing skills—must be taken by entering part-time and full-time undergraduate students.

The following students may be exempt from TASP requirements:

- Students who have previously earned a baccalaureate degree.
- Students who earned 3 or more college-level credit hours from an accredited college or university *prior to September 1, 1989.*
- Students who have achieved high test scores on one of the following:

  A. The high school exit-level Texas Assessment of Academic Skills (TAAS) test–1770 or better on writing, TLI (Texas Learning Index) X–86 on math, *and* TLI X–89 on reading within 3 years.
  B. The ACT–23 or better composite with at least a 19 verbal *and* 19 math within 5 years.
  C. The SAT1–1070 or better composite with at least a 500 verbal *and* 500 math within 5 years.
  D. Active duty military.
  E. Students who graduated from high school in 1999 with a GPA of 3.5 or higher on a 4.0 scale and completed the recommended or advanced high school curriculum (the exemption is effective only for a student who enrolls in an institution of higher education on or before the second anniversary of the date the student graduated from high school).

Students seeking entry into teacher certification programs may be exempted only on the basis of high test scores.

TASP test scores are not used to determine admission status. However, entering students must test before enrolling in college-level courses in Texas public institutions of higher education. Students transferring hours from private or out-of-state institutions who have earned a B or better in courses equivalent to those specified as B

or better courses in reading, math, and writing may be waived from taking some or all of the TASP test. (Contact the Transfer Evaluation Office at 742-1510 for course equivalents.)

Students are strongly encouraged to take the TASP test before coming to Texas Tech so that the scores may be used to help determine initial placement in college courses. TASP test registration usually must be done a month prior to the scheduled testing date. Six or more test dates are available each year at 110 Texas locations. TASP test registration booklets are available at most Texas public colleges and universities or by writing to the testing company, National Evaluation Systems, Inc., P.O. Box 140347, Austin, TX 78714-0347.

The TASP test fee is paid by the student (fee vouchers may be available in the Financial Aid Office for some students with exceptional need). Test scores should be released to Texas Tech University by indicating Code 323 on the TASP test registration form.

Students who have tested but not attained the established minimum scores on all three sections of the test are required by Texas law to obtain TASP advising and to enroll in a formal program of skills development each semester until they have passed all sections of the test. Assigned skills development must be completed as a condition of enrollment. Students whose term enrollment would result in 60 or more semester credit hours upon completion will be blocked from registration in any 3000 or 4000 level (upper division) courses until they have satisfied all TASP requirements.

For further information on testing, contact the TASP Office of the Registrar, 116 West Hall, or telephone (806) 742-1183. Questions about TASP skills development should be directed to the TASP Skills Development Office in 72 Holden Hall, telephone (806) 742-3242.

Admission of International Students. International students may apply for admission to Texas Tech by writing to the Office of Admissions and School Relations to obtain an International Student Application form or apply electronically at www.applytexas.org on the World Wide Web. With the official application form, international applicants must furnish original documents, or official certified copies, indicating the nature and scope of their educational program.

Applicants with foreign academic credentials must provide academic records in the original language with certified English translation. Applicants who have attended school outside the United States need to provide official results of secondary external examinations on examination board letterhead, (such as GCE “Ordinary” level exams); certificates of completion of a state secondary school examination; and official transcripts from any university-level studies already completed in the United States or elsewhere. Failure to provide complete information regarding post—secondary level study could result in cancellation of admission. Students who have completed secondary school in the United States must also take and submit scores from the SAT1 or ACT.

Students whose native language is not English must also present a score of at least 550 (paper exam) or 213 (computer exam) on the Test of English as a Foreign Language (TOEFL). The TOEFL requirement may be waived if the student has attended a U.S. high school or a college for at least two years or if the student is a citizen of a country where English is the native language. Countries Texas Tech University considers to have English as the native language include Australia, Canada (except the Province of Quebec), Commonwealth Caribbean Countries (Anguilla, Antigua, the Bahamas, Barbados, Belize, British Virgin Islands, Bermuda, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent, Trinidad and Tobago, and Turks and Caicos Islands), Ireland, Liberia, New Zealand, United Kingdom (England, Northern Ireland, Scotland, Wales), and the United States. Information

(continued on page 28)

Alternate Admission Programs

Programs for Applicants Prior to Summer 2003

Students not admitted through the review process may be admitted through one of the following provisional admission options:

Gateway Program. This new partnership between Texas Tech University and South Plains College provides students with the opportunity of living on the Texas Tech campus while completing their provisional student course work through South Plains College. Students in this program will be able to live in the Texas Tech residence halls, participate in many of our student activities and organizations, access student health and advisement services, and attend all university functions. At the same time they will be enrolled as full-time students at South Plains College, where, if qualified, they will be able to receive state or federal financial aid. Courses for these students will be offered at the nearby Reese Center. Students who complete 12 hours (one semester) of transferable college credit with a 2.50 GPA or 24 hours (two semesters) with a 2.25 GPA can be admitted to Texas Tech as transfer students.

Summer Provisional Program.* Attend *either the first or second summer term* at Texas Tech and pass 7 hours of college-level Core Curriculum courses with a cumulative GPA of at least 2.5 on a 4.0 scale. (The required course work must include I S 1100, a 1-hour Freshman Seminar). Or attend *both the first and second summer terms* at Texas Tech and pass 13 hours of college-level Core Curriculum courses with a cumulative GPA of at least 2.25. (The required course work must include I S 1100, a 1-hour Freshman Seminar).

Spring Provisional Program.* Enroll at Texas Tech in the spring semester following high school graduation and pass 13 hours of required Core Curriculum courses with a cumulative GPA of at least 2.25. (The required course work must include I S 1100, a 1-hour Freshman Seminar).

Provisional students who complete one of these requirements and meet all other admission criteria will be admitted as regular degree-seeking students. Students who do not complete their provisional requirements may gain admission in one of two ways:

- Complete 12–23 semester hours of transferable college work at another institution with a cumulative 2.5 GPA.
- Complete 24 or more semester hours of transferable college work at another institution with a cumulative 2.25 GPA (2.5 for Business Administration applications).

* Not eligible for state or federal financial aid.

Programs Effective Summer 2003

Freshman applicants who do not meet the university's admissions requirements are eligible to participate in either the Summer Gateway Program or the Fall/Spring Gateway Program.

Summer Gateway Program. Students participating in this program are required to enroll in the summer following high school graduation. Students must pass a prescribed number of hours in specific transferable courses. These courses will be offered on the Texas Tech campus by South Plains College. Summer Gateway students will live in Texas Tech residence halls and have access to most student activities, facilities, programs, and services. Students may satisfy their Summer Gateway requirements in one of two ways:

- Attend either the first or second summer session and pass 7 hours of transferable course work with a cumulative GPA of at least 2.5 on a 4.0 scale. The required course work must include a one-hour college orientation course.
- Attend both the first and second summer sessions and pass 13 hours of transferable course work with a cumulative GPA of at least 2.25. The required course work must include a one-hour college orientation course.

Summer Gateway students who complete either of these requirements will be admitted as transfer students.

Fall/Spring Gateway Program. Students are required to enroll for one academic year following high school graduation and pass 24 semester hours of transferable credit with a cumulative GPA of 2.25. Students may be considered for transfer after one semester provided they pass 12 semester hours of transferable credit with a cumulative GPA of 2.5. The required course work must include a one-hour college orientation course. All course work will be offered by South Plains College and taught at the Reese Educational Center. Students will live in Texas Tech residence halls and have access to most student activities, facilities, programs, and services. Fall/Spring Gateway students who complete either of these requirements will be admitted as transfer students.

Transfer Option. Students who do not successfully complete one of the Gateway programs may gain admission in one of two ways:

- Complete 12-23 semester hours of transferable college work at another institution with a cumulative GPA of 2.5.
- Complete 24+ semester hours of transferable college work at another institution with a cumulative GPA of 2.25.

concerning the TOEFL may be obtained from Educational Testing Service, P.O. Box 899, Princeton, New Jersey 08540, U.S.A.

International students not living in the United States are encouraged to apply a year in advance. International students are required to verify their ability to support themselves financially (a required minimum of $18,200 for the academic year in addition to travel money is necessary; this is subject to change if tuition, fees, or room and board charges are modified). The tuition rate for international students is $255 per semester hour. In addition, an administrative fee of at least $250 per semester and $125 per summer term is charged for certain sponsored international students.

A nonrefundable processing fee is required for all applicants. Those applying for either undergraduate or graduate programs will not be considered unless their applications are accompanied by an International Money Order in the amount of $60 (U.S.), or U.S. Postal Money Order for applicants in the U.S., payable to Texas Tech University. Permanent residents may use the State of Texas Common Application to Public Colleges and Universities either on the Web at www.applytexas.org or on paper and pay the $50 application fee.

Admission of Former Texas Tech Students. Former Texas Tech students applying for readmission to the university must apply 30 days prior to open registration for the semester the student plans to attend. Former students who paid an application fee for a previous application are not required to submit another application fee. For admission criteria refer to the "Scholastic Probation and Suspension" policy listed in the Academic Regulations section.

Former Texas Tech students who have not attended or earned credit at another institution following Texas Tech enrollment can be reinstated through the Office of the Registrar by completing the Returning Student Form available at www.reg.ttu.edu or call the Office of the Registrar at (806) 742-3661. Former students who left on first scholastic suspension who have undertaken no college-level work are not eligible to return to Texas Tech for a period of one full calendar year (two long semesters and both summer sessions).

All other former students can apply for readmission by utilizing the State of Texas Common Application for Transfer/Transient/Readmission available electronically at www.applytexas.org or the Office of Admissions and School Relations at (806) 742-1480. Official transcripts from all institutions attended subsequent to Texas Tech enrollment must be submitted.

Former students returning from first suspension may apply for readmission to the college from which they were suspended or to another college if they have decided upon a different major or career goal. Conditions of the readmission will be established by the academic dean of the new college, and all such conditions must be met.

Former students who return after first suspension will be required to successfully complete XL 0201, "Strategies for Learning," during the first semester of their readmission. A nonrefundable fee of $150 will be collected for this course. Attendance in XL 0201 is mandatory from the first day of classes. Three absences will result in a student being withdrawn from the university.

Former students who have been scholastically suspended for a second or subsequent time are not eligible to return to Texas Tech for a period of one calendar year.

Academic Fresh Start. Under this program, state residents may apply for admission to Texas public universities without consideration being given to academic work completed 10 or more years prior to the semester in which the applicant seeks to enroll. An applicant who is admitted under this plan may not receive any credit for courses taken 10 or more years prior to enrollment. The applicant who elects to participate in this program must do so *at the time of application* and must otherwise meet current freshman or transfer admissions requirements.

If a student who enrolls under this program completes a prescribed course of study, earns a baccalaureate degree, and applies for admission to a postgraduate or profes-

sional program offered by a public institution of higher education, the admitting institution will consider only the grade point average of the applicant established by the course work completed after the student enrolled under this plan (along with other criteria the institution normally uses to evaluate applicants for admission).

Special Admission. The university may, under unusual or special circumstances, waive the admission requirements for a limited number of applicants.

Specific terms of this policy are established and periodically revised by the Texas Tech administration.

Admission of Transfer Students. Undergraduate students who have attended another accredited college may be accepted for admission to Texas Tech provided they meet certain requirements.

The Admissions Office recommends that applications be on file by March 1 for summer or fall admission and November 1 for spring admission. Students must apply for admission at least 30 days before the beginning of the semester. Falsification or omission of application information will void admission to Texas Tech University. Applicants must complete the following:

1. File an application to Texas Tech University and pay an application fee of $50. The State of Texas Common Application is available at www.applytexas.org.
2. Provide official transcript(s) of their *entire* academic record from *all* institutions in which they have been or are currently enrolled. (Official transcripts must be sent directly to the Admissions Office and have the signature of the proper college official and the college seal. Transcripts must be in a sealed envelope from the sending institution to be acceptable.) Applicants must be eligible to return to the institution most recently attended.
3. Provide a high school transcript for use in advisement and placement.

Transfer applicants may be admitted to the university in one of the following ways:

1. Transfer of 24 or more hours from an accredited institution with a minimum 2.25 GPA.
2. Transfer of 12 to 23 hours including at least 12 hours of required basic courses from an accredited institution with a minimum 2.5 GPA.
3. If transferring with fewer than 12 hours, meet the same standards for admission as required of new freshmen entering from high school and have a minimum 2.0 cumulative GPA in work completed.

Due to a high volume of applications, some colleges and/or departments may have higher admission requirements for acceptance into their programs. Transfer students choosing the College of Business Administration typically must have a cumulative 2.5 GPA; College of Architecture, cumulative 3.0 GPA; and General Studies, 24 hours with a 3.0 GPA.

Note: The student's major, types of courses taken, and pattern of progress, as well as high school records and standardized test scores are considered in the admissions process. Students transferring 24 or more hours from an accredited institution with a cumulative GPA of 2.00–2.24 will be reviewed, as will those with 12–23 hours and a 2.00–2.49 GPA.

Transfer of Credits from Other Colleges and Universities. Evaluation of course credit earned at other institutions by the Transfer Evaluation Office does not decree approval of the credit for use toward degree requirements. Only the academic dean of the college offering the program in which a student is enrolled has authority for determining which courses will be applied toward any specific program. The only exception to this rule is that no transferred course completed with a grade below C- may be applied to fulfill course requirements in majors, minors, or specializations.

Applicants must submit official records from all accredited institutions attended. Official transcripts must be sent directly to the Office of Admissions and School Relations. All college-level, nonvocational courses completed with a passing grade of D or above at regionally accredited colleges and universities (not including trade or technical schools) will be evaluated for acceptance of transfer credit by the Transfer Evaluation Office. The Transfer Evaluation Office determines acceptable transfer credit on the basis of an evaluation of course content as described from the sending institution's catalog and in consultation with the appropriate academic units at Texas Tech University as necessary for clarification. While all credit hours presented on the sending

institution's transcripts will be evaluated, and equivalent college-level courses posted to the student's academic record, a maximum of 66 semester credit hours from two-year colleges may be applied towards degree requirements.

Students are encouraged to meet with the academic advisors of the college in which they plan to enroll to discuss that college's policies on applicability of transfer credit for degree purposes. Credit hours will be applied to degree programs and majors when courses are deemed equivalent to the Texas Tech courses that satisfy various program requirements by the college in which the student is seeking a degree.

Students wishing to transfer credit to Texas Tech from a nonaccredited institution must:

- Complete 30 semester credit hours of work in residence at Texas Tech with at least a 2.0 GPA
- Receive approval from the academic dean in order to validate credits for transfer.

The following guidelines apply to the transfer of college credit:

- Original copies of official college transcripts will be reviewed and course work evaluated before transfer credit will be posted to a student's permanent academic record. Courses that may have been accepted for credit by another institution will not necessarily be accepted by Texas Tech.
- Nonvocational, college-level courses completed with a grade of D or above at another accredited institution (including courses taken on a pass–fail basis and passed) will normally be accepted for transfer. No transferred course completed with a grade below C- may be applied to fulfill course requirements in majors, minors, or specializations.
- Courses completed with codes indicating no grade or credit will not be transferred. This includes courses from which a student has withdrawn or received a grade of incomplete.
- Vocational and technical courses normally not acceptable for transfer may be transferred as credit with departmental approval. However, only the student's academic dean can determine the applicability of such credit towards a degree.
- Transferability of courses will not be affected by a student's academic standing (i.e., probation, suspension), but credits earned while on academic suspension from Texas Tech University will apply to a degree plan only if approved by the student's academic dean.
- Remedial courses will not be accepted for transfer and the credit hours will not be reflected on the student's academic record at Texas Tech.
- Nonvocational, college-level courses from a nonaccredited institution may be posted to the student's academic record only after the student has validated the credits for transfer with the student's academic dean according to Texas Tech policy.
- Credit by examination will be accepted when the student provides documentation of appropriate test scores on an original score report from the national testing organization or official high school transcript. Credit is awarded according to Texas Tech University's credit by examination guidelines.
- Credit granted for nontraditional educational experiences by community colleges or other universities will not be accepted for transfer. These include courses taken at a nondegree granting institution; life or work experience; and work completed at specialized proprietary schools.
- Credit for specialized support courses such as math, science, and English intended for use in an occupational program will not be transferred.
- Credit hours taken at a junior or community college may not be transferred as upper division work, even when the Texas Common Course Numbering System designation indicates similar course content.
- When a course has been repeated at another institution, only the most recent course and grade will be transferred and posted to the student's academic record, unless the course is designated in the institution's catalog as "may be repeated for credit."
- Texas Tech will not transfer credit for any college course documented only on a high school transcript.

Texas Common Course Numbering System. The Texas Common Course Numbering System (TCCNS) has been designed to aid students in the transfer of general academic courses between Texas public colleges and universities throughout the state. The system ensures students that courses designated as common will be accepted for transfer and the credit will be treated as if the courses had actually been taken on the receiving institution's campus. Texas Tech courses identified as common will have the Common Course Number listed in brackets at the end of each course description. For more information concerning the Texas Common Course Number System, please visit the TCCNS Web page at www.tccns.org/ccn.

For more information on how your credit will transfer to Texas Tech visit www.reg.ttu.edu. The following lower division courses have been evaluated by academic departments

and determined to be the equivalent of the Texas Tech courses listed.

TCCNS	TTU Equivalent
ACCT 2301	RHIM 2322
AGRI 1131	AGSC 1111
AGRI 1307	PSS 1321
AGRI 1309	AGSC 2300
AGRI 1413	PSS 2401
AGRI 1415	PSS 1411
AGRI 2317	AAEC 2305
ANTH 2301	ANTH 2300
ANTH 2351	ANTH 2302
ARTS 1301	ART 1309
ARTS 1303	ART 1310
ARTS 1304	ART 1311
ARTS 1311	ART 1320
ARTS 1312	ART 1331
ARTS 1316	ART 1324
ARTS 1317	ART 1325
ARTS 2316	ART 2322
ARTS 2317	ART 2322
ARTS 2323	ART 2320
ARTS 2326	ART 2338 + 2339
ARTS 2327	ART 2338 + 2339
ARTS 2333	ART 2328
ARTS 2334	ART 2328
ARTS 2336	ART 2339
ARTS 2341	ART 2334
ARTS 2342	ART 2334
ARTS 2346	ART 2330 + 2331
ARTS 2347	ART 2330 + 2331
ARTS 2356	ART 2326
ARTS 2356	ART 2325
ARTS 2357	ART 2326
ARTS 2366	ART 2322
BIOL 1406	BIOL 1403
BIOL 1407	BIOL 1404
BIOL 1411	BIOL 1401
BIOL 1413	BIOL 1402
BIOL 2401	ZOOL 2403
BIOL 2402	ZOOL 2404
BUSI 1301	B A 1301
BUSI 1307	FFP 1370
CHEM 1105	CHEM 1105
CHEM 1107	CHEM 1106
CHEM 1111	CHEM 1107
CHEM 1112	CHEM 1108
CHEM 1207	CHEM 1301
CHEM 1305	CHEM 1305
CHEM 1307	CHEM 1306
CHEM 1311	CHEM 1307
CHEM 1312	CHEM 1308
CHEM 1405	CHEM 1305 + 1105
CHEM 1407	CHEM 1306 + 1106
CHEM 1411	CHEM 1307 + 1107
CHEM 1412	CHEM 1308 + 1108
CHEM 2401	CHEM 2501
COMM 1307	MCOM 1300
COMM 1318	PHOT 2310
COMM 2311	JOUR 2310
COMM 2327	ADV 2310
COSC 1301	C S 1300
COSC 1305	C S 1405
COSC 1401	ISQS 2440
COSC 1420	C S 1462
COSC 2425	C S 2350
DANC 1131	DAN 2100
DANC 1147	DAN 1103
DANC 1245	DAN 1204
DANC 1341	DAN 1304
DRAM 1120	TH A 1101
DRAM 1121	TH A 1102
DRAM 1141	TH A 2101
DRAM 1310	TH A 2303
DRAM 1322	TH A 1301
DRAM 1351	TH A 2302
DRAM 2120	TH A 1103
DRAM 2337	TH A 1301
ECON 2301	ECO 2302
ECON 2302	ECO 2301
ENGL 1301	ENGL 1301
ENGL 1302	ENGL 1302
ENGL 2311	ENGL 2311
ENGR 1307	CTEC 2301
ENGR 2305	E E 2304
ENGR 2405	GTEC 1312
FREN 2311	FREN 2301
FREN 2312	FREN 2302
GERM 2311	GERM 2301
GERM 2312	GERM 2302
GOVT 2301	POLS 1301
GOVT 2302	POLS 2302
GREE 1311	GRK 1301
GREE 1312	GRK 1302
GREE 2311	GRK 2301
GREE 2312	GRK 2302
HECO 1315	F&N 2310
HIST 1301	HIST 2300
HIST 1302	HIST 2301
HIST 2311	HIST 1300
HIST 2312	HIST 1301
HIST 2321	HIST 2321
HUMA 1301	HUM 2301
HUMA 1302	HUM 2302
HUMA 1315	TH A 2303
ITAL 1311	ITAL 1301
ITAL 1312	ITAL 1302
ITAL 2311	ITAL 2301
ITAL 2312	ITAL 2302
JAPN 2311	JAPN 2301
JAPN 2312	JAPN 2302
LATI 2311	LAT 2301
LATI 2312	LAT 2302
MATH 1314	MATH 1320
MATH 1316	MATH 1321
MATH 1324	MATH 1330
MATH 1325	MATH 1331
MATH 1342	MATH 2300
MATH 1348	MATH 1350
MATH 2312	MATH 1350
MATH 2313	MATH 1351
MATH 2314	MATH 1352
MATH 2315	MATH 2350
MATH 2318	MATH 2360
MUSI 1183	MUAP 1113
MUSI 1184	MUAP 1114
MUSI 1192	MUAP 2133
MUSI 1193	MUAP 2134
MUSI 1286	MUCP 1201
MUSI 1287	MUCP 1202
MUSI 1300	MUTH 1300
MUSI 1301	MUTH 1301

MUSI 1308	MUHL 1301
MUSI 1309	MUHL 1302
PHED 1301	ESS 1201
PHED 1304	HLTH 1300
PHED 1336	RLS 1301
PHED 1337	RLS 1302
PHIL 1301	PHIL 2300
PHIL 2303	PHIL 2310
PHIL 2306	PHIL 2320
PHYS 1101	PHYS 1103
PHYS 1102	PHYS 1104
PHYS 1105	PHYS 1101
PHYS 1111	ASTR 1100
PHYS 1112	ASTR 1101
PHYS 1301	PHYS 1306
PHYS 1302	PHYS 1307
PHYS 1305	PHYS 1303
PHYS 1310	PHYS 1304
PHYS 1311	ASTR 1300
PHYS 1312	ASTR 1301
PHYS 2125	PHYS 1105
PHYS 2126	PHYS 1106
PHYS 2325	PHYS 1308
PHYS 2326	PHYS 2301
PHYS 2425	PHYS 1308 + 1105
PHYS 2426	PHYS 2301 + 1106
PHYS 2427	PHYS 2402
PSYC 2301	PSY 1300
PSYC 2306	HLTH 1305
PSYC 2308	PSY 2301
PSYC 2315	PSY 2301
RUSS 2311	RUSN 2301
RUSS 2312	RUSN 2302
SOCI 1301	SOC 1301
SOCI 1306	SOC 1320
SOCI 2301	HDFS 2322
SOCI 2301	SOC 2331
SPAN 2311	SPAN 2301
SPAN 2312	SPAN 2302
SPCH 1311	COMS 1300
SPCH 1315	COMS 2300
SPCH 1318	COMS 1301
SPCH 2341	TH A 2305

Completion of Core Requirements at Another Texas Public Institution. In accordance with the rules mandated by the Texas Legislature concerning the transfer of core curriculum: "If a student successfully completes the 42 semester credit hour core curriculum at an institution of higher education, that block of courses may be transferred to any other institution of higher education and must be substituted for the receiving institution's core curriculum. A student shall receive academic credit for each of the courses transferred and may not be required to take additional core curriculum courses at the receiving institution unless the board has approved a larger core curriculum at that institution." (Section 5.402, d)

Educational Experience in the Armed Services. Credit may be given for formal service school courses completed in the armed services after evaluation of official documents by the Transfer Evaluation Office. The student's academic dean decides if credit awarded for such courses will be applied toward requirements for the bachelor's degree.

Resolution of Transfer Disputes for Lower–Division Courses. In the event a dispute occurs involving the transfer of lower-division courses, the Texas Higher Education Coordinating Board has established the following procedures to resolve the dispute:

1. If an institution of higher education does not accept course credit earned by a student at another institution of higher education, the receiving institution shall give written notice to the student and to the sending institution that transfer of the course credit is denied. A receiving institution shall also provide written notice of the reasons for denying credit for a particular course or set of courses at the request of the sending institution.
2. A student who receives notice as specified in subsection (1) may dispute the denial of credit by contacting a designated official at either the sending or the receiving institution.
3. The two institutions and the student shall attempt to resolve the transfer of the course credit in accordance with Coordinating Board rules and guidelines.
4. If the transfer dispute is not resolved to the satisfaction of the student or the sending institution within 45 days after the date the student received written notice of denial, the institution that denies the course credit for transfer shall notify the Commissioner of Higher Education of its denial and the reasons for the denial.

The Commissioner of Higher Education or the commissioner's designee shall make the final determination about a dispute concerning the transfer of course credit and give written notice of the determination to the involved student and institutions. The Coordinating Board shall collect data on the types of transfer disputes that are reported and the disposition of each case that is considered by the commissioner or the commissioner's designee.

If a receiving institution has cause to believe that a course being presented by a student for transfer from another school is

not of an acceptable level of quality, it should first contact the sending institution and attempt to resolve the problem. In the event that the two institutions are unable to come to a satisfactory resolution, the receiving institution may notify the Commissioner of Higher Education, who may investigate the course. If its quality is found to be unacceptable, the Coordinating Board may discontinue funding for the course.

Concurrent Attendance at Texas Tech and Other Institutions. A student registered at Texas Tech who wishes to register concurrently at another institution must obtain written approval from the academic dean of the college in which they are enrolled. This approval applies to all residence courses, extension courses, correspondence courses in progress elsewhere at the time of registration, and those begun during the semester.

A student registered at another institution but wishing to enroll concurrently for credit at Texas Tech will be considered as a transfer student and will be required to meet the standards for such students. In no case will concurrent registration resulting in enrollment beyond a normal load at this institution be permitted.

Admission of Graduate Students. Full details of admission requirements for those wishing to enter the graduate program at Texas Tech are published in the *Graduate Catalog*, which is issued annually and available online (www.ttu.edu/catalogs). A printed copy may be obtained from the Graduate Admissions Office, Texas Tech University, Box 41030, Lubbock, TX 79409-1033. Those who wish to enter the graduate program in order to work toward a master's or doctor's degree will be required to take the Aptitude Test of the Graduate Record Examinations (GRE). (Master's programs in business require the GMAT.) GRE scores must be received before final decisions can be made concerning applications for admission to graduate degree programs.

New Student Orientation Conferences (Double T Days)

New freshman and transfer students admitted to Texas Tech for fall or spring are strongly encouraged to attend a new student orientation conference. Students, parents, and guests are included in the programming aspects of the conferences that are designed to introduce and orient students to the university and the Lubbock community. At orientation students attend academic advisement sessions, register for classes, take placement tests, and meet new and current students. All new freshman and transfer students admitted to the university will receive conference registration materials. Questions regarding the conferences may be addressed to the Office of Admissions and School Relations, (806) 742-0048 or visit www.srel.ttu.edu and select New Student Orientation.

Special Programs

Special Undergraduate Programs for High School Students. Outstanding local area high school students are invited to take advantage of the special enrollment program on the Texas Tech University campus. Students may take college classes and earn credit while still attending high school. To be accepted to the special enrollment program, a student must meet the following criteria with the permission of their high school:

- For fall or spring enrollment, students must be a high school junior or senior in the top 10 percent of their high school class with at least an 1180 SAT1 or 27 ACT score.
- For summer enrollment, students must be a high school senior in the top 25 percent of their class with at least an 1140 SAT1 or 25 ACT or a high school junior in the top 10 percent of their class with at least an 1180 SAT1 or 27 ACT score.
- Students enrolled in special academic programs (e.g., Lubbock Exemplary Academic Program [LEAP]) and students who do not meet the above requirements but have special circumstances will have their records reviewed to determine other factors that may influence their success in college level courses.

Students enrolling for a specific course with the permission of their high school will be approved on an exception basis.

Seniors' Academy. The Seniors' Academy is specifically designed for students age 55 and above who wish to enrich their later years through the adventure of lifelong learning. The academy offers streamlined admissions and registration procedures to accommodate adult learners.

If you enroll in the Seniors' Academy, either to earn a degree or to take a series of classes for personal enrichment, you will be able to take advantage of:

- Flexible entrance procedures. No transcripts or SAT1 or ACT scores will be required for nondegree-seeking students.
- Simplified registration procedures.
- Special counseling with adult learning experts to determine an appropriate course of study, especially tailored to your interests and aptitudes.
- Academic counseling and tutoring at no extra expense to help you brush up on study skills and fundamentals through the Learning Center.
- Adult learner orientation sessions to assure that you adjust easily to campus life and are introduced to the university's various resources, such as the Library, the Counseling Center, and the Advanced Technology Learning Center.

Students who are seeking a degree should have official transcripts from all institutions in which they have been enrolled sent to the Office of Admissions and School Relations. These transcripts will be evaluated allowing appropriate advisement for class registration. Transfer procedures allow many classes completed at other colleges or universities to help fulfill Texas Tech degree requirements.

For more information on the Seniors' Academy or for application forms, contact the Texas Tech Office of Admissions and School Relations, (806) 742-1480.

Undergraduate Credit by Examination

It is the general policy of the university to recognize academic achievement of students gained by means other than through performance in organized classes. Students will be given the opportunity to receive credit by special examination in all courses where proficiency may be practicably determined by examination.

Students may achieve a high level of proficiency in certain subject areas through advanced work in high school, participation in advanced placement programs, or independent study. The university strongly encourages such superior attainment, recognizes it for academic purposes, and permits students who have done such work to obtain course credit through examination. A grade of Credit (CR) will be given on the examination to those earning credit, but the grade will not be considered in determining grade point averages. Course credit earned by examination is recorded by the Registrar on the student's transcript as "(Number) hours of credit via credit by examination program in (course equivalent)," and no grade points are awarded. Course credit by examination may not be used to satisfy the 30-hour minimum residence credit requirement for graduation. Any current or former Texas Tech student (or prospective student) may attempt to earn credit by examination for any undergraduate course provided the student has neither passed nor failed that course at Texas Tech. The student is responsible for complying with the following procedures:

1. As of July 1, 2001, all CLEP exams were converted to a computer-based version. Appointments to use the computers and schedule the exams must be made through the Testing Center at 213 West Hall, (806) 742-3671. Like the SAT and ACT scores, CLEP scores have been recentered nationally. Scaled scores for the computer-based CLEP are different from the old paper and pencil version but the level of competency remains the same.
2. The student is responsible for having test scores sent to the Registrar's Office unless tests are taken at Texas Tech University. Score reports sent from other university test centers must be requested from the Testing, Evaluation, Assessment, and Measurement Center, 213 West Hall. The student is responsible for completing tests for lower level courses in sufficient time to qualify for registering for higher level courses.
3. After the 12th day of classes, credit by examination may be attempted for a course one is enrolled in only upon written approval of the appropriate academic dean's office.
4. In cooperation with and in compliance with federal nondiscrimination laws and policies, credit by examination is open to all persons. Students with mostly A and B grades who have higher admission test scores are encouraged to consider attempting credit by examination.

5. College Level Examination Program (CLEP) tests **cannot** be repeated before six months have passed.
6. Accommodations for nonstandard testing must be submitted in writing (before the test date) and supported by documentation from a professional who is licensed and certified to diagnose the disability. All requests are subject to approval and must be scheduled with the Testing Center 213 West Hall (806) 742-3671.

There are five separate programs by which a student may earn course credit by examination. These include the following:

1. Specified CEEB Achievement Tests.
2. CEEB Advanced Placement Examinations that are a part of the Advanced Placement Programs (AP) available in a limited number of secondary schools.
3. Specified subject examinations of the CEEB College Level Examination Program (CLEP).
4. Departmental examinations prepared, administered, and scored by faculty members who teach the related course.
5. Credit for an International Baccalaureate (IB) examination.

The student is responsible for taking the tests early enough to allow sufficient time for scores to be reported to the university and processed by the Registrar's Office. Many courses in the credit by examination program are prerequisites for higher level courses; therefore, students seeking credit by examination must plan so that this credit can be assured before registering for advanced courses. Information regarding test dates and fees for national standardized examinations is available from the Testing, Evaluation, Assessment, and Measurement Center at Texas Tech. It is the student's responsibility to request that his or her CEEB test scores be sent to the university. Information concerning each of the testing programs follows.

1. ***Credit for CEEB Achievement Tests.*** The CEEB Achievement Tests are part of the CEEB Admissions Testing Program. Each year there are several national administrations of the CEEB Achievement Tests. Students should plan to take the specified tests at national testing centers during their senior year of high school at an early testing date in order that scores may be reported to the university by June. In addition to the national administrations, there are administrations of the Achievement Tests recognized for credit by Texas Tech during the Early Registration Conferences held on the campus each summer.

Further information concerning the CEEB Achievement Tests may be obtained from your high school counselor or principal, the College Entrance Examination Board, Box 592, Princeton, New Jersey 08540, or the Testing, Evaluation, Assessment, and Measurement, Center of Texas Tech University, Box 45002, Lubbock, Texas 79409-5002.

2. ***Credit for CEEB Advanced Placement Program Examinations (AP).*** The Advanced Placement Examination is the final examination for a nationally standardized course offered in a limited number of secondary schools under the auspices of the Advanced Placement Program. The objective of the AP is to allow students to begin work toward college credit while still in high school. Students should check with their high school counselor or principal as to the availability of the AP examinations in their school. The AP is offered once a year during May at participating high schools.

3. ***Credit for CEEB College Level Examination Program (CLEP) Examinations.*** Under the College Level Examination Program, the university will award credit for only the specified examinations. As with the other CEEB testing programs, a student may attempt a CLEP examination at a national CLEP testing center before enrolling and have the scores reported to the university. These examinations are offered on the campus during the Early Registration Conferences held each summer, several times each month to students currently enrolled, and monthly at national CLEP test centers.

Further information concerning the CLEP tests may be obtained from your high school counselor or principal, College Level Examination Program, Box 1821, Princeton, New Jersey 08540, or the Testing, Evaluation, Assessment, and Measurement Center of Texas Tech University, Box 45002, Lubbock, Texas 79409-5002.

4. ***Credit for an International Baccalaureate (IB) Examination.*** The International Baccalaureate is an international program of courses and examinations offered at the high school level. Texas Tech welcomes applications from students in the IB program and will grant 6 to 8 semester hours of credit for scores of 5, 6, or 7 on the IB higher level examinations. An IB examination transcript must be sent to Texas Tech.

5. ***Credit by Departmental Examination.*** Any current or former Texas Tech student (or prospective student) may attempt to earn credit by examination for any undergraduate course provided the student has neither passed nor failed that course at Texas Tech. Several departments within the university prepare, administer, score, and award credit for their own examinations. Credit for specific courses is given upon satisfactory performance of the comprehensive examinations that are administered by the departments responsible for the courses and recommended by the deans of the respective colleges. In order to be eligible to attempt credit by departmental examination, a student must not have previously audited, enrolled in, or attempted credit by examination in the course. A student must apply in writing to the responsible department at least 30 days prior to taking a departmental examination for credit. Further information regarding any credit by departmental examination should be secured directly from the academic department concerned.

TTU Courses for which credit can be earned	Standardized Test(s) Used	Min. Score	Sem. Hrs.
Art			
ART 1310	AP: Art History	4	3
ART 1311	AP: Art History	4	3
ART 1320	AP: Art General	4	3
ART 1324	AP: Art Drawing	4	3
Biology			
gen. biol. credit	IB: Biology Standard Level	4, 5, 6, 7	4
BIOL 1401, 1402	AP: Biology	3	8
BIOL 1403, 1404	AP: Biology	5	8
BIOL 1403, 1404	IB: Biology Higher Level	5, 6, 7	8
BIOL 1401, 1402	CLEP-S: General Biology	52	8
Business Administration			
ACCT 2300, 2301	CLEP-S: Principles of Accounting	50	6
MGT 3370	CLEP-S: Principles of Management	52	3
MKT 3350	CLEP-S: Principles of Marketing	55	3
BLAW 3391	CLEP-S: Introductory Business Law	51	3
Chemistry			
CHEM 1301	IB: Chemistry Standard Level	4, 5, 6, 7	3
CHEM 1305, 1306 & 1105, 1106	AP: Chemistry	3	8
CHEM 1305, 1306 & 1105, 1106	CLEP-S: General Chemistry	52	8
CHEM 1307, 1308 & 1107, 1108	AP: Chemistry	4	8
CHEM 1307, 1308 & 1107, 1108	CLEP-S: General Chemistry	65	8
CHEM 1307, 1308 & 1107, 1108	IB: Chemistry Higher Level	5, 6, 7	8
Computer Science			
C S 1300	CLEP-S: Info. Systems and Computer Appls.	55	3
C S 1412	AP: Computer Science A	4	4
C S 1412	AP: Computer Science AB	3	4
Economics			
ECO 2301	CLEP-S: Principles of Microeconomics	50	3
ECO 2301	IB: Economics Higher Level	5, 6, 7	3

TTU Courses for which credit can be earned	Standardized Test(s) Used	Min. Score	Sem. Hrs.
ECO 2302	CLEP-S: Principles of Macroeconomics	50	3
ECO 2301	AP: Microeconomics	4	3
ECO 2302	AP: Macroeconomics	4	3
English			
ENGL 1301	SAT II: Writing	610	3
ENGL 1301, 1302	SAT II: Writing	680	6
ENGL 1301	CLEP-S: Freshman College Composition	50	3
ENGL 1301, 1302	CLEP-S: Freshman College Composition	57	6
ENGL 1301	AP: English Language and Composition	3	3
ENGL 1301, 1302	AP: English Language and Composition	4	6
ENGL 1301	AP: English Literature and Composition	3	3
ENGL 1301, 1302	AP: English Literature and Composition	4	6
ENGL 1301, 1302	ACT: English Aptitude	28	6
ENGL 1301, 1302	ACT: Composite Aptitude	28	6
ENGL 1301, 1302	SAT I: Verbal Aptitude	710	6
ENGL 2301, 2302	CLEP-S: Analyzing and Interpreting Literature	51	6
ENGL 2301, 2302	CLEP-S: English Literature	50	6
ENGL 2302	IB: English A1 or A2	5, 6, 7	3
ENGL 2305, 2307	CLEP-S: Analyzing and Interp. Lit.	52	6
French			
FREN 1501	CLEP-S: College Level French Language	49	5
FREN 1501, 1502	CLEP-S: College Level French Language	50	10
FREN 1501, 1502, 2301	CLEP-S: College Level French Language	51	13
FREN 1501, 1502, 2301, 2302	CLEP-S: College Level French Language	52	16
FREN 1501, 1502	AP: French	2	10
FREN 1501, 1502, 2301	AP: French	3	13
FREN 1501, 1502, 2301, 2302	AP: French	4	16
FREN 1507	IB: French B Standard or Higher Level	3	5
FREN 2301, 2302	IB: French B Standard or Higher Level	4	6
FREN 2301, 2302, 3304	IB: French B Standard or Higher Level	5	9
FREN 2301, 2302, 3302, 3304	IB: French B Standard or Higher Level	6, 7	12
*FREN 3302, 3304	IB: French A1 or A2 Standard or Higher Level	6, 7	6
*FREN 3304	IB: French A1 or A2 Standard or Higher Level	4, 5	3
Geography			
GEOG 2351	IB: Geography Standard or Higher Level	5, 6, 7	3
German			
GERM 1501	CLEP-S: College Level German Language	44	5
GERM 1501, 1502	CLEP-S: College Level German Language	50	10
GERM 1501, 1502, 2301	CLEP-S: College Level German Language	56	13
GERM 1501, 1502, 2301, 2302	CLEP-S: College Level German Language	63	16
GERM 1501, 1502	AP: German	2	10
GERM 1501, 1502, 2301	AP: German	3	13
GERM 1501, 1502, 2301, 2302	AP: German	4	16
GERM 1507	IB: German B Standard or Higher Level	3	5
GERM 2301, 2302	IB: German B Standard or Higher Level	4	6
GERM 2301, 2302, 3303	IB: German B Standard or Higher Level	5	9

TTU Courses for which credit can be earned	Standardized Test(s) Used	Min. Score	Sem. Hrs.
GERM 2301, 2302, 3303, 3304	IB: German B Standard or Higher Level	6, 7	12
*GERM 3303	IB: German A1 or A2 Standard or Higher Level	4, 5	3
*GERM 3303, 3304	IB: German A1 or A2 Standard or Higher Level	6, 7	6
History			
general history credit	IB: History Higher Level: History of the Americas	5	3
general history credit	IB: History Higher Level: History of the Americas	6, 7	6
HIST 1300	IB: History Higher Level: European	5	3
HIST 1301	IB: History Higher Level: European	5	3
HIST 1300, 1301	IB: History Higher Level: European	6, 7	6
HIST 1300, 1301	AP: European History	3	6
HIST 1300	CLEP-S: Western Civilization I: Ancient Near East to 1648	51	3
HIST 1301	CLEP-S: Western Civilization II: 1648 to the Present	51	3
HIST 2300	SAT II: United States History	600	3
HIST 2300, 2301	AP: US History	3	6
HIST 2300, 2301	SAT II: United States History	700	6
HIST 2300	CLEP-S: History of the U.S. I: Early Colonizations to 1877	52	3
HIST 2301	CLEP-S: History of United States II: 1865 to the Present	52	3
HIST 3395	IB: History Higher Level: African	5	3
HIST 3396	IB: History Higher Level: African	5	3
HIST 3395, 3396	IB: History Higher Level: African	6, 7	6
Mathematics			
MATH 1320	CLEP-S: College Algebra	52	3
MATH 1320	IB: Mathematics Studies Standard Level	5, 6, 7	3
MATH 1321	CLEP-S: Trigonometry	50	3
MATH 1350	SAT II: Mathematics Level IC or IIC	670	3
MATH 1351	AP: Calculus AB	4	3
MATH 1350, 1351	CLEP-S: Calculus with Elementary Functions	50	6
MATH 1351, 1352	AP: Calculus BC	4	6
MATH 1350, 1351, 1352	CLEP-S: Calculus with Elementary Functions	56	9
MATH 1351	IB: Mathematics Methods Standard Level	6, 7	3
MATH 1351	IB: Mathematics Higher Level	5, 6, 7	3
MATH 1550	IB: Mathematics Methods Standard Level	4, 5	5
MATH 1550	IB: Mathematics Higher Level	4	5
MATH 2300	AP: Statistics	4	3
Music			
**MUHL 1301 & MUTH 1303, 1103	IB: Music Standard or Higher Level	6, 7	4
Philosophy			
general philosophy credit	IB: Philosophy Standard Level	5, 6, 7	3
PHIL 2300	IB: Philosophy Higher Level	5, 6, 7	3
Physics			
PHYS 1306, 1307 & 1103, 1104	AP: Physics B	3	8
***PHYS 1306, 1307 & 1103, 1104 or 1303, 1101 or 1400	IB: Physics Standard Level	4, 5, 6, 7	8 or 4
PHYS 1308, 1105	AP: Physics C–Mechanics	3	4
PHYS 1308, 1105 & 2301, 1106	IB: Physics Higher Level	4, 5, 6, 7	8
PHYS 2301, 1106	AP: Physics C–Electricity and Magnetism	3	4

TTU Courses for which credit can be earned	Standardized Test(s) Used	Min. Score	Sem. Hrs.
Political Science			
POLS 1301	CLEP-S: American Government	50	3
POLS 1301	AP: Government and Politics–United States	3	3
Psychology			
PSY 1300	CLEP-S: Introductory Psychology	51	3
PSY 1300	AP: Psychology	3	3
PSY 1300	IB: Psychology Standard or Higher Level	5, 6, 7	3
PSY 2301	CLEP-S: Human Growth and Development	53	3
Spanish			
SPAN 1501	CLEP-S: College Level Spanish Language	48	5
SPAN 1501, 1502	CLEP-S: College Level Spanish Language	50	10
SPAN 1501, 1502, 2301	CLEP-S: College Level Spanish Language	52	13
SPAN 1501, 1502, 2301, 2302	CLEP-S: College Level Spanish Language	54	16
SPAN 1501, 1502	AP: Spanish	2	10
SPAN 1501, 1502, 2301	AP: Spanish	3	13
SPAN 1501, 1502, 2301, 2302	AP: Spanish	4	16
SPAN 1507	IB: Spanish B Standard or Higher Level	3	5
SPAN 2301, 2302	IB: Spanish B Standard or Higher Level	4	6
SPAN 2301, 2302, 3304	IB: Spanish B Standard or Higher Level	5	9
SPAN 2301, 2302, 3302, 3304	IB: Spanish B Standard or Higher Level	6, 7	12
*SPAN 3302, 3304	IB: Spanish A1 or A2 Standard or Higher Level	6, 7	6
*SPAN 3304	IB: Spanish A1 or A2 Standard or Higher Level	4, 5	3
Theatre Arts			
TH A 2301 or 2303	IB: Theater Arts Standard or Higher Level	5	3
TH A 2301 or 2303 & TH A 3308 or 3309 or 3335 or DAN 3313	IB: Theater Arts Standard or Higher Level	6, 7	6

AP = Advanced Placement Program
CLEP-S = College Level Examination Program—Subject Exams
IB = International Baccalaureate Examinations
ETS continually revises and updates standardized testing and measurement. Therefore, test names and scores are subject to change.
* International students who have completed their secondary or high school degree in their native language and who have scores of 6 or 7 may consult the Department of Classical and Modern Languages and Literatures for possible credit-by-exam in 4000-level courses.
** As with transfer students and incoming freshmen, incoming students from IB (International Baccalaureate) programs will need to take a music theory placement exam for advising purposes.
*** Students may select the course or courses that best fit their curriculum.

Registration and Finances

Contact Information: Office of the Registrar, Box 45015, Lubbock, Texas 79409, (806) 742-3661.

Each semester and summer term opens with a registration period during which the formal process of enrollment in the university is completed. Prior to registering for each semester or summer term, every student who completes the admission process is notified of his or her admission to the university and is furnished additional materials that deal with the actual registration.

Scholastic Order for Registration. Priority for time of registration is based upon the student's last name and classification. To provide equity in registration time assignments, students' names will be rotated alphabetically each long semester. Scholastic order for registration will apply to new students, transfer students, and currently enrolled sophomores and freshmen. Exceptions to any of the assigned registration times will not be made.

Matriculation Number. Generally, the student's social security number is used for matriculation and record identification purposes. However, disclosure of the social security number for these purposes is voluntary. Any student who chooses not to use the social security number in this manner will be assigned a matriculation number by the university.

Stop Enrollment/Stop Registration. Insufficient information or improper information given by the student on any admission or registration form will constitute cause for delaying the admission or enrollment for the student. Students with this type of administrative hold on their records may be denied registration. For information about administrative holds and status of holds on students' records, refer "Administrative Holds" in the Academic Information section of this catalog.

Name Change. Students who have a change in legal name must notify the Registrar's Office prior to registration for the change to be effective for that semester of enrollment. A student may not register under a name different from that used during the last enrollment without completing the change of name form. All grade reports and transcripts are issued under the student's legal name as recorded in the Registrar's Office.

Registration of Undergraduate Students in Graduate Courses. An undergraduate student who is within 12 semester hours of graduation and who has at least a B average in the major subject may enroll for courses carrying graduate credit, subject to the approval of the dean of the academic college and the Dean of the Graduate School. This approval must be obtained on special forms at the time of registration. No course taken without this approval may be counted for graduate credit. Graduate work taken under this provision may not be used to meet undergraduate degree requirements.

Unless he or she has previously taken the Aptitude Test of the Graduate Record Examinations, an undergraduate student who is permitted to enroll for graduate credit as indicated above is required to take the test during the first semester of enrollment in graduate courses.

The maximum course load that may be carried by an undergraduate taking courses for graduate credit is 16 credit hours in a semester or 6 hours in a summer term. An undergraduate may not accumulate more than 12 semester hours for graduate credit before being admitted to the Graduate School. Undergraduates permitted to enroll for graduate credit are expected to complete all of their undergraduate requirements within the academic year in which they first enroll for graduate credit.

It is the responsibility of the student to obtain the necessary forms and to follow prescribed procedure in registering for any course. An undergraduate student who

enrolls in a course for graduate credit without obtaining proper approval will be dropped from that course.

Change of Schedule. With proper approval, students who wish to request a change in schedule may do so. Student-initiated changes in schedule, including adding and dropping courses, must be arranged by the student in person; changes are not official until all steps in the process have been completed. The university reserves the right to make changes in a student's schedule.

Enrollment Without Credit. Persons who wish to audit a course for no grade must obtain written permission from the dean of the college in which the course is offered. Those who audit a course do so for the purpose of hearing or seeing only; they do not have the privilege of participating in class discussions or laboratory or field work, of turning in papers, or of receiving a grade or credit in the course. Students who audit a course will not be listed on the class roll, and no notation of the audit will be made on the student's transcript.

Students who are enrolled for 12 semester hours or more may audit a course without paying an additional fee. Persons who are enrolled for fewer than 12 hours must pay a $10 fee for auditing a course.

Veterans' Exemptions From Fees Under the Hazlewood Act. The following men and women who were legal residents of Texas at the time of entry into the Armed Forces and who have been legal residents of Texas for a period of not less than twelve months immediately preceding their registration in Texas Tech University are by state law exempt from the payment of all fees except laboratory and library fees or similar deposits and fees or charges for room and board: all nurses and honorably discharged members of the Armed Forces of the United States who served during the Spanish–American War, World War I, World War II (except those who were discharged from service because they were over the age of 38 or because of a personal request on the part of the person that he or she be discharged), the National Emergency which began on June 27, 1950 (also referred to as the Korean War), and all persons who were honorably discharged after service on active military duty, excluding training, for more than 180 days during the Cold War (which began on the date of the termination of the Korean War); the Vietnam era which began on December 21, 1961 and ended on May 7, 1975; the Grenada and Lebanon era which began on August 24, 1982 and ended on July 31, 1984; the Panama era which began on December 10, 1989 and ended on January 21, 1990; and the Persian Gulf War which began on August 2, 1990 and ends on the date thereafter prescribed by Presidential proclamation or September 1, 1997, whichever occurred first; or any future national emergency declared in accordance with federal law. These exemptions also apply to the children of members of the armed forces of the United States who are or were killed in action, who die or died while in service, who are missing in action, or whose death is documented to be directly caused by illness or injury connected with service in the armed forces of the United States, and to the benefit of orphans of members of the Texas National Guard and the Texas Air National Guard killed since January 1, 1946, while on active duty.

The exemptions provided for shall not exceed a cumulative total of 150 credit hours. The exemption from fees provided for above does not apply to persons if at the time of their registration they are eligible for educational benefits under federal legislation in effect at the time of their registration.

Discharge papers must be presented by the student to the Office of the Registrar, who will in turn certify the student's eligibility to Student Business Services.

NOTE: This provision of the catalog will be altered to comply with any amendment to state or federal law.

Veterans' Certification. Each student using VA Educational Assistance is responsible for providing accurate information to the VA Coordinator, Room 115 West Hall. Because the Department of Veteran Affairs requires updated information concerning any changes, students must report all changes of status in their academic schedule or address. Undergraduate students who have accumulated 64 or more

credit hours must file a copy of their official degree plan or teacher certification plan with the Veterans Coordinator or enrollment certification will be canceled. Graduate students must have taken the GRE, GMAT, or LSAT and provide a copy of their letter of acceptance from the Graduate School. Graduate students must also provide a degree plan as soon as possible after enrollment in Texas Tech.

The VA Certifying Official will immediately report grades of I (Incomplete) to the VA Regional Office (VARO) at the time the I grade is posted on the student's transcript and request an adjustment of hours certified for any persons using VA assistance through the Veterans Administration. The VARO will contact the student regarding any overpayment or additional information required. The student may repeat the course after collection of overpayment provided the VA Certifying Official approves the course. The student will be paid for taking the course a second time because the VARO will treat the original course as having been "audited" by the student. Contact the VA Certifying Official with any questions regarding VA policy.

Each student using the Hazlewood Act must be certified through the Office of the Registrar, Room 106 West Hall, each semester.

Financial Information

Summary of Student Expenses

The following estimates are based on a semester class credit hour academic schedule of 15 hours. Please remember that additional expenses such as classroom materials or other items might be required and are not included in the estimates below:

	Fall	Spring
Resident Tuition (state, institutional)	$ 1,320.00	$ 1,320.00
Nonresident Tuition	4,590.00	4,590.00
Tuition (Adjacent County of New Mexico, Oklahoma, and Arkansas)	1,320.00	1,320.00
Tuition (Nonadjacent County of New Mexico and Oklahoma)	1,770.00	1,770.00
Student Union Fee	91.00	91.00
Information Technology Fee	150.00	150.00
Laboratory Fee	30.00	30.00
Library Fee	75.00	75.00
Medical Services Fee	60.00	60.00
Student Services Fee	117.00	117.00
ID Card Maintenance Fee	5.50	5.50
International Education Fee	2.00	2.00
Course Fee	105.00	105.00
Recreation Center Fee	57.00	57.00
Athletic Fee	50.00	50.00
Books and Incidentals	600.00	600.00
Total (Texas Resident)	$2,662.50	$2,662.50
Total (Nonresident)	$5,932.50	$5,932.50
Total (Adjacent County of New Mexico, Oklahoma, and Arkansas)	$2,662.50	$2,662.50
Total (Nonadjacent County of New Mexico and Oklahoma)	$3,112.50	$3,112.50

For estimated costs, including residence hall room and board, add charges listed in "Room and Board Rates" section of the Residence Halls division of this catalog.

Application Fee

Application Fees are as follows:
Undergraduate (U.S. Citizen) $50
Foreign 60

Tuition and Fees

Texas Tech University reserves the right, without notice in this or any other publication, to change, amend, add to, or otherwise alter any or all fees, dues, rates, or other charges set forth herein by action of the Board of Regents of Texas Tech University, Texas State Legislature, or other authority as the case may be.

Texas Tech University reserves the right to deny credit for course work completed in a semester or term and/or registration in a future semester or term for unpaid balances. This also includes the release of official academic transcripts.

The university accepts no responsibility for billings or refund checks sent to incorrect addresses or difficulties caused by the postal service or other delivery services.

It is the student's responsibility to ensure that payment is in the possession of Student Business Services by the university established due dates announced each semester.

Payment Policy

Failure to make payment by the due date will result in the cancellation of the registration. A student who fails to make full payment of tuition and fees including any incidental fees by the due date may be prohibited from registering for classes until full payment is made. A student who is not 100% paid prior to the end of the term may be denied credit for course work completed that semester or term.

Fee Payment. Payment arrangements must be made prior to the first class day. Watch for announcements of these important dates. Students who are canceled prior to the first class day for nonpayment will not be allowed to reregister for classes until open registration. Students registering for the first time after the first due date will have until the 12th class day (4th class day In summer) to make payment arrangements. Students who are canceled on the 12th class day (4th class day In summer) will be assessed late charges before being allowed to re-register.

Tuition and fees may be paid using one of the following options:

Option 1: Payment of the total amount due; or

Option 2: Emergency enrollment loan; or

Option 3: Payment option plan (not available for summer terms).

Emergency Enrollment Loan. Students may request an Emergency Enrollment Loan (EEL) for 100% payment of tuition and fees. The loan must be repaid over a period not to exceed 90 days (30 days In summer) from the first cancellation date. Students may obtain the EEL form at Student Business Services in 163 Drane Hall, Financial Aid in 301 West Hall, or the Registrar in 100 West Hall. EEL forms are also available at http://techsis.admin.ttu.edu/student. The student may print the form, sign it, and deliver it in person to Student Business Services, Financial Aid, or the Registrar for immediate application to their tuition and fee account. A service charge of $25 will be imposed for this option.

Payment Option Plan Agreement. Texas State Law (Texas Education Code, Section 54.007a) allows students to pay tuition and fees in three installments over the course of the semester. Students selecting this option are required to sign a Payment Option Plan Agreement (POPA) form with the university. POPA forms are available at Student Business Services in 163 Drane Hall, Financial Aid in 301 West Hall, or the Registrar in 100 West Hall. POPA forms are also available at http://techsis.admin.ttu.edu/student. POPA forms must be turned in prior to the due date for payment. The first installment of 50% of all tuition and fees must accompany the POPA form. The second and third installments must be made in increments of one-half of the remaining balance for each installment. During the fall semester, the second installment is due October 1 and the third installment is due November 1, in the spring semester, the second Installment Is due February 1 and the third Installment Is due March 1. A service charge of $25 will

be imposed for this option. This option is not available for summer terms.

Students who have elected the payment option plan and subsequently add or change courses must maintain a 50% or greater payment status on the 12th class day. Please check your account information via the Web to ensure compliance with the terms of the agreement.

Billings will be mailed to the student's permanent legal address in the Student Registration System unless the student has established a Special Billing Address. Please keep addresses current.

General Payment Information

Payment. Payment may be made in cash (in person at Student Business Services, 163 Drane Hall), personal check, cashier's check, money order, Visa, MasterCard, American Express, or Discover Card. Checks should be made payable to Texas Tech University. All payments made other than cash are subject to final acceptance for payment.

Mailing Payments. Cash should not be sent through the mail and Texas Tech University accepts no responsibility for cash sent thorough the mail. Payments should be sent to Texas Tech University, Student Business Services, Box 41099, Lubbock, Texas 79409. Payments should be mailed far enough in advance so as to reach Student Business Services by the due date.

Telephone Credit Card Payments. Credit card payments may be made by calling 806-742-3272 or toll-free 1-866-774-9477. Please call between the hours of 8 a.m. and 4:30 p.m., Monday through Friday.

Fax Credit Card Payments. Credit card payments may be made by faxing payment to 806-742-0445. Please fax credit card payments between the hours of 8 a.m. and 4:30 p.m., Monday through Friday. Texas Tech University assumes no responsibility or liability for credit card payments faxed other than these hours.

Web Credit Card Payments. Payment can be made on the Web at this address: http://techsis.admin.ttu.edu/student.

Account Information. Tuition and fee information can be obtained via the Web at http://techsis.admin.ttu.edu/student. The student's six-digit PIN number will be required to view this information.

Late Payment Fee. $50 per due date charged the first working day following the university established due date. Postmarks will not be a consideration for assessment of this charge.

Late Registration Fee. $50 charged to registrations after classes have begun. Includes re-registration and re-enrollment in the event of cancellation.

Returned Check Charge. $25 assessed for each check returned from the bank unpaid. A returned check for initial payment of tuition and fees may result in cancellation of enrollment. Responsibility rests with the student regardless of the maker of the check.

Reinstatement Fee. $200 charged for a registration or re-registration and re-enrollment after the 12th class day (4th class day in summer) for initial payment. The amount of the reinstatement fee is subject to change by Board action without prior notice.

Refund Policy

Note Change in Refund Policy. Financial aid refunds are disbursed as permitted by federal regulations. All refunds will be disbursed no later than the 35th class day in the fall or the 20th class day in the summer. Students may choose either to have their refund checks mailed to them or to have their funds automatically deposited into their checking or savings account.

Automatic Deposit. Students may have their refund deposited directly into their checking or savings account at the bank of their choice prior to the first class day. The Financial Aid Refund Direct Deposit Authorization form may be obtained from Student Business Services, 163 Drane Hall. Forms are also located at this address: http://techsis.admin.ttu.edu/student.

Refund checks will be mailed on the first class day. A manual review of each check will take place prior to mailing.

Address selection criteria in the Student Information System permit a student to establish the address to which their refund check will be sent. A refund address may be established via the Web at this address: http://techsis.admin.ttu.edu/student.

The following will be the selection criteria for address printing on the check:

First selection:	Refund Address
Second selection:	Permanent Legal Address
Third selection:	Local Address

IT IS THE STUDENT'S RESPONSIBILITY TO MAINTAIN A CURRENT ADDRESS IN THE STUDENT INFORMATION SYSTEM.

Refund Check Replacement Policy. The time period for reissuing a refund check will be 10 business days from the date of the check. This will allow sufficient time for the postal system to forward the check in cases of changed addresses.

Change in Class Schedule. Any refund as a result of class change will be processed and mailed no later than the 35th class day of a fall or spring semester or the 20th class day of a summer term. The class change refund amount will be in accordance with the following:

Summer Terms

1st class day through 4th class day 100%
After the 4th class day ..... None

Students who drop their class enrollment to zero credit hours for a summer term should refer to the withdrawal schedule below.

Withdrawal. Students withdrawing at their request or those who have been withdrawn due to university action may be eligible to receive a refund of paid tuition and fees. The student will be required to pay tuition and fees according to the following schedule:

Before the 1st class day None
1st, 2nd, or 3rd class day 20%
4th, 5th, or 6th class day 50%
7th class day or later 100%

Fall or Spring Semester

1st class day through 12th class day 100%
After the 12th class day ..... None

Students who drop their class enrollment to zero credit hours for a fall or spring semester should refer to the withdrawal schedule below.

Withdrawal. Students withdrawing at their request or those who have been withdrawn due to university action may be eligible to receive a refund of paid tuition and fees. The student will be required to pay tuition and fees according to the following schedule:

Before the 1st class day ..... None
1st five class days 20%
2nd five class days 30%
3rd five class days 50%
4th five class days 75%
21st class day and after. 100%

Any refund due to a student will be after calculation of the amount of tuition and fees due at the time of withdrawal. If the student has paid less than the amount due at the time of withdrawal, the student will be required to pay the percentage due.

Federal Refund Formula. Effective with the fall 2000 semester the new federal refund formula requires federal student aid to be refunded at a pro rata basis if a complete withdrawal from the institution occurs before 60% of the semester has been completed.

Tuition and Fee Rates

- ***Tuition for Texas Residents.*** For legal resident students of the state of Texas, tuition is $88 per semester credit hour ($44 state, $44 institutional).
- ***Tuition for Nonresidents.*** Tuition is $306 per semester credit hour ($262 state, $44 Institutional).
- ***Tuition in Counties Not Adjacent to Texas Who are Legal Residents of New Mexico or Oklahoma.*** Tuition is $118 per semester credit hour ($74 state, $44 Institutional).
- ***Tuition for Nonresident Students Who Are Legal Residents of New Mexico, Oklahoma, and Arkansas Residing in a County Adjacent to Texas.*** Tuition is $88 per semester credit hour ($44 state, $44 Institutional).
- ***General Fees.*** All fees are mandatory and are authorized by state statute or Texas Tech University Board of Regents authority.

- ***Application Fee.*** $50, Foreign $60
- ***Honors College Application Fee.*** $25
- ***Athletic Fee.*** $50 per fall and spring semester enrolled In 4 or more credit hours
- ***Cultural Activities Fee.*** $1 per semester credit hour.
- ***Student Union Fee.*** $91 per semester enrolled in 4 or more credit hours and $45.50 for all enrolled In summer terms.
- ***Information Technology Fee.*** $10 per semester credit hour.
- ***Laboratory Fee.*** Not less than $2 per semester credit hour with a maximum charge of $30 for each applicable course.
- ***Library Fee.*** $5 per semester credit hour.
- ***Medical Services Fee.*** $60 per semester enrolled In 4 or more credit hours and $30 for all enrolled In summer terms.
- ***Student Services Fee.*** $9 per semester credit hour with a maximum of $108 per semester
- ***Diploma Replacement Fee.*** $16 for printing and mailing a replacement diploma.
- ***Diploma Insertion Fee.*** $2 (reapplication for graduation).
- ***Identification Card Maintenance Fee.*** $5.50
- ***Identification Card Replacement Fee.*** $12.
- ***Identification Card Revalidation Fee.*** $5.
- ***International Education Fee.*** $2 per semester or summer term.
- ***International Student Fee.*** $50 charged to each nonimmigrant international student each enrollment.
- ***Course Fee.*** $3 minimum per course with a maximum charge of $45 per course.
- ***Recreation Center Fee.*** $57 per semester enrolled In 4 or more credit hours and $28.50 for all enrolled In summer terms.
- ***Field Trip Fee.*** Varies
- ***Off Campus Travel Fee.*** Varies
- ***Special Instruction Fee.*** Varies

Other Fees

- ***Music Fees for Private Instruction.*** An additional fee is charged at the time of registration for individual instruction in voice, piano, strings, and wind instruments for enrollment in the following courses in applied music: MUAP 1001, 1002, 2001, 2002, 3001, 3002, 4001, 4002, 5001 (1 semester credit hour–$15) (2 or more semester credit hours–$30).
- ***Auditing Fee.*** Students enrolled for fewer than 12 semester credit hours in a semester (6 hours in summer) must pay a $10 fee for the privilege of auditing a course. Written permission from the dean of the college in which the course is being taught and from the course instructor is required. No charge is assessed for enrollment of 12 or more semester credit hours. (Senior citizens 65 years of age and older are exempt from payment of this fee regardless of the number of semester credit hours.)
- ***Parking Fee.*** Required for all vehicles parked on campus; obtain schedule of fees from Traffic and Parking.
- ***Add/Drop Fee.*** $1 per occurrence
- ***Distance Learning/Electronic Instruction Fee.*** *$10 per semester credit hour.*

General Tuition and Fee Information

Tuition Rate for Excess Undergraduate Credit Hours. Texas Education Code, Section 61-0565 states that a resident student who has attempted 45 semester credit hours in excess of the number of hours required for completion of the degree program in which the student is enrolled may be charged a higher tuition rate not to exceed the rate charged to a nonresident student. Students who initially enrolled as an undergraduate after August 1999 may be affected.

Tuition Rebate for Certain Undergraduates. A qualified student is eligible for a rebate of a portion of the undergraduate tuition the student has paid if the student is awarded a baccalaureate degree and has attempted no more than 3 hours in excess of the minimum number of semester credit

hours required to complete the degree, including transfer credits and course credit earned exclusively by examination. The amount of tuition rebated is $1,000 unless the total amount of undergraduate tuition paid by the student awarded the degree was less than $1,000, in which event the amount of tuition rebated is an amount equal to the amount of undergraduate tuition paid by the student. To qualify, the student must have been a resident of Texas and entitled to pay tuition required of a resident student at all times while pursuing the degree. Student Business Services should be contacted for information regarding outstanding student loans and how the rebate will be applied toward them. If the student has an outstanding student loan, including an emergency loan, owed or guaranteed by this state, including the Texas Guaranteed Student Loan Corporation, the amount of the rebate shall be applied to the student's loan. If a student has more than one outstanding loan, the institution shall apply the amount of the rebate to the loans as directed by the student. If the student fails to provide timely instructions on the application of the amount, the institution shall apply the amount of the rebate to the loans according to priorities established by the coordinating board.

Student Financial Assistance

The objective of the student financial aid program at Texas Tech is to provide financial assistance to students who, without such aid, would not be able to pursue higher education. The financial assistance offered at Texas Tech is in various forms, including loans, scholarships, grants, and employment, and is awarded to students on the basis of financial need and other qualifications required by the donors of the funds. Need is defined as the difference between a reasonable expected expense to attend Texas Tech and the amount of money reasonably available to the student from all sources. No student or prospective student shall be excluded from participating in or be denied the benefits of any financial aid program at Texas Tech on the grounds of race, color, national origin, religion, or sex. Although qualifications required for each financial aid program may differ, the general requirements for financial assistance at Texas Tech are that the student must be enrolled for at least one-half the normal academic load, be in good academic standing with the university, and be in need of financial assistance.

The university participates in the following financial assistance programs:

- College Work–Study Program
- Hinson–Hazlewood College Student Loan
- Parent Loans for Undergraduate Students
- Pell Grants
- Perkins Student Loan
- Stafford Loans
- Student Part-time Employment
- Supplemental Educational Opportunity Grants
- Texas Public Education Grants
- Texas Public Education–State Student Incentive Grants.

Alternative Loans:

- LEAP
- SLEAP
- State Student Incentive Grant
- Texas Grant*

Although no strict deadlines have been established for applications for most financial aid programs at Texas Tech, preference is given to applications completed by April 15 for the fall semester, by October 1 for the spring semester, and by March 1 for the summer session. Applications completed after these dates will be considered, but no guarantee can be given that the funds will be available when needed. Deadline for scholarship applications is March 1, and they are listed in the *Scholarships and Financial Aid* publication and available online at www.fina.ttu.edu.

Federal regulations require that all financial aid recipients maintain satisfactory academic progress. According to the standards and practices at Texas Tech University, the following guidelines will be applied in determining satisfactory progress.

1. All undergraduate and law student aid recipients must have a 2.0 cumulative GPA; graduate students must have a 3.0.
2. If the student's cumulative GPA falls below 2.0 (Graduate–3.0), the student will be given one semester probation.

3. If a student earns a 2.0 GPA (Graduate–3.0) during a semester he or she is on probation but fails to raise the cumulative GPA to a 2.0 (Graduate–3.0) or better, he or she will continue on probation as long as the current GPA of 2.0 (Graduate–3.0) is maintained and until such time as his or her cumulative GPA meets the requirements.
4. If at the end of any probationary semester, the student does not have a 2.0 (Graduate–3.0) current or cumulative GPA, the student will not receive future financial aid until a 2.0 (Graduate–3.0) cumulative GPA has been obtained.
5. All students enrolling at Texas Tech for the first time (including transfers) will not be denied aid based on their enrollment status. However, all financial aid recipients must meet the requirements for satisfactory progress to continue on aid.
6. In addition to maintaining the overall GPA, a student must be making reasonable academic progress. For all students, satisfactory academic progress is reviewed at a minimum of once yearly. Students who have not maintained progress and are on appeal are reviewed each semester until minimum satisfactory academic progress has been met. Therefore, after completion of 60 undergraduate hours attempted, a student must have earned at least 75 percent of all hours attempted at Texas Tech (transfer hours included). A graduate student must be earning 75 percent of all hours attempted from the beginning of the graduate program. Grades of "W" or "F" are included in the calculation.
7. Students are expected to complete their program of study within 150 percent of the number of hours required.
8. A special graduate, nondegree graduate, or special undergraduate student is only eligible to receive financial aid for one 12-month period.
9. Summer school is considered as a semester.
10. Financial aid recipients or applicants whose aid has been canceled or denied as a result of failure to meet the required standards may be reinstated under the following conditions:
    A. A student must regain a 2.0 cumulative GPA (Graduate–3.0).
    B. A student must, after 60 hours, have completed and earned 75 percent of the hours attempted (undergraduate only).
    C. Students wishing to appeal their loss of aid may do so in writing to the Financial Aid Appeals Committee. Forms are available in the Financial Aid Office. Appeals may be made under hardship based on (1) the death of a relative of the student, (2) personal injury or illness of the student, or (3) special circumstances as determined by the institution. Documentation is required (ex. death certificates or notice, medical bills, also a letter from an instructor or PASS showing effort made to make up work in the course).
11. Incompletes taken in course work must be graded within one year from initial date of the course. Students may be asked to obtain a letter from their department indicating the time frame that the "I" will be completed.
12. Texas Grant:*
    A. Students must meet the respective institution's satisfactory academic progress during the first two years on the program.
    B. Beginning the third year of eligibility, students must meet the state's guidlines of a 2.5 adjusted GPA and complete 75 percent of course work at Texas Tech.

Contact Information: Office of Student Financial Aid, Box 45011, Texas Tech University, Lubbock, Texas 79409-5011. Information about the graduate fellowships, traineeships, and scholarships may be secured from the Graduate School.

Exemptions and Waivers

All exemptions or waivers have been authorized by statute in the Education Code or through Texas Tech University Board of Regents action.

Texas Tech University reserves the right to apply exemptions and waivers after the census day (12th class day of a fall or spring semester or the 4th class day of a summer term). Also, Texas Tech University reserves the right to audit any exemption or waiver prior to application to a student's tuition and fee account.

- ***Academic Common Market.*** Exempts nonresident tuition over and above Texas resident tuition rate. Certification by Academic Common Market Coordinator is required.
- ***Blind Students.*** Exempts a student from payment of all tuition and fees excluding charges for room and board. Certification by the Texas Rehabilitation Commission or the Texas Commission for the Blind is required.
- ***Biomedical Research Program: Scholarship Student.*** Exempts from nonresident tuition. Documentation is required through the Office of International Affairs.
- ***Children of Disabled Firemen.*** Exempts a student from payment of tuition and required fees. Certification by Texas Higher Education Coordinating Board is required.

- ***Children of Disabled Peace Officers.*** Exempts a student from payment of tuition and required fees. Certification by Texas Higher Education Coordinating Board is required.
- ***Children of Prisoners of War or Persons Missing in Action.*** Exempts a student from payment of Texas resident tuition and required fees. Certification by Texas Higher Education Coordinating Board is required.
- ***Competitive Scholarship.*** Exempts a student from payment of nonresident tuition over and above resident tuition. Student must be awarded a competitive scholarship of at least $1,000 for the academic year or summer of their enrollment and be either a nonresident or citizen of a country other than the United States. Student must compete with other students including Texas residents and the award must be made through a duly recognized scholarship committee. Certification is sent to Student Business Services from the Financial Aid Office.
- ***Concurrent Enrollment.*** Charges a student minimum tuition charges over and above per credit hour rate. Student must present certification of enrollment at institution of public higher education.
- ***Deaf Students.*** Exempts a student from payment of all tuition and fees excluding charges for room and board. Certification by Texas Rehabilitation Commission or the Texas Commission for the Deaf and Hard of Hearing is required.
- ***Early High School Graduate.*** A student receives a credit up to and not to exceed a cumulative total of $1,000. Certification from the Texas Higher Education Coordinating Board.
- ***Economic Development and Diversification Employees, Spouses, and Dependents.*** Exempts a student from payment of nonresident tuition. The Texas Higher Education Coordinating Board provides a listing of eligible companies. Students must provide employment certification accordingly.
- ***Educational Aide Exemption.*** Exempts a student from payment of all tuition and fees except charges for class and laboratory fees. Student must apply for this exemption through the Financial Aid Office with certification provided by the Texas Higher Education Coordinating Board.
- ***Faculty Exemption (Teacher or Professor).*** Exempts a student from payment of nonresident tuition. Certification by employing department is required.
- ***Faculty Dependent (Nonresident Dependent of Teacher or Professor).*** Exempts a student from payment of nonresident tuition. Certification by employing department is required.
- ***Foster Care.*** Exempts a student from payment of tuition and fees. Must be a Texas resident. Certification from Department of Protective and Regulatory Services is required.
- ***Good Neighbor (Students from other Nations of the Western Hemisphere).*** Exempts a limited number of students from payment of 100% of tuition. Certification through the Office of International Affairs is required.
- ***Individual Studies.*** Waives payment of Student Services Fee, Student Union Fee, Rec. Center Fee, and Medical Services Fee. Student must be enrolled only for those courses, which because of the nature of the courses will not permit the student to avail themselves of these services. All courses in which the student is enrolled must meet these criteria and be certified by the Office of the Provost.
- ***Junction.*** Waives Student Services Fee, Student Union Fee, Recreation Center Fee, Medical Services Fee, and ID Maintenance Fee for main campus.
- ***Mexico and Canada Exchange Program.*** Exempts a student from payment of nonresident tuition. Certification by the Office of International Affairs is required.
- ***Military Personnel and Dependents.*** Exempts a student from payment of nonresident tuition. Application must be made through Admissions and Records. Certification by Unit Commander or Unit Personnel Officer is required. A separate certification is required, in original form, with original signature, for each semester or term of enrollment.
- ***Off-Campus.*** Waives Student Services Fee, Student Union Fee, Rec. Center Fee, Medical Services Fee, and ID Maintenance Fee. Student MUST be registered in ONLY those courses, which, because of their nature, will not permit the student to avail themselves of these services. If student is enrolled in a course requiring attendance on campus this waiver does not apply. Certification by the Office of the Provost is required.
- ***Prisoner of War.*** Exempts a student from payment of tuition and required fees. The U.S. Department of Defense must have classified student as a prisoner of war on or after January 1, 1999.

- ***Senior Citizens (55 Years of Age and Older).*** Exempts a student from payment of up to 6 semester or term credit hours of resident or nonresident tuition. Student must be 55 years of age or older by the first class day. Notification should be given to Student Business Services at time of enrollment.
- ***Senior Citizens (65 Years of Age and Older).*** Exempts a student from payment of up to 6 semester or term credit hours of resident tuition. Student must be 65 years of age or older by the first class day. Notification should be given to Student Business Services at time of enrollment.
- ***Special Field Trips.*** Waives Student Services Fee, Student Union Fee, Medical Services Fee, Rec. Center Fee, and ID Maintenance Fee. Student MUST be registered in ONLY those courses, which, because of their nature, will not permit the student to avail themselves of these services. Certification by the Office of the Provost is required.
- ***TANF Students.*** Exempts a student from payment of tuition and fees for the first academic year of enrollment. Certification is required from the Department of Protective and Regulatory Services.
- ***Valedictorian (Highest Ranking High School Graduate).*** Exempts a Texas resident student from payment of 100% of tuition during both semesters of the first regular session immediately following his or her graduation from high school. Documentation must be provided to Student Business Services.
- ***Veterans and Dependents.*** Exempts a student from payment of tuition and fees except Student Services Fee and Medical Services Fee and charges for class materials paid directly to the department as a reimbursement for materials used in a laboratory setting. Certification by the Registrar's Office is required.
- ***Veterans and Dependents (Partial Exemption).*** Certification by the Registrar's Office is required. The amount exempted will be that amount calculated after the application of federal aid, which the student must utilize first.
- ***Benefits-Eligible Medical Services Waiver.*** Waives the student from payment of the Medical Services Fee. By Board of Regents mandate, appointment must be on or before the 12th class day of the fall or spring semester (4th class day of a summer term) in a position eligible for State benefits as defined in the Texas Civil Statutes and the Teacher Retirement System of Texas.
- ***Teaching Assistant, Research Assistant, Graduate Assistant, Graduate Part-Time Instructor Dependents.*** Exempts a student from payment of nonresident tuition over and above state resident rate. Certification from the employing department is required.

Residence Halls

Contact Information: Housing and Dining Services, Box 41141, Lubbock, Texas 79409, (806) 742-2661, housing@ttu.edu, www.hous.ttu.edu

Residence hall living is a key component to the success of all students. National research indicates that students living in residence halls maintain higher grade point averages and are more likely to complete their degree plan within five years than students who live off campus. Additionally, the university feels that students will have their best opportunity for a well-rounded educational experience while living in a supervised residence hall designed for student living.

Freshman Policy for Residence Halls

The current university residence hall policy requires students having fewer than 30 hours of academic credit prior to the beginning of the first semester of enrollment to live on campus unless exempted by the Department of Housing and Dining Services. The on-campus residency policy applies when a student is registered for two or more courses.

Requests for exemptions to the residence hall policy must be submitted to the Department of Housing and Dining Services no later than May 1 for fall enrollment; November 1 for spring enrollment; or May 1 for summer enrollment. Registration for classes may be delayed pending verification of housing. Because of unforeseen changes in a student's circumstances due to illness or other personal reasons, some petitions are considered after the above dates. Students are encouraged to discuss such developments with the department at any time. Unless it is clearly established that illness or personal reasons that were not known prior to the above dates have arisen to necessitate a student's living off campus, students should not expect to be relieved of their academic-year residence hall obligations.

Subject to verification and authorization by the Department of Housing and Dining Services, students will be given permission to live off campus provided:

1. The student resides and will continue to reside in the established household of his or her parent or legal guardian.
2. The student presents evidence of financial hardship conditions and is living in the established household of a brother, sister, grandparent, uncle, or aunt. In the event the individual with whom the student lives changes residence, the student shall promptly notify the Department of Housing and Dining Services.
3. The student is married or a single parent with dependent child(ren) living with the student.
4. The student is 21 years of age or older on or before the first day of class of the initial semester of enrollment.
5. The student has successfully completed 30 or more semester hours of academic credit before the beginning of the initial semester of enrollment or has lived in university residence halls for two regular semesters.
6. The student has served in the military service as verified by a discharge certificate (DD214).
7. The student has a health problem as verified by a physician which precludes living in the residence halls.
8. The student presents evidence of an extreme hardship which will be intensified by living in the residence halls.

Any one of the eight exemption categories will be sufficient. Evidence of deliberate falsification of information, data, or any materials submitted or providing false or erroneous information in connection with an application for on-campus housing exemption shall be grounds for taking disciplinary action against the student in accordance with the Code of Student Conduct.

Any student wishing to move from the residence halls should consult the Residence Hall Contract for the provisions applicable to cancellation of the contract. Authorization for off-campus housing does not relieve the student of contractual obligations that may have been assumed with the university for housing in the residence halls.

It is the responsibility of the student to file a change of address form or correct any information regarding place of residence with the Office of the Registrar. Failure to do so will be considered cause for disciplinary action.

Residence Hall Reservations

Residence halls, like all other services and facilities of Texas Tech, are available to all students regardless of race, creed, national origin, age, sex, or disability. Application for admission to the university and application for residence hall accommodations are separate transactions. *Applications for housing are accepted up to 1 year in advance of enrollment in the university. Students may apply for housing before being admitted to the university.*

To receive a higher priority for room assignment, all students are encouraged to submit the Residence Hall Application specifying their preferred hall choices as early as possible. The date the application is received determines the priority for room assignment. Space in the university residence halls is reserved on a first-come, first-served basis. All students who apply for accommodations in the residence halls and are accepted sign a Residence Hall Contract for the full academic year. A contract will be mailed to new students after the application and required fees have been received. Students and parents are urged to read the Residence Hall Contract carefully.

Room and roommate assignments for new students are made in June after the continuing students in the residence halls have completed reassignments for the following year. Roommate requests are granted when space is available, if the request is mutual and if both applications are received at or about the same time. Other specific requests (building, type of room, etc.) will be considered when space is available.

Students should notify the Housing Office in writing if cancellation of the application becomes necessary. Information relating to cancellation is included with the housing application and is outlined in the Residence Hall Contract.

All unclaimed rooms in the residence halls will be declared vacant at 8 a.m. on the first day of classes. Students who enroll at the university but fail to claim their assigned residence hall room will be subject to the cancellation provisions stated in the section “Termination of Contract During Occupancy” of the Residence Hall Contract.

Residence Hall Facilities and Services

The Texas Tech residence hall system includes a variety of living options and provides convenient and affordable housing for approximately 6,000 students. Special interest housing–including Honors, Intensive Study, Substance-Free, Learning Communities, and Upperclass areas–provides students with the opportunity to live with others of similar interests. Carpenter/Wells Complex arranged in three-bedroom townhouses or four bedroom flats offer private bedrooms in an apartment setting. Gaston Hall–Apartments and Doak Hall offer upperclass students separate living areas. Gordon Hall, a suite-style residence, is designated as an Honors Residence Hall.

Ethernet computer connections and a private telephone line are available for each resident. Other services include basic cable television service, local telephone service, coin-operated laundry and vending machines, and desk services.

An experienced and trained staff of Residence Life Coordinators and Resident Assistants manages each residence hall. Each residence hall office provides assistance to residents with concerns, including maintenance requests, room and roommate assignments, and resource information.

The interests of students living on campus are promoted through the Residence Halls Association and individual hall governments. Each hall government sponsors social, cultural, educational, and recreational activities.

Dining services for on-campus residents provides a wide variety of choices. Students may dine in any of the conveniently located dining halls or in the food court, The Market at Stangel/Murdough. Twenty meals are served each week. The evening meal on Sunday is not provided, nor are meals served during Thanksgiving, Christmas, or spring vacation periods. Residents may choose from several meal plans. Regular and theme (Mexican, Italian, Asian, etc.) menus are offered in all-you-care-to-eat dining halls. The Market at Stangel/Murdough and Sam's Place deli/convenience stores provide late or after-hours dine-in or carry-out options.

Room and Board Rates

Room and board fees are billed on a semester basis. Statements of account are mailed to the permanent home address unless the student specifies an optional billing address. Students are encouraged to pay room and board by the semester; however, payments may be made by the academic year or by an installment payment plan. If payment is made by installment, an installment option fee will be added to the account. Students receiving financial aid should contact the Housing Office prior to the due date of the first installment to discuss payment arrangements. Payments may be made by VISA, MasterCard, Discover Card, American Express, personal check, cashier's check, or money order made payable to Texas Tech University. Cash payments should be made in person at the Housing Office located in Doak Hall.

Rates for room and board are based on a per-person charge and are established by the University Board of Regents in February of each year. For reference purposes, the rates for the 2002–2003 academic year are listed below. Rates are for a double room and the Diamond Meal Plan (excluding state and local taxes):

Non-Air-Conditioned Halls:	
Bledsoe, Doak,* Gaston,* Sneed	$4,806
Air-Conditioned Halls:	
Chitwood, Clement, Coleman, Gaston,* Gates, Horn, Hulen, Knapp, Murdough, Stangel, Wall, Weymouth	$5,497
Air-Conditioned Suites:	
Gordon (2-bedroom)	$5,698
Carpenter/Wells Complex:*	
3-Bedroom townhouse	$6,335
4-Bedroom flat	$6,104

*Doak and Gaston residents add $36 for continuous housing between fall and spring semesters.

**Rates are for a single room and the Diamond Meal Plan (excluding state and local taxes).

Student Affairs

Center for Campus Life. This office provides programs and services to enhance the "Red Raider Experience." Services related to the following areas are offered:

- First Year Experience
- Community Engagement
- Leadership Development
- Student Life Research
- Texas Tech Spirit and Traditions
- Student Organizations
- Diversity Involvement
- Campus Events and Programs

Some of the specific programs that the center provides are Red Raider Camp, RaiderGate, Homecoming, Arbor Day, Red Raider Nights, spirit activities, Texas Tech-Lubbock Community Day, Greek life, and multicultural programs. The center also provides services to over 400 registered student organizations. Additional services available are grounds use and solicitation requests, publication of the *Student Affairs Handbook,* student grievances, and the Assessment Response Team that works with students during emergencies. The center is housed in two locations: 228 Student Union, (806) 742-3621 and 250 West Hall, (806) 742-2192.

Bookstore. The Texas Tech Bookstore is operated by Barnes and Noble. It is the supplier for all required and recommended textbooks and supplies for students. It offers a large selection of used books and will buy back books from students at the end of each semester (prices based on books used for following semester).

The bookstore offers a wide selection of reference and general interest books. Study guides, exam books, technical books, and bestsellers are all available. In addition to books, the bookstore carries a variety of Texas Tech apparel and giftware; art, school, and engineering supplies; convenience items; and much more. Services include textbook reservations and special orders.

The bookstore accepts personal checks, major credit cards, and Tech Express. Store hours are 7:45 a.m. to 6 p.m. Monday through Thursday; 7:45 a.m. to 5 p.m. Friday; and 11 a.m. to 3 p.m. Saturday (summer hours vary). **Contact information:** (806) 742-3816 or www.bkstore.com/texastech.

Career Center. The Center provides a number of services designed to assist all Texas Tech students and alumni with their career development and job search efforts. Representatives from hundreds of organizations visit the Career Center each year to conduct employment interviews with students in an effort to fill internship, Co-Op, and full-time positions. To obtain interviews and submit a resume, students may register at www.careercenter.ttu.edu.

The Career Center also sponsors various job fairs that include graduate and professional schools, school districts, summer camps, and a large career expo. Resources at the Career Center include videos and job listings as well as a computer program to help students find a major, occupation, or graduate school. Counselors are available to meet individually with students to discuss job-related topics (resumes, cover letters, etc.). The Career Center is located on the third floor of West Hall but will relocate to the Wiggins Complex in spring 2003.

Forensics and Dramatics. Students who meet general eligibility requirements may participate in intramural and intercollegiate debate and the full range of individual events, both public address and oral interpretation. Both contest and noncontest events are held on campus and at other colleges. The Forensics Union (housed in the Communication Studies Department) and Delta Sigma Rho are active in sponsoring campus-wide speech activities.

Students may also participate in the plays presented by the Department of Theatre and Dance and in activities of its related organizations—Alpha Psi Omega, Chi Tau Epsilon, and the U.S. Institute of Theatre Technology. Students may participate in acting, stage makeup, costuming, lighting,

scene design and construction, publicity, and other activities connected with play production. Main stage productions, laboratory theatre productions, and a summer repertory season are presented each year.

High Tech Computer Store. The campus computer store is located in the east basement of the Student Union. High Tech offers hardware, software, and peripherals at educational prices and is open to all students, faculty, and staff of Texas Tech and the Health Sciences Center. High Tech houses a factory authorized service department as well as professional staff to assist in selecting computers and software. Microsoft Campus Agreement software is now available. Student software starts at $5. Faculty and staff software starts at $10. Some restrictions apply. High Tech is open from 8 a.m. to 5:30 p.m. weekdays. Summer and break hours are 8 a.m. to 4:30 p.m. weekdays. E-mail address is hightech.sales@uc.ttu.edu; Web address is www.hightech.uc.ttu.edu.

Music Organizations. The university is represented by the following official touring musical organizations: University Choir, Symphonic Wind Ensemble, Marching Band, Jazz Ensemble, Music Theatre, and Symphony Orchestra. Students may also participate in the University Singers, Chamber Singers, Women's Chorus, Men's Glee Club, Lubbock Chorale, Court Jesters, Concert Band, Jazz Bands and Combos, Brass Choir, Mixed Chamber Orchestra, Woodwind Ensemble, Guitar Ensemble, String Ensemble, Harp Ensemble, Flute Ensemble, Clarinet Choir, French Horn Ensemble, Trombone Ensemble, Trumpet Choir, Tuba Ensemble, Percussion Ensemble, Steel Drum Bands, New Music Ensemble, Early Music Ensemble, two university bands, and piano accompanying. Each organization is under the direction of a faculty member of the School of Music and is open to any student who is officially enrolled in the university and meets academic and audition requirements. Each group studies a broad repertoire and gives a number of public performances annually.

Participation in Cocurricular Activities. Students attending Texas Tech University have an endless array of experiential opportunities. The campus boasts well over 375 registered student organizations ranging from academic, professional, honorary, graduate, and multicultural to Greek, religious, service, sports clubs, and special interest groups. Through the Student Activities Office, students can enroll in Leadership Tech, which is a tiered leadership certificate program; join the Homecoming Coordinating Committee; take advantage of the new area of Multicultural Programs; and participate in committee work. The value of these experiences is immeasurable. Students can enjoy the luxury of having a practical forum in which to cultivate leadership skills and develop peer and faculty/staff networks. All of their involvement can also be systematically tracked through the Campus and Community Involvement Record (CCIR), which is an official cocurricular involvement transcript.

Each student participating in an off-campus activity of any type does so on a voluntary basis. Parents and students should understand that students are responsible for their own safety and welfare while participating in an off-campus activity and that such participation is at the student's own risk. Texas Tech University assumes no responsibility for students participating in off-campus activities. Texas Tech students are responsible for making their own individual arrangements with instructors for class work missed while participating in an on-campus or off-campus activity. For students involved in Big 12 sports, eligibility rules for the Big 12 Conference are administered by the Texas Tech Athletics Council. **Contact information:** Student Activities, 228 Student Union, (806) 742-3621, student.activities@uc.ttu.edu, www.uc.ttu.edu/sa.

Student Conduct. Responsible citizenship among college students includes honesty and integrity in class work; regard for the rights of others; and respect for local, state, and federal laws as well as campus standards. Specific standards concerning the rights and responsibilities of students and registered student organizations at Texas Tech are contained in the *Code of Student Conduct* and *Student Affairs Handbook*. Students are expected to become thoroughly familiar with and abide

by these standards. Copies of the *Code of Student Conduct* and *Student Affairs Handbook* may be obtained from the Office of Student Judicial Programs, 247 West Hall, (806) 742-1714, Web site www.studentaffairs.ttu.edu.

Student Government. The Student Government Association (SGA) provides students with opportunities to excel through involvement with general, presidential, and external committees; Freshmen Council; Freshmen Advisory Board; Student Senate; and executive offices. The SGA also provides many services to students, including student insurance information packets, housing guides, the *WORD* magazine, new student guide, information maps about Citibus routes, Moment's Notice, and other programs and publications.

The Student Government Association also supports student organizations through a funding process that allocates a portion of student services fees to individual groups. The three executive officers–President, Internal Vice President, and External Vice President–work to represent the views and needs of students to the administration and local and state government. The SGA is always receptive to new programs and practices that can benefit students. **Contact information:** 230 Student Union, (806) 742-3631, www.sga.ttu.edu.

Student Health Insurance Plan. All registered undergraduate students taking 6 or more credit hours may subscribe to a supplemental student health Insurance plan that provides 24-hour coverage on or off campus while in any hospital or under the care of any qualified physician (according to the policy provisions). The 12-month plan covers all vacations and remains in force even though the student graduates or drops out of school. The policy is effective for the academic year or can be purchased by term (see policy for details). Students may include their spouse and children for an additional premium. New spring students may enroll at a prorated premium with coverage terminating at the end of that academic year. Complete information on the insurance program is mailed to each new student. Information is also available in the Student Government Association office in the Student Union and the Office of Campus Life, 250 West Hall. **Contact information:** 213 Administration Building, (806) 742-2131.

Student Health Services. Student Health Services is a primary care clinic staffed with licensed physicians, nurses, nurse practitioners, health educators, and support staff that provide care for minor illnesses and injuries, as well as mental health issues. Health Services is located in Thompson Hall at Drive of Champions and Flint Avenue on the north end of the campus. Services are available by appointment by calling (806) 743-2848. Appointment hours are 8 a.m. to 5:30 p.m. weekdays. Summer and interim hours vary.

Students enrolled for 4 or more semester hours generally pay a medical services fee that entitles them to access clinic and pharmacy services, when appointments are available. A valid Texas Tech ID is required to access the clinic services. Approximately 200 primary care appointments are available each day. Care is provided at Student Health Services in Thompson Hall and physicians do not make residence hall or house calls. A student who is unsure about a medical issue or problem may call (806) 743-2860 and speak confidentially to the triage nurse. If all appointments are filled for the day, the triage nurse will advise on care until the student can be seen. Students are not given excuses for missed classes or exams due to a clinic visit. Students experiencing a lengthy illness that may affect their academic performance may consult their Student Health Services physician about obtaining a letter explaining the situation.

Student Health Services includes a primary health care clinic, men and women's health clinic, allergy clinic, and prevention education. The nursing staff provides blood pressure and cholesterol checks, immunizations, and advice about self-care. Lab tests and x-rays ordered by Student Health Services providers and performed at Student Health are also covered by the medical service fee. Prevention services include

lifestyle and weight management consultations, tobacco cessation information, confidential/ anonymous HIV testing, and educational programming on more than 100 health issues presented free of charge upon request in classrooms, residence halls and at student organization meetings.

Pharmacy services (806)743-2636 are conveniently located in the same building. The pharmacy can fill most prescriptions, including those written by an outside physician or transferred from another pharmacy. Over-the-counter medications are available at reduced prices. Pharmacy purchases may be charged to major credit cards, Tech Express, and prescription insurance cards.

The medical services fee does not cover after-hours care, hospital emergency room visits, hospitalization, and referrals to providers outside of Student Health Services. Students who are between semesters in the summer and want to continue to use Student Health Services may do so by paying a bridge fee. Please contact Student Health Services at (806) 743-2860 for more information and eligibility.

Student Health Services is not a substitute for major medical insurance. Students should have their own insurance policies or coverage on their parent's insurance. Students who are thus covered should carry an insurance card in case they need medical care not covered by the medical services fee. Students who do not have insurance or who are not covered by a family policy may purchase student injury and sickness insurance through a plan offered by the TTU Student Association. Applications may be obtained from Student Health or from the Student Association located in room 230 of the Student Union.

The university requires that all students born after December 31, 1956, provide proof of two MMR immunizations in their lifetime. The first immunization must have been received on or after the first birthday. The two immunizations must have been received at least 30 days apart. Students must meet this requirement by providing documentation of the immunization by the fifth week of the first semester of enrollment. Failure to comply with this requirement will result in a block being placed on the student's registration. Documentation may be mailed to Student Health Services, Medical Records, 3601 4th Street, Lubbock TX 79430 or faxed to (806) 743-2122. Include your social security number or ID number on all documentation. Students may obtain the immunization by appointment at Student Health Services in Thompson Hall for $5. Questions regarding MMR status should be directed to Student Health Services at (806) 743-2860 ext. 276.

The university also requires that non-U.S. residents from countries with a high prevalence of tuberculosis receive a Mantoux skin test for tuberculosis. This requirement is in accordance with recommendations from the American College Health Association and the Center for Disease Control (CDC). The tuberculosis screen test must be administered either by Student Health Services or a U.S. health care provider. The test will be at the student's expense. Student Health Services will administer this test for $8. Required students should provide documentation of the test and results or receive the test at Student Health Services by the fifth week of the first semester of enrollment. Failure to comply with this requirement will result in a block being placed on the student's registration.

Non-U.S. residents from the following countries are exempt from this requirement: **American Region:** Canada, Jamaica, Saint Kitts and Nevis, Saint Lucia, and Virgin Islands. **European Region:** Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Malta, Monaco, Netherlands, Norway, San Marino, Sweden, Switzerland, and United Kingdom. **Western Pacific Region:** American Samoa, Australia, and New Zealand. Non-U.S. residents from any country not listed above are required to have a Mantoux skin test.

The 77th Texas legislature passed a law requiring that all public institutions of higher education in Texas provide information to new students about bacterial meningitis. The university is extending this requirement and notifying ALL Texas Tech students of this information. Please review the information about bacterial meningitis on the Texas Tech web site (www.techsis.admin.ttu.edu/health.htm). Once you have read and confirmed that you have received this information your student record will be updated.

The Center for Disease Control (CDC) and the American College Health Association recommend that all college students living in residence halls consider obtaining the meningocuoccus vaccine. Meningococcus is a bacterial infection usually infecting young children and the elderly; however, young adults living in close quarters such as residence halls are also at an increased risk of infection. The risk for residence hall students is increased from 1 chance in 100,000 to 3 chances in 100,000. Students living off campus have no increased risk. Students interested in getting this vaccine should check with their insurance carriers to see if the cost of this vaccine is covered. If you have any questions or would like to receive the vaccination for bacterial meningitis, please contact Student Health Services at (806) 743-2860.

In recent years, Hepatitis B vaccinations have been added to required childhood immunizations. Many young adults missed receiving this vaccination. Hepatitis B is a chronic infection of the liver, which is transmitted through sex and/or contact with blood and/or body fluids. Students can obtain this immunization through Student Health Services at a significantly reduced cost.

In accordance with state law, a student's medical information is kept completely confidential and cannot be released to anyone, including parents and/or guardians, without the student's written permission unless otherwise authorized by law. Student Health Services brochures are available in several locations on campus. **Contact information:** (806) 743-2860, www.ttu.edu/~ttushs.

Student Mediation Center. The Student Mediation Center is comprised of three offices: Student Legal Services, Student Judicial Programs, and the Office of the Ombudsman. The center offers several different programs; however, the main focus is mediation services.

Mediation Services. This program is offered at Texas Tech as part of the Voluntary Alternative Dispute Resolution (ADR) Program to increase student options in addressing university-related and interpersonal disputes. Mediation creates and explores many alternatives to a dispute, thus opening more avenues for settlement. It is an informal and confidential alternative to the existing grievance and complaint procedures; however, using this service does not forfeit an individual's right to access the traditional processes.

Student Legal Services. A program designed to bring legal advice and guidance within the reach of students was inaugurated at Texas Tech in 1973. The office is staffed by two licensed attorneys, a legal secretary, law clerks, and student interns from the Texas Tech School of Law. The legal office is located in 109 West Hall; appointments are encouraged.

The primary objectives of the program are to afford the students confidential legal advice on individual problems and to establish an educational office designed to inform the students of their obligations and duties as well as their rights as defined by a system of law. Informal lectures on legal topics of concern are conducted on request.

The attorneys for students are able to represent students in court under limited circumstances; however, most cases are resolved through negotiation, advice, and proper direction. The office is dedicated to the concept of preventive law.

Ombudsman's Office. Staff members in the Ombudsman's Office provide informal, neutral, and confidential dispute resolution services for students. Staff can assist with

interpersonal misunderstandings or disputes as well as with concerns about academic or administrative issues. The Ombudsman's Office operates independently as a supplement to existing administrative or formal grievance procedures and has no formal decision-making authority. The Ombudsman does not act as an advocate for either side in a dispute. Instead, the Ombudsman acts as an advocate for fairness for all parties involved. The Ombudsman's Office is a safe place for students to bring concerns and find solutions. Services are available from 8 a.m. to 5 p.m. on weekdays and at other times by appointment. **Contact information:** 203 Student Union, (806) 742-4791, www.ttu.edu/ombudsman.

Student Judicial Programs. This program implements student judicial procedures because it is the responsibility of the university to consider any referral received alleging a code of conduct violation. Some of the programs provided are background checks, Raider Assistance Program (RAP), Web-based alcohol program, and Clery Act reporting for the university. **Contact information:** 247 West Hall.

Grievance Procedures. Opportunities are available to students for redress of grievances. Generally, students wishing to review the action of a faculty or staff member or a department should direct their questions to the supervisor responsible for the department in the university organizational structure. Procedures for handling specific problems have been established to expedite the filing and hearing of student concerns. Questions involving academic matters should first be directed to the appropriate academic college or department office. Grievance procedures are described in the *Student Affairs Handbook* and questions may be directed to the Center for Campus Life, 250 West Hall, (806) 742-2192.

Student Part-Time Employment. The Student Financial Aid Office administers a Student Part-time Employment service to assist students in financing their education. This service is available to currently enrolled students at Texas Tech University. A listing of employment opportunities both on and off campus to which students may be referred is maintained. It is preferable for students seeking employment through this service to wait until they come to the campus to check on openings. See also the section entitled "Student Financial Assistance" in the Finances section.

Student Media. *The University Daily*, the university student newspaper, is published daily, Monday through Friday. *La Ventana* is the university yearbook, published annually. *Amigos! Freshman Directory* for incoming students is also published annually. KTXT-FM is licensed as a noncommercial educational radio station at 88.1 MHz. The publications and the radio station are staffed with paid personnel from the student body. The Student Media Committee, a student-faculty-staff committee, selects the student editors and station manager and reviews the annual budgets.

Testing, Evaluation, Assessment, and Measurement (TEAM) Center. The Testing TEAM Center provides assessment services based on test samples of individual and group performances. Academic testing programs include national and institutional testing programs such as Graduate School Admissions (GRE and GMAT), Law School Admissions Test (LSAT), Medical School Aptitude Test (MCAT), PCAT, TOEFL, SAT1, ACT, and others. Academic institutional testing includes Credit-by-Examination, College Level Examination Program (CLEP), and others such as CEEB. Programs include special testing for persons with certified handicaps; differential diagnostic testing; and consulting for academic strengths, vocational interests, career aptitudes, and learning plans. Additional group and individual services are available as staffing and time allow. The testing office is located in 213 West Hall.

Student Union. The Student Union is one of the few buildings on campus specifically constructed and operated for the out-of-class activities of the campus community. The building features the outstanding Allen Theatre, a large covered courtyard, and numerous services and facilities for the use and convenience of its patrons.

The list of retail and service areas is extensive. Continued effort is made to

determine the goods and services that will most benefit the campus community, and new areas are continually being added to those available in the center. Service areas include Raider Express, Texas Tech's first convenience store; High Tech, the campus computer store that features many lines of computers, peripherals, and software; the American State Bank branch; and PostTech, the university retail postal and shipping service.

Numerous options are available in food services. In the fast food area, Chick-fil-A serves sandwiches and salads. Center Pit BBQ serves a variety of barbecue sandwiches and plates, and Cappuccino's offers gourmet coffees, espresso, cappuccino, and a variety of fresh bakery items. The Sara Lee Sandwich Shop also provides a wide assortment of deli sandwichs.

The catering service is capable of serving the needs of every event from the most extravagant dinner service for hundreds to a simple refreshment break for a small group. Every function that could possibly fall between the two can be done by calling University Caterers. The whole of Student Union Food Service is dedicated to providing the absolute best in products and services whether it is a cup of coffee before classes or a comprehensive banquet function.

The Student Union also offers meeting rooms, including two ballrooms, that may be used by any campus department at nominal charges. Registered student organizations can use meeting spaces at no charge. The Student Union houses the Student Government Association and offers a check cashing service; automated teller machines; and a posting area for services, housing, and sale notices.

The Student Union Ticket Booth serves as the major outlet for advance ticket sales for many campus functions. The service is provided free of charge to any registered student organization. The Ticket Booth is also a location for Select-A-Seat, the computerized ticketing service that allows campus access to events at venues in Lubbock and across the region, including major concerts and shows. It is open from 8:30 a.m. to 4:30 p.m. Monday through Friday in the Information Center on the first floor.

The Student Union is open from 7 a.m. to 10:30 p.m. weekdays; 7 a.m. to 11:30 p.m. Friday; 8 a.m. to 11:30 p.m. Saturday; and 2 to 10:30 p.m. Sunday.

Students With Disabilities. Students with disabilities will find numerous programs designated to coordinate academic accommodations and promote access to every phase of university life. Such programming is coordinated through ACCESS TECH: An Academic Accommodation and Disability Support Program, with the assistance of an advisory committee of disabled and nondisabled students, faculty, staff, and community members in related professions.

ACCESS TECH program personnel oversee and coordinate programs to ensure accessibility on an individual basis to students with disabilities. Texas Tech strives to provide these students with equal access to a college education and support in adjusting to the college experience. ADA compliance officers located in the Office of the Provost also work with students with disabilities to coordinate accessible facilities.

Prospective and current students interested in receiving more information regarding programs for students with disabilities should contact ACCESS TECH, 214 West Hall, (806) 742-2405. The state office of the Texas Commission for the Blind is also located on the Texas Tech campus.

Student Counseling Center. The Counseling Center provides professional services to address career and academic major decisions, social adjustment, and all other personal concerns affecting a college student's life and academic performance. With the aid of career-interest tests, career literature, and a computer-assisted career exploration program (SIGI–PLUS), the center guides students in choosing their academic major and career direction. Academic counseling focuses on barriers to success such as test and speech anxiety or learning disabilities.

Personal and social adjustment counseling addresses the developmental issues of early adulthood that many college students

experience as well as the particular concerns of graduate and nontraditional students. This can involve relationship loss, coping with grief, body image concerns, depression, sexual assault, stress and anxiety, time management, alcohol or other substance abuse, gay–lesbian identity issues, communication skills, or simply help in understanding oneself better.

Counseling can be conducted on an individual or group basis. Several Student Counseling Center programs address specific issues, including alcohol and/or substance abuse. In addition, the center houses Tech P.R.I.D.E., a minority student retention program staffed by undergraduate peer mentors. The Relationship Enhancement Center (REC) is also part of the counseling center and provides couples and family counseling for Tech students and their families. P.R.I.D.E. and REC services are available during the evening hours as well as the daytime.

Student Counseling Center services are available to enrolled students and on a consultation/referral basis to faculty and staff. All information is confidential within the limits of the law. The office hours are 8 a.m. to 5 p.m. Monday through Friday. Tech P.R.I.D.E. and REC services are available in the evenings Monday through Thursday. **Contact information:** 214 West Hall, (806) 742-3674, web site www.ttu.edu/counselingcenter.

Academic Information

All baccalaureate degrees conferred by Texas Tech University are based on the satisfactory completion of specific authorized degree programs comprised of a minimum of 120 semester hours. A student's major subject is the degree program in which he or she is working. The degree programs are offered through the nine undergraduate instructional colleges of the university and are usually supervised by the departments in each college.

Requirements for undergraduate degrees, therefore, are established at these three different levels: (1) the university as a whole (Uniform Undergraduate Degree Requirements), (2) the college through which the degree is conferred, and (3) the particular degree program in which the student is working. Students should familiarize themselves with all three sets of requirements that must be fulfilled before the degree is granted.

Immediately following are explanations of the Uniform Undergraduate Degree Requirements of the university that apply to all undergraduate degrees conferred. Core Curriculum requirements also apply to all candidates for baccalaureate degrees. These requirements appear in the next section of this catalog.

Uniform Undergraduate Degree Requirements

Residence Credit. The minimum actual residence required of each student is two consecutive semesters or the equivalent, and the minimum amount of residence work required is one-fourth of the total hours applicable toward the degree sought. In addition, the student must complete the last 30 hours at Texas Tech. These hours may include a maximum of 6 semester hours in correspondence course work, provided the minimum residence and course work requirements stated above have been met. Course work taken through the Division of Outreach and Extended Studies at Texas Tech University or at any other institution will not be counted as residence credit. A Texas Tech resident student may apply up to 18 hours of course work completed at a distance through Extended Studies toward a bachelor's degree.

The term "residence" as a degree requirement should not be confused with "residence" in the state of Texas for tuition purposes. Residence credit as used here means credit for work done while enrolled in and attending classes at Texas Tech University.

Graduation Under a Particular Catalog. A student is expected to complete the degree requirements set forth in a particular university catalog. Normally this will be the catalog in effect at the time the student enters a post-secondary school program, assuming that it has not changed from the original degree objective. For the student who changes a degree objective after beginning a college career, the degree requirements in effect when the student is officially admitted to the college from which the degree is to be received will be applicable. Only with the specific approval of the academic dean may a different catalog be selected. In no case may a student complete the requirements set forth in a catalog more than seven years old. When necessary, a catalog issued later than the student's first registration may be selected by the academic dean in conference with the student.

The annual *Undergraduate Catalo*g is published in the summer, and its provisions apply during the following school year, September through August. However, a student who registers for the first time in the university during a summer session is subject to the degree requirements set forth in the catalog effective for the fall semester immediately following the initial enrollment.

Double Major. A student interested in pursuing a double (dual) major should contact his or her academic dean for specific requirements. A double major will typically require more than 130 hours.

Application for Degree. A candidate should file an application for a degree in the academic dean's office at the time designated by the dean, at least one calendar year prior to graduation. Veterans must file a degree plan by the time they have accumulated 64 semester hours.

Students who file a late application for a degree in the semester or summer session in which they expect to complete the work for a bachelor's degree, but who have less than the number of grade points required for graduation, will be granted only conditional admission to candidacy. In this status, students act on their own responsibility in making graduation arrangements.

Commencement Exercises. Diplomas are awarded at the end of each semester and the summer terms. Commencement exercises are held at the end of each long semester and at the end of the second summer term. Students may participate only in the commencement exercises that immediately follow completion of their degree.

Second Bachelor's Degree. No second bachelor's degree is conferred until the candidate has completed at least 24 semester hours—exclusive of credit by examination—in addition to the courses counted toward the first bachelor's degree.

Foreign Language Requirement

Unless the second year of credit in a single foreign language has been received before entrance into the university, one year (or the equivalent) of a single language must be taken at the college level. This can be accomplished by successful completion of e.g., FREN 1502 or 1507. For most programs in the College of Arts and Sciences, sophomore level proficiency is required. International students whose native language is not English and who graduated from a secondary school using primarily their native language may satisfy this requirement by bringing their certificate of graduation to the academic dean's office of the college in which they are enrolled.

Students who take freshman level courses to satisfy the foreign language graduation requirement may not use those courses to satisfy any other specified university degree requirements. Hours in the required freshman level language courses may count toward free elective hours included in any baccalaureate degree.

The foreign language requirement may be met through credit-by-examination, described elsewhere in this catalog. As of fall 1998, students who petition to complete the foreign language requirement via study abroad through a non-Texas Tech affiliated program will agree to have foreign language credit applied to their degrees based on scores on a language placement test administered by the language laboratory, upon the student's return from the study abroad. Approval to do this must be granted *in advance* by the student's associate dean. For more information, consult the Department of Classical and Modern Languages and Literatures.

Any foreign language courses not used to satisfy the foreign language requirement or other Core Curriculum requirements may be used to satisfy the humanities requirement in the Core Curriculum and, in some cases, the multicultural requirement.

Multicultural Requirement

As an all-university requirement, every student must include at least one 3-hour multicultural course or equivalent that focuses explicitly on the distinctive subcultures of the U.S. or on the culture of another society. Completion of a registered "study abroad" course can also fulfill the requirement. Many courses fulfill a Core Curriculum requirement and at the same time satisfy the multicultural emphasis. Students should check with an advisor for appropriate courses. For students in the College of Business Administration, except 150 Accounting majors, completing the B.B.A. degree requirements satisfies the university's multicultural requirement.

The following courses satisfy the university's multicultural requirement:

TTU Course		TCCNS
AGED 2300	Introduction to Agricultural Sciences Development	
ANTH 1301	Understanding Multicultural America	ANTH 2351
ANTH 2302	Cultural Anthropology	
ANTH 3325	Anthropological Folklore	
ANTH 3331	Indians of North America	
ANTH 3332	Peoples of Latin America	
ANTH 3346	Ancient Civilizations of Middle and South America	
ANTH 4372	Society and Culture of Mexico	
ARCH 2311	History of Ancient Through Baroque Architecture	
ARCH 2312	History of Renaissance and Baroque Architecture	
ARCH 3311	History of 18th, 19th, and 20th Century Architecture	
ARCH 4311	Architecture in Nonwestern Societies	
ART 1309	Art Appreciation	ARTS 1301
ART 1310	Art History Survey I	ARTS 1303
ART 1311	Art History Survey II	ARTS 1304
ART 3310	Greek and Roman Art	
ART 3311	Native American Arts	
ART 3315	Ancient Near Eastern and Egyptian Art	
ART 3317	Baroque Art	
ART 3318	The Art of the Renaissance	
ART 4315	The Arts of Pre-Columbian America	
CLAS 3303	Sports and Public Spectacles in the Ancient World	
CLAS 3320	The World of Greece	
CLAS 3330	The World of Rome	
CLAS 3350	Comparative Mythology	
C LT 2301	The Epic in the Western Tradition	
C LT 3334	Literatures and Cultures of Africa, Asia, or Latin America	
C LT 4305	Contemporary Theories of Cultural Meaning	
COMS 3311	Rhetoric in Western Thought	
COMS 3332	Intercultural Communication	
EDEL 2300	Schools, Society, and Diversity	
EDSE 2300	Schools, Society, and Diversity	
ENGL 3335	Ancient and Medieval World Literature	
ENGL 3336	Early Modern World Literature	
ENGL 3337	Modern and Contemporary World Literature	
ENGL 3387	Literature of Diverse Americans	
ESS 3308	Sport in World Cultures	
FADS 3312	History and Philosophy of Dress	
FIN 4328	International Finance	
F&N 4380	Cultural Aspects of Food	
FREN 4322	Civilisation Française: French Civilization	
GEOG 2310	Geography of World Trade	
GEOG 2351	Regional Geography of the World	GEOG 1303
GEOG 3358	Geography of Asia's Pacific Rim	
GEOG 3359	Geography of the Middle East	
GEOG 3360	Technology and the Human Landscape	
GEOG 3363	Geography of South America	
GEOG 3364	Geography of Middle America	
GERM 3301	German Culture and Society	
GERM 3306	Contemporary German	
GERM 4305	Readings in German Language and Literature	
GERM 4312	Literature of the Holocaust	
HDFS 3350	Development in Cross-Cultural Perspectives	
HIST 2321	Studies in World History	HIST 2321
HIST 3306	African American History to 1877	
HIST 3307	African American History From 1877 to Present	
HIST 3311	Social and Cultural History of the Southwest	
HIST 3312	Spanish-Speaking Peoples in the United States . . .	
HIST 3318	The Plains Indians	
HIST 3325	History of Mexican Americans in the United States	
HIST 3326	History of Native Americans in the United States	
HIST 3381	Colonial Latin America	

TTU Course		TCCNS
HIST 3382	Modern Latin America	
HIST 3384	History of Brazil	
HIST 3389	The British Empire, 1783 to Present	
HIST 3390	The History of Exploration	
HIST 3395	Africa: Empires and Civilizations	
HIST 3396	Africa: Revolution and Nationalism Since 1800	
HIST 3398	The Modern Middle East, 1800 to the Present	
HIST 4327	Gender, Race, and Class in United States Law	
HIST 4381	Colonial Mexico and the Spanish Borderlands	
HIST 4391	Modern South Africa	
HIST 4393	Modern China	
HIST 4394	Modern Japan	
HIST 4395	Modern Vietnam	
I D 3382	Period Furnishings I	
LAIS 2300	Latin America and Iberia: An Interdisciplinary Introduction	
LAIS 4300	Seminar in Latin American and Iberian Studies	
LARC 3302	Development of Landscape Architecture	
MER 3340	International Merchandising	
MGT 4375	International Management	
MKT 4358	International Marketing	
MUHL 1301	Introduction to Music Literature	MUSI 1308
MUHL 1302	Introduction to Music Literature	MUSI 1309
MUHL 2301	History of Music	
MUHL 2302	History of Music	
PHIL 2350	World Religions and Philosophy	
PHIL 3301	Classical Greek Philosophy	
PHIL 3302	Asian Philosophy	
POLS 3330	Ancient and Medieval Political Theory	
POLS 3361	International Politics	
POLS 3364	Comparative Foreign Policy	
POLS 3370	Politics of the Developing Areas	
POLS 3371	Comparative Politics	
POLS 3372	Government of Russia and the Commonwealth of Independent States	
POLS 3373	Government of Western Europe	
POLS 3374	Government of Mexico and the Caribbean	
POLS 3375	South American Governments	
POLS 3376	Asian Governments and Politics	
POLS 3378	Middle Eastern Governments and Politics	
POLS 3379	British Government	
RHIM 3350	Travel and Tourism	
RUSN 2303	An Introduction to Russian Culture	
RUSN 3301	Russian Civilization Through Literature in the 19th Century	
RUSN 3302	20th Century Russian Civilization Through Literature in Translation	
RUSN 4301	The Great Russian Realists: Tolstoy and Dostoevsky	
RUSN 4302	Contemporary Russian Literature in Translation	
SLAV 2301	The Vampire in East European and Western Culture	
SOC 3324	American Minority Problems	
SOC 3348	Sociology of China and Japan	
SPAN 3301	Hispanic Life and Culture	
SPAN 3329	Mexican Life and Culture	
SPAN 4329	Contemporary Mexico	
SPAN 4332	Civilización Hispánica: Hispanic Civilization	
SPAN 4360	Hispanic Literature of the Southwest	
SPAN 4390	Internship in Spanish	
SPAN 4391	Spanish for the Southwest	
TH A 2310	Avant-Garde Theater	
TH A 3308	History of Theatre I	
TH A 3309	History of Theatre II	
TH A 3310	Introduction to Performance Studies	
W S 4327	Gender, Race, and Class in U.S. Law (HIST 4327)	

Core Curriculum

The Core Curriculum is designed to give all students who graduate from the university the opportunity to acquire a general knowledge of areas of study that have traditionally been regarded as basic to a university education. This general knowledge base requires study in the natural and applied sciences, social sciences, humanities, visual and performing arts, and the tools of language and thought. The curriculum complies with 1997 Texas legislation requiring each state-supported institution to establish a "core curriculum. . .in the liberal arts, humanities, sciences, and political, social, and cultural history." Students who acquired college credit prior to fall 1989 may be exempt and should consult their academic advisors.

In addition to the core, each student must complete at least one 3-hour multicultural course that focuses explicitly on the distinctive subcultures of the U.S. or on the culture of another society (see immediately following section). Many courses fulfill Core Curriculum requirements and at the same time satisfy the multicultural emphasis. Students should check with an advisor for appropriate courses.

Students should choose only those Core Curriculum courses that follow their degree plans. The following courses have been approved for the Core Curriculum.

A. Communication:

1. Written: English rhetoric, composition: 6 hours

"The objective of a communication component of a core curriculum is to enable the student to communicate effectively in clear and correct prose in a style appropriate to the subject, occasion, and audience."

TTU Course		Texas Common Course Number System (TCCNS) (for transfer purposes)
ENGL 1301	Essentials of College Rhetoric	ENGL 1301
ENGL 1302	Advanced College Rhetoric	ENGL 1302

In addition to the 6 hours of composition and rhetoric, a writing-across-the-curriculum requirement includes 6 hours of writing intensive courses in the major.

2. Oral: Speech: 3 hours

Oral communication means the basic skills acquired in speaking and listening effectively and critically.

TTU Course		TCCNS
CH E 2306	Exposition of Technical Information	
COMS 2300	Public Speaking	SPCH 1315
COMS 3358	Business and Professional Communication	
HDFS 2320	Basic Interpersonal Skills	SPCH 1318
MGT 3373	Managerial Communication	
PETR 3308	Engineering Communications	

B. Mathematics: Logic, college-level algebra or equivalent, finite math, statistics, calculus or above: 6 hours, at least 3 of which must be mathematics

"The objective of the mathematics component of the core curriculum is to develop a quantitatively literate college graduate. Every college graduate should be able to apply basic mathematical tools in the solution of real-world problems."

TTU Course		TCCNS
AAEC 3401	Agricultural Statistics	
I E 3341	Engineering Statistics	
MATH 1320	College Algebra	MATH 1314
MATH—All mathematics courses above 1320, except 3430		
MUTH 3303	Form, Analysis, and Synthesis	
PHIL 2310	Logic	PHIL 2303
PHIL 4310	Advanced Logic	

PSY 3400	Statistical Methods
SOC 3391	Introduction to Social Research I

C. Natural Science: 8 hours (three-hour lecture courses must be accompanied by the related one-hour laboratory course)

"The objective of the study of the natural sciences component of a core curriculum is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories. (*The natural sciences investigate the phenomena of the physical world.*)"

TTU Course		**TCCNS**
ANSC 3404	Consumer Selection and Utilization of Meat Products	
ANTH 2300	Physical Anthropology	ANTH 2301*
ANTH 2100	Physical Anthropology Laboratory	
ASTR 1300	Solar System Astronomy	PHYS 1311
ASTR 1100	General Astronomy Laboratory I	PHYS 1111
ASTR 1301	Stellar Astronomy	PHYS 1312
ASTR 1101	General Astronomy Laboratory II	PHYS 1112
ATMO 1300	Introduction to Atmospheric Science	GEOL 1347*
ATMO 1100	Atmospheric Science Laboratory	
BIOL 1305	Ecology and Environmental Problems	
BIOL 1113	Environmental Problems Laboratory	
BIOL 1401	Biology of Plants	BIOL 1411
BIOL 1402	Biology of Animals	BIOL 1413
BIOL 1403	Biology I	BIOL 1406
BIOL 1404	Biology II	BIOL 1407
CHEM 1305	Chemistry and Society I	CHEM 1305
CHEM 1105	Experimental General Chemistry I (Laboratory)	CHEM 1105
CHEM 1306	Chemistry and Society II	CHEM 1307
CHEM 1106	Experimental General Chemistry II (Laboratory)	CHEM 1107
CHEM 1307	Principles of Chemistry I	CHEM 1311 (or 1411)
CHEM 1107	Principles of Chemistry I (Laboratory)	CHEM 1111
CHEM 1308	Principles of Chemistry II	CHEM 1312 (also 1412)
CHEM 1108	Principles of Chemistry II (Laboratory)	CHEM 1112
F&N 1410	Science of Nutrition	
GEOG 1401	Physical Geography	GEOG 1301*
GEOL 1303	Physical Geology	GEOL 1403
GEOL 1101	Physical Geology Laboratory	
GEOL 1304	Historical Geology	GEOL 1404
GEOL 1102	Historical Geology Laboratory	
GEOL 1350	History of Life	
GEOL 1105	History of Life Laboratory	
HONS 2305	Honors Integrated Science I	
HONS 2115	Honors Integrated Science Laboratory I	
HONS 2306	Honors Integrated Science II	
HONS 2116	Honors Integrated Science Laboratory II	
PHYS 1303	Physics for Nonscience Majors	PHYS 1305
PHYS 1101	Experimental Elementary Physics (Laboratory)	PHYS 1105
PHYS 1306	General Physics	PHYS 1301
PHYS 1103	Experimental General Physics I (Laboratory)	PHYS 1101
PHYS 1307	General Physics	PHYS 1302
PHYS 1104	Experimental General Physics II (Laboratory)	PHYS 1102
PHYS 1308	Principles of Physics I	PHYS 2325
PHYS 1105	Principles of Physics I (Laboratory)	PHYS 2125
PHYS 1406	Physics of Sound and Music	
PHYS 2301	Principles of Physics II	PHYS 2326
PHYS 1106	Principles of Physics II (Laboratory)	PHYS 2126
PSS 1411	Principles of Horticulture	HORT 1401
PSS 2330	Urban Soils	
PSS 2130	Urban Soils Laboratory	
PSS 2401	Introductory Entomology	AGRI 1413
ZOOL 2403	Human Anatomy and Physiology I	BIOL 2401

*Does not include lab course

D. Technology and Applied Science: 3 hours

The objective of the study of the technology and applied science component of a core curriculum is to enable the student to understand how profoundly scientific and technological developments affect society and the environment. Human nutrition, the world's environment, and energy problems are all viewed as critical to one's understanding of and interactions with today's world.

TTU Course		TCCNS
AGED 4302	Transfer of Agricultural Technology	
AGSM 2302	Agricultural Surveying and Land Conservation	
AGSM 3303	Internal Combustion Engine Theory and Operation	
AGSM 4302	Agricultural Buildings and Environmental Control	
ANSC 1401	General Animal Science	AGRI 1419
ANSC 2303	Care and Management of Companion Animals	
ANSC 3402	Animal Breeding and Genetics	
ARCH 2351	Building Systems	
ARCH 3350	Building Technology	
ART 3362	Technology in the Visual Arts	
ATMO 2301	Weather, Climate, and Human Activities	
ATMO 3301	General Meteorology	
C E 1130	Civil Engineering Seminar I	
CH E 1305	Engineering Analysis I	
CHEM 1303	Science, Technology, and Chemistry	
CHEM 3305	Organic Chemistry I	CHEM 2323
C S 1300	Computers and Modern Society	COSC 1301
C S 1412	Programming Principles II	COSC 1420
C S 3368	Introduction to Artificial Intelligence	
CTEC 1312	Construction Methods	
CTEC 2301	Surveying and Surveys	ENGR 1307
EDIT 2318	Computing and Information Technology	
EDIT 3318	Applications of Technology in Elementary Education	
E E 1305	Introduction to Engineering and Computer Programming	
FADS 3305	Computer Applications in Apparel Design	
F&N 2310	Principles of Food Preparation	HECO 1315
FD T 2300	Principles of Food Technology	AGRI 1329
FD T 2302	Elementary Analysis of Foods	
FD T 3301	Food Microbiology	
FD T 3303	Food Sanitation	
FFP 2310	Technological Application in Family Financial Planning	
GEOG 3353	Man, Resources, and Environment	
GEOG 3360	Technology and the Human Landscape	
GEOG 4301	Geomorphology in Environmental Management	
GEOL 3323	Environmental Geology	
GEOL 3428	GIS in Natural Science and Engineering	
G PH 2300	Introduction to Geophysics	
GTEC 1312	Alternating and Direct Current Technology	
HONS 3302	Honors Seminar in Sciences	
I D 4383	Computer Aided Drafting for Interior Designers II	
I E 1305	Engineering Analysis	
I E 3351	Manufacturing Engineering I	
I E 4363	Work and Product Safety Engineering	
ISQS 2440	Introduction to Computer Systems in Business	
ISQS 3344	Introduction to Production and Operations Management	
MATH 3430	Computational Techniques for Science and Mathematics	
MBIO 4307	Industrial Microbiology	
M E 1315	Introduction to Mechanical Engineering	
M E 2322	Engineering Thermodynamics I	
MTEC 1312	Mechanical Technology	
MUCP 3001	Projects in Electronic and Experimental Music	
MUSI 3341	Introduction to Technology for Musicians	
MUSI 3342	Advanced Technology for Musicians	
PETR 1305	Engineering Analysis I	
PHIL 3330	Philosophy of Science	
PHYS 1305	Engineering Physics Analysis I	
PSS 1321	Agronomic Plant Science	AGRI 1307

PSS 2311	Vegetable Crops	
PSS 2312	Propagation Methods	
PSS 2432	Principles and Practices in Soils	
PSS 3323	Crop Growth and Culture	
RHIM 3303	Computers in the Hospitality Industry	
RWFM 2301	Introductory Wildlife	AGRI 2330
RWFM 2302	The Ecology and Conservation of Natural Resources	
RWFM 2305	Freshwater Ecology and Fisheries	
RWFM 4314	Watershed Planning	
SOC 3352	Technology and Society	
TELE 3300	Telecommunications Technologies and Society	
TELE 3310	Introduction to Telecommunications	
TH A 3304	Principles of Theatrical Lighting	

E. Humanities: 3 hours

"The objective of the humanities in a core curriculum is to expand the students' knowledge of the human condition and human cultures, especially in relation to behaviors, ideas, and values expressed in works of human imagination and thought. Through study in disciplines such as literature and philosophy, students will engage in critical analysis and develop an appreciation of the humanities as fundamental to the health and survival of any society." Any foreign language courses not used to satisfy the foreign language requirement or other Core Curriculum requirements may be used to satisfy the humanities requirement.

TTU Course		**TCCNS**
ANTH 3323	Religion of Culture	
ANTH 3325	Anthropological Folklore	
ANTH 3346	Ancient Civilizations of Middle and South America	
ANTH 3351	Language and Culture	
ARCH—All architecture history courses		
CLAS 3302	Classical Mythology	
CLAS 3303	Sports and Public Spectacles in the Ancient World	
CLAS 3320	The World of Greece	
CLAS 3330	The World of Rome	
CLAS 3350	Comparative Mythology	
C LT 2301	The Epic in the Western Tradition	
C LT 3302	Literary Traditions	
C LT 3334	Literatures and Cultures of Africa, Asia, or Latin America	
C LT 4305	Contemporary Theories of Cultural Meaning	
COMS 3311	Rhetoric in Western Thought	
COMS 3318	Persuasion and Social Movements	
COMS 3319	Rhetoric and American Issues	
ENGL—All English courses in literature or linguistics. Excluded are courses in technical writing.		
FADS 3312	History and Philosophy of Dress	
HIST—Any history courses not used to fulfill Core Curriculum American history requirement.		
HONS 3301	Honors Seminar in Humanities	
HUM 2301	Introduction to Humanities	HUMA 1301
HUM 2302	Introduction to Humanities	HUMA 1302
JOUR 3350	History of American Journalism	
LAIS 2300	Latin America and Iberia: An Interdisciplinary Introduction	
LAIS 4300	Seminar in Latin American and Iberian Studies	
LARC 3302	Development of Landscape Architecture	
PHIL 2300	Beginning Philosophy	PHIL 1301
PHIL 2320	Introduction to Ethics	PHIL 2306
PHIL 2350	World Religions and Philosophy	
PHIL 3301	Classical Greek Philosophy	
PHIL 3302	Asian Philosophy	
PHIL 3303	Modern European Philosophy	
PHIL 3304	Existentialism and Phenomenology	
PHIL 3305	American Philosophy	
PHIL 3320	Introduction to Political Philosophy (POLS 3331)*	
PHIL 3322	Biomedical Ethics	
PHIL 3324	Philosophy of Religion	
PHIL 3332	Feminism and Philosophy	
PHIL 4301	Seminar in Ancient Philosophy	

PHIL 4320	Ethics
PHIL 4323	Aesthetics
PHIL 4330	Epistemology
PHIL 4331	Philosophy of Language
PHIL 4340	Metaphysics
PHIL 4341	Great Figures in Philosophy
POLS 3330	Ancient and Medieval Political Theory
POLS 3331	Introduction to Political Philosophy (PHIL 3320)*
POLS 3332	Modern Political Theory
POLS 3333	Contemporary Political Theory
POLS 3334	American Political Theory
TH A 2310	Avant-Garde Theatre
W S 2300	Introduction to Women's Studies
W S 3341	Women in European Civilization (HIST 3341)*
W S 4327	Gender, Race, and Class in U.S. Law (HIST 4327)*
W S 4374	Love, Death, and Magic in Europe 1500–1800 (HIST 4374)*

*Cross-listed courses: Cannot receive credit for both courses.

F. Visual and Performing Arts: 3 hours

"The objective of the visual and performing arts in a core curriculum is to expand students' knowledge of the human condition and human cultures, especially in relation to behaviors, ideas, and values expressed in works of human imagination and thought. Through study in disciplines such as the visual and performing arts, students will engage in critical analysis, form aesthetic judgments, and develop an appreciation for arts as fundamental to the health and survival of any society."

TTU Course		**TCCNS**
ARCH 1412	Architectonics Studio	
ARCH 1441	Architectural Delineation I	
ARCH 1442	Architectural Delineation II	
ART—All art history courses except 3311 and 4315		
ART 1309	Art Appreciation	ARTS 1301
ART—All studio courses		
DAN 3313	History of the Dance	
HONS 3304	Honors Seminar in Fine Arts	
LARC 1401	Landscape Architecture Drawing and Drafting	
MUAP 1001	Applied Music Instrument or Voice	
MUAP 1002	Applied Music Instrument or Voice	
MUAP 2001	Applied Music Instrument or Voice	
MUAP 2002	Applied Music Instrument or Voice	
MUAP 3001	Applied Music Instrument or Voice	
MUAP 3002	Applied Music Instrument or Voice	
MUAP 4001	Applied Music Instrument or Voice	
MUAP 4002	Applied Music Instrument or Voice	
MUAP 1123	Group Keyboard Instruction I	MUSI 1181
MUAP 1124	Group Keyboard Instruction II	MUSI 1182
MUAP 2123	Group Keyboard Instruction III	MUSI 2181
MUAP 2124	Group Keyboard Instruction IV	MUSI 2182
MUAP 2133	Class Guitar	MUSI 1192
MUAP 2134	Class Guitar	MUSI 1193
MUAP 3205	Jazz Improvisation	
MUCP 1201	Introduction to Contemporary Music	MUSI 1286
MUCP 1202	Introduction to Contemporary Music	MUSI 1287
MUEN—All courses except 1103 Marching Band		
MUHL 1301	Introduction to Music Literature	MUSI 1308
MUHL 1302	Introduction to Music Literature	MUSI 1309
MUHL 1308	Music Appreciation	MUSI 1306
MUHL 2301	History of Music (music majors)	
MUHL 2302	History of Music (music majors)	
MUHL 2308	Heritage of Music	
MUHL 2309	Heritage of Music	
MUHL 3304	History of Jazz	
MUHL 3308	Masterpieces in Music	
MUSI 2301	Essential Elements of Music	

TTU Course		TCCNS
MUTH 1300	Songwriting	
MUTH 1301	Introduction to Music Theory	
MUTH 1101	Developmental Aural Skills	
MUTH 1303	Elementary Music Theory I	MUSI 1311
MUTH 1103	Elementary Aural Skills I	
MUTH 1304	Elementary Music Theory II	MUSI 1312
MUTH 1104	Elementary Aural Skills II	
TH A 2301	Introduction to Acting	
TH A 2303	Introduction to Theatre	DRAM 1310
TH A 2304	Introduction to Cinema	
TH A 2305	Fundamentals of Oral Interpretation	SPCH 2341
TH A 3308	History of Theatre I	
TH A 3309	History of Theatre II	
TH A 3310	Introduction to Performance Studies	
TH A 4303	Theory and Practice of Playwriting	

G. Social and Behavioral Sciences: 15 hours

"The objective of a social and behavioral science component of a core curriculum is to increase students' knowledge of how social and behavioral scientists discover, describe, and explain the behaviors and interactions among individuals, groups, institutions, events, and ideas. Such knowledge will better equip students to understand themselves and the roles they play in addressing the issues facing humanity."

1. U.S. History: 6 hours

Under state law all students who receive bachelor's degrees from Texas Tech University must complete 6 hours in American history. Students will normally fulfill this requirement by completing HIST 2300 and 2301. However, this requirement may be satisfied by juniors and seniors by completing any 6 hours from among the American history courses listed under the Department of History portion of the catalog. Also, 3 semester hours of Texas history, HIST 3310, may be substituted for 3 of the American history hours.

TTU Course		TCCNS
HIST 2300	History of the United States to 1877	HIST 1301
HIST 2301	History of the United States Since 1877	HIST 1302
HIST 3310	History of Texas	
W S 3323	History of Women in America (HIST 3323)	

2. Political Science: U.S. and Texas: 6 hours

Under state law all students must have received credit for 6 semester hours in political science, covering the federal and Texas constitutions. Students will normally fulfill this requirement by completing POLS 1301, which is a prerequisite for all other political science courses, and POLS 2302. If a student earns AP credit for or a grade of A or B in POLS 1301, he or she may substitute in place of POLS 2302 one of the upper-level courses marked with an asterisk in the course list under the Department of Political Science portion of the catalog. (Permission of the instructor may be required for such substitution.)

TTU Course		TCCNS
POLS 1301	American Government, Organization	GOVT 2301
POLS 2302	American Public Policy	GOVT 2302

3. Individual or Group Behavior: 3 hours

TTU Course		TCCNS
AAEC 2305	Fundamentals of Agricultural and Applied Economics	AGRI 2317
ADV 4313	International Advertising	
ANTH 1301	Understanding Multicultural America	
ANTH 2301	Introduction to Archeology	ANTH 2302
ANTH 2302	Cultural Anthropology	ANTH 2351
ANTH 3303	World Ethnology	
ANTH 3305	Anthropological Linguistics	
ANTH 3306	Women in Culture and Society	
ANTH 3308	Cultural Ecology	
ANTH 3315	Health, Medicine, and Culture	

TTU Course		TCCNS
ANTH 3331	Indians of North America	
ANTH 3332	Peoples of Latin America	
ANTH 3345	North American Archeology	
ANTH 3371	Peoples of the Southwest	
ANTH 4372	Society and Culture of Mexico	
ARCH 1311	Design, Environment, and Society	
ART 3311	Native American Arts	
ART 4315	Arts of Pre-Columbian America	
COMS 1300	Introduction to Communication Studies	SPCH 1311
COMS 1301	Interpersonal Communication	
COMS 3310	Theories of Interpersonal Communication	
COMS 3313	Persuasion	
COMS 3331	Nonverbal Communication	
COMS 3332	Intercultural Communication	
COMS 3334	Gender and Communication	
COMS 3353	Small Group Communication	
COMS 3355	Communication in Organizations	
COMS 3356	Leadership and Communication	
ECO 2301	Principles of Economics I	ECON 2302
ECO 2302	Principles of Economics II	ECON 2301
ECO 2305	Principles of Economics	
EDEL 2300	Schools, Society, and Diversity	
EDSE 2300	Schools, Society, and Diversity	
ESS 3307	Gender Issues in Sports	
ESS 3308	Sport in World Cultures	
F&N 4380	Cultural Aspects of Food	
GEOG 2351	Regional Geography of the World	
GEOG 3337	Man's Economic Environment	
HDFS 2303	Life Span Human Development	PSYC 2314
HDFS 2322	Courtship and Marriage	
HDFS 3301	Theories of Human Development and the Family	
HDFS 3320	The Contemporary Family	
HDFS 3321	Human Sexuality Through Family Life Cycle	
HDFS 3322	The Family in the Community	
HDFS 3325	Family Dynamics of Addiction	
HDFS 3331	Parenting	
HDFS 3332	Aging in the Family	
HLTH 1305	Human Sexuality	PSYC 2306
HLTH 2302	Environmental Health and Awareness	
HLTH 3325	Health Concerns in Chemical Dependencies	
HONS 3303	Honors Seminar in Social Sciences	
I E 3301	Engineering Economic Analysis	
I E 4361	Engineering Design for People	
JOUR 4330	Public Opinion and Propaganda	
MCOM 1300	Introduction to Mass Communications	COMM 1307
PHIL 3321	Philosophy of Law	
PHIL 3331	Philosophy of Social and Human Sciences	
POLS 3326	Women in Politics	
POLS 3341	The Administrative Process	
POLS 3351	The Judicial Process	
POLS 3361	International Politics	
POLS 3371	Comparative Politics	
PSY 1300	General Psychology	PSYC 2301
PSY 2301	Child Psychology	PSYC 2308
PSY 4300	Psychology of Human Sexual Behavior	
PSY 4325	Drugs, Alcohol, and Behavior	
PSY 4330	Psychology of Life Span Development and Aging	
SOC 1301	Introduction to Sociology	SOCI 1301
SOC 1320	Current Social Problems	SOCI 1306
SOC 2331	The Sociology of Marriage	SOCI 2301
SOC—All sociology advanced courses except SOC 3391 and 4391		
S W 2301	Introduction to the Social Welfare Institution	SOCW 2361

TTU Course		TCCNS
S W 3311	Human Behavior and the Social Environment I	
W S 1305	Human Sexuality (HLTH 1305)*	
W S 2331	Sociology of Marriage (SOC 2331)*	
W S 3306	Women in Culture and Society (ANTH 3306)*	
W S 3312	Gender and Communication (COMS 3334)*	
W S 3321	Human Sexuality Through Family Life Cycle (HDFS 3321)*	
W S 3325	Women in the Modern World (SOC 3325)*	
W S 3326	Women in Politics (POLS 3326)*	
W S 3331	Sociology of the Family (SOC 3331)*	
W S 3337	Inequality in America (SOC 3337)*	
W S 4302	Psychology of Human Sexual Behavior (PSY 4300)*	
W S 4399	Women's Studies Seminar	

*Cross-listed courses: cannot receive credit for both courses.

Academic Regulations

Classification of Students. An undergraduate student is classified according to the following: freshman, 0–29 hours completed; sophomore, 30–59; junior, 60–89; senior, 90–completion of degree requirements. The two ranks, junior and senior, are often referred to as "upperclass" and "advanced." A student who is enrolled for 12 or more credit hours per semester is considered a full-time student; one enrolled for fewer than 12 hours is considered a part-time student. A freshman may have remedial courses (numbered 0301 or 0302) counted as part of a full course load although these courses do not count toward a degree.

All bachelors' degrees conferred by Texas Tech University are based on the satisfactory completion of specific authorized degree programs comprised of a minimum of 120 semester hours. A student is considered to be making satisfactory progress toward a degree objective when he or she completes at least 12 credit hours in each semester, achieves a grade point average of 2.00 or higher in each semester, and maintains an overall grade point average of 2.00 or higher.

Semester Hours and Course Loads. The semester hour is the unit of measure for credit purposes. **The student is expected to spend approximately two hours in preparation for each hour of lecture or recitation.**

The maximum number of semester hours a student may carry (course load) without specific permission of the academic dean is: 19 hours per long semester; 16 hours per long semester for students on scholastic probation; 8 hours per summer term. In determining a greater load, the dean considers the quality of scholastic work performed by the student, the types of courses involved, the student's health, and extracurricular interests and activities.

Quarter Hour Conversion. Quarter credit hours are converted to semester credit hours by multiplying the number of quarter hours by two-thirds (or .67). Since a fraction of a credit hour cannot be awarded, the remaining fraction of semester hour credit is rounded to the nearest whole number from the tenth's position of the decimal. For example, 5 quarter hours are equivalent to 3.4 semester hours which in turn will be rounded to 3 semester hours of credit: 5 quarter hours x .67 = 3.4 semester hours = 3 semester hours. Applicability of transfer credit towards degree requirements at Texas Tech University will be at the discretion of the student's academic dean.

Enrollment in One of the Colleges or Schools. Each student accepted for admission will enroll in one of the colleges or schools of the university: Agricultural Sciences and Natural Resources, Architecture, Arts and Sciences, Business Administration, Education, Engineering, Honors, Human Sciences, Visual and Performing Arts, Law, or Graduate. The student should consult the dean of the college or school whenever any question arises concerning academic status. Matters specifically requiring the dean's approval include:

- Course load and schedule.
- Changes in schedule, including dropping and adding courses.
- Withdrawal and honorable dismissal from the university.
- Graduation requirements and candidacy for a degree.
- Applicability of transfer credits to degree programs.

Advising Center at Texas Tech (ACTT). Academic advisors at ACTT assist students in the decision-making process through choosing an appropriate major or career, assisting students in course selection, answering questions about university policies, and advising these specific student populations: Arts and Sciences Undeclared (ASUD) to 60 earned hours; Prelaw to 30 earned hours; General Studies to 30 earned hours; provisionally admitted students; and future Texas Tech students.

ACTT's *DISCOVERY!* program is designed to assist undecided, undeclared, or uncertain students. The program guides students through the various campus resources, empowering them to uncover learning styles, personality types, strengths, and interests, then align them with an appropriate academic major and/or career. This cultivates independent decision-making skills necessary for successful transitions from a stage in which others have made the majority of life decisions to the stage in which students become the primary decision-makers.

Contact information: 79 Holden Hall, (806) 742-2189, fax (806) 742-2200, or e-mail advising@actt.ttu.edu.

Academic Advising. Academic advising services at Texas Tech University are offered through ACTT (Advising Center at Texas Tech) in 79 Holden Hall and within each academic college and/or major. While students are responsible for their academic progress, academic advisors assist them with matriculation to graduation. The role of academic advisors is to develop dialog through which students can gain insight and explore academic, career, and life goals. A part of academic advising is a decision-making process in which students are guided toward making informed choices that lead to graduation. Advisors advocate for students in the university system, help students thrive in a large university setting, and serve as resource brokers for the university community and beyond. Helping to plan a class schedule is only one function of the academic advising process.

Advisors' Responsibilities. Advisors are responsible for providing a process through which students can explore educational and career opportunities offered by the university. Advisors' responsibilities include the following:

- Provide students with accurate information concerning academic policies and procedures.
- Provide an opportunity for students to discuss educational and career goals.
- Assist students in developing a degree plan.
- Help students develop a long-term program for satisfying the requirements of the degree plan.
- Assist students in selecting and sequencing course work.
- Heighten awareness of campus resources that may be used to help students achieve success in college.
- Use developmental advising as a tool in the retention process.
- Provide students with a caring person who may serve as a role model throughout their college experience.
- Encourage scheduled appointments prior to registration and throughout the semester in order to promote thoughtful planning.
- Orient students to college life and inspire them to achieve excellence.
- Help students understand the need to acquire an education versus a credential.
- Keep an accurate, well-documented file relative to advising activities for each student.
- Maintain confidentiality in accordance with the Family Educational Rights and Privacy Act of 1974.

Students' Responsibilities. Students are expected to be an active and responsible participant in the advising process with the following behavior:

- Make and keep appointments.
- Become familiar with applicable sections of the *Undergraduate Catalog.*
- Use various student services provided to enhance success.
- Complete all required paperwork and adhere to university deadlines.
- Keep advisors informed about any circumstances that could influence academic performance such as work schedules, illness, family, or other personal situations.
- Take an active role in decision-making concerning academic progress.
- Create a class schedule based on the selection of courses decided upon during the advising session.

- Notify advisors as soon as is practical when a grade of D or F is received so that the impact on future schedules can be evaluated.
- Consult with advisors prior to dropping any course.
- Thoroughly read the *Undergraduate Catalog*, *Schedule of Classes*, and other official documents.
- Keep a record of all contacts with the university.

Dropping a Course. Students may officially drop a course through the 30th class day of a long semester or the 12th class day of a summer term and receive the grade of W regardless of their progress in the class. After the 30th class day (12th for summer), the grade of W or WF will be given by the instructor, depending on the student's progress. Students cannot drop courses within 5 days before the first day of the final examination period during the long semester or 3 days in the summer.

Change of College. Students who wish to transfer from one college of the university to another should contact the academic dean of the college to which they plan to transfer to make sure that they can meet all enrollment requirements. The student then completes an academic transfer form in the receiving dean's office. The last day to change college is the last day to drop a course or withdraw from the university.

Change of Address. Each student is responsible for maintaining his or her correct address on file in the Office of Admissions and Records. Change of address forms are available in that office, and other campus departments will be notified when such a form is filed. Students required by the housing residence rules to live on campus may not move off campus during the semester without approval from the Department of Housing and Dining Services.

Administrative Holds. By failing to meet certain obligations to the university, a student may be denied registration and/or a transcript until the administrative hold is cleared.

Administrative holds may be placed on a student's record because of an outstanding debt to the university, disciplinary action, academic suspension, incomplete admission forms or substandard test scores, etc. It is the student's responsibility to get the hold released, which can be accomplished by meeting the requirements of the department placing the hold.

Status of holds on students' records for students who have attended Texas Tech since August 1983 may be obtained by using the Web at http://techsis.admin.ttu.edu/student/.

Class Attendance. Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is expected, and the university reserves the right to deal at any time with individual cases of nonattendance. Instructors set attendance policy for each course they teach. Instructors should state clearly in their syllabi their policy regarding student absences and how absences affect grades. Excessive absences constitute cause for dropping a student from class; in such cases the grade of WF may be given.

In the event of excessive absences, the student must visit the instructor to discuss his or her status in the course. If it is decided that the student should drop the course, the instructor will then assign a grade of W or WF (see sections on dropping a course and on withdrawal). In extreme cases the academic dean may suspend the student from the university.

Department chairpersons, directors, or others responsible for a student representing the university on officially approved trips should notify the student's instructors of the departure and return schedules in advance. The instructor so notified must not penalize the student, although the student is responsible for material missed. Students absent because of university business must be given the same privileges as other students; e.g., if other students are given the choice of dropping one of four tests, then students with excused absences must be given the same privilege.

Reporting Illness. In case of an illness that will require absence from class for more than one week, the student should notify his or her academic dean. The dean's office will inform the student's instructors through the departmental office. In case of class absences because of a brief illness, the student should inform the instructor directly. Other information related to illness is found

in the *Student Affairs Handboo*k and the *Residence Halls Handboo*k.

Absence Due to Religious Observance. A student who is absent from classes for the observance of a religious holy day, according to the legal definition, will be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence if, not later than the 15th day after the first day of the semester, the student has notified the instructor of each scheduled class that the student will be absent for a religious holy day.

This notification will be in writing and will be delivered by the student personally to the instructor of each class, with receipt of the notification acknowledged and dated by the instructor, or by certified mail, return receipt requested, addressed to the instructor of each class.

A student who is excused under this policy must not be penalized for the absence, but the instructor may appropriately respond if the student fails to satisfactorily complete the assignment.

Academic Integrity. It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and a high standard of integrity. The attempt of students to present as their own any work that they have not honestly performed is regarded by the faculty and administration as a serious offense and renders the offenders liable to serious consequences, possibly suspension.

The instructor in a course is responsible for initiating action for dishonesty or plagiarism that occurs in his or her class. In cases of convincing evidence of or admitted academic dishonesty or plagiarism, an instructor should take appropriate action. Before taking such action, however, the instructor should attempt to discuss the matter with the student. If cheating is suspected on a final exam, the instructor should not submit a grade until a reasonable attempt can be made to contact the student, preferably within one month after the end of the semester. See the section on "Academic Conduct" in the Code o*f Student Conduc*t for details of this policy.

1. *Cheating*: Dishonesty on examinations and quizzes or on written assignments, illegal possession of examinations, the use of unauthorized notes during an examination or quiz, obtaining information during an examination from the examination paper or otherwise from another student, assisting others to cheat, alteration of grade records, illegal entry to or unauthorized presence in an office are instances of cheating. Complete honesty is required of students in the presentation of any and all phases of course work as their own. This applies to quizzes of whatever length as well as to final examinations, daily reports, lab work, and term papers.
2. *Plagiarism*: Offering the work of another as one's own, without proper acknowledgment, is plagiarism; therefore, any student who fails to give credit for quotations or an essentially identical expression of material taken from books, encyclopedias, magazines, documents from the Internet, and other reference works, or from the themes, reports, or other writings of a fellow student, is guilty of plagiarism.

Civility in the Classroom. Students are expected to assist in maintaining a classroom environment that is conducive to learning. To ensure that all students have the opportunity to gain from time spent in class, faculty members are encouraged to include a statement in their course syllabus relating to behavioral expectations in the classroom. More information on this subject is available on-line at www.ttu.edu/vpsa/publications/civility.htm.

Grading Practices. A grade is assigned for all courses in which a student is regularly enrolled during any semester or summer term. Only through regular enrollment can a grade be earned. A passing grade may be earned only if the student is enrolled for the duration of the course, and a grade, once given, may not be changed without the approval of the student's dean.

The instructor of record determines all grades for a course. The method of determining a grade will be included in the course syllabus that is to be presented to the students at the beginning of the semester.

The grades used, including plus and minus, with their interpretations, are A, excellent; B, good; C, average; D, inferior (passing, but not necessarily satisfying degree requirements); F, failure; P, passing; PR, in

progress; I, incomplete; W, withdrawal; WF, withdrawal failing. The letter R designates a course repeated to remove an I. The grade of PR is given only when the work in a course extends beyond the semester or term; it implies satisfactory performance and is used primarily in individual study courses. The grades of CR, credit, and NC, no credit, are given in certain instances.

The grade of I is given only when a student's work is satisfactory in quality but, due to reasons beyond his or her control, has not been completed. It is not given instead of an F. The instructor assigning the grade will stipulate, in writing, at the time the grade is given the conditions under which the I may be removed. The I will remain on record until the faculty member submits a new grade. The I may be replaced by an R if the course is repeated. The appropriate grade will be given for the second registration.

The grade of W is given for a course officially dropped during the first six weeks of a term. A student should continue to attend a class until authorized by the academic dean to drop a course. The grade of WF is given when the student drops a course after the first 30 days of a term (12 days in summer) if the student is not passing the course at the time of the drop. A grade of WF will be given when the student is required by the dean to drop a course for failure to attend the class or for other reasons.

An NP is given if the student has not paid certain fees by the end of the semester. If the student subsequently pays the delinquent fees, Student Business Services will notify the Registrar, who will then record the academic grade earned.

Grade Appeals. A student who wishes to appeal a course grade should first consult with the course instructor, then with the department chairperson, and then, if the matter has not been resolved, with the dean of the college in which the course is offered. A grade appeal must be filed in the office of the dean of the college in which the course is offered within 45 days of the start of the next long semester after the term in which the disputed grade was received. Copies of the grade appeals policy can be obtained from any academic dean's office or from the Center for Campus Life.

Semester Grade Reports. At the close of each semester and each summer term, final course grades are available on the Texas Tech students' Web site or hard copy. Students wishing to receive a hard copy should go to the Texas Tech student Web site and update the grading address.

Grade Points. The grades of A, B, C, and D carry with them grade points of 4, 3, 2, and 1, respectively, for each semester hour of credit value of the course in which the grade is received. All other grades have no grade points assigned them.

Grade Point Averages. The current grade point average is determined by dividing the total number of grade points acquired during that semester by the total number of semester hours of all courses in which the student was registered in that semester, exclusive of courses in which grades such as W, I, P, CR, and PR are received. In the same manner, the cumulative grade point average is obtained by dividing the total number of grade points earned in all courses for which the student has registered at this university, including hours of F and WF, by the total number of semester hours.

With the approval of the student's dean, a grade point deficiency in degree requirements may be made up by earning sufficient grade points in additional courses.

Only courses taken and grades received at this university are used in calculating grade point averages.

Grade Replacement Policy. After a course has been retaken at Texas Tech, a student may apply to the Registrar for grade replacement. This policy applies to students enrolled at the university during spring 1993 or thereafter and applies only to those who have not received a baccalaureate degree at the time of the request.

The grade replacement is for the purpose of providing an adjusted grade point average. The most recent passing grade will replace all previous grades in that

course. The cumulative adjusted GPA will be posted on the bottom of the student's transcript. A notation will indicate the original course that is being replaced. The original grade and original cumulative GPA will remain. The cumulative (not the adjusted) GPA will be used for honors.

An application may be obtained and initiated by the student in the Office of the Registrar after the current semester academic procedures have been completed. The four parts of the form are for the dean's office, the student's academic home department, the student, and the original for the Registrar. Students may apply after the passing grade is received in the replacing course. A student wanting to replace a grade received before fall 1983 should contact the student's academic dean's office.

Adjusted Grade Point Average. A student placed on scholastic suspension or probation at the end of the semester will not be removed from suspension on the basis of grade replacements that can be or are made after the semester grades are reported. However, a suspended student who attains an adjusted GPA of 2.0 or higher after official grades have been submitted and academic status has been determined may be allowed to attend Texas Tech upon appeal to the associate academic dean.

Pass–Fail Option. Undergraduate students may take up to 13 elective semester hours toward satisfying degree requirements in which they will be graded on a pass–fail basis. Courses specified in the catalog as available only with pass–fail grading and courses taken in excess of degree requirements are not included in the 13-hour restriction. Freshman Seminar (I S 1100) cannot be taken pass–fail.

A college may further restrict the pass–fail option but may not broaden it beyond elective courses. No student on probation will be allowed the pass–fail option.

Students wishing to take a course pass–fail should contact the academic dean's office of the college in which they are enrolled. A student must declare the intent to take a course pass–fail no later than the last day on which a grade of W is automatically given for courses dropped. A student who has chosen to take a course pass–fail may not subsequently change to a letter graded basis. A grade of F received on a course taken pass–fail will be computed into the grade point average.

The names of students taking a course pass–fail will not be made known to the instructor.

An exception to the above-stated rules applies to students who have had two years of one foreign language in high school and who enroll in the same foreign language at the 1501 level even though a 1507 course is available. Those students taking the 1501 course are required to take it pass–fail.

Courses taken in the declared major or minor shall not be taken by pass–fail unless required by the department. The department of the major or minor will decide whether courses taken under the pass–fail system, before a student has declared a major or minor, shall count toward satisfying the degree requirements.

Credit by Examination for Matriculated Students. With the approval of their academic dean, matriculated students in the university may attempt examinations on courses in which they think they have acquired the basic knowledge. Certain CEEB nationally standardized tests and departmental examinations are available for matriculated students to attempt credit by examination in undergraduate courses (see section entitled "Undergraduate Credit by Examination").

Honor Rolls. Full-time undergraduate students who earn a grade point average of 4.0 during a semester are eligible for the President's Honor Roll. Those who earn a GPA of 3.5 or higher during a semester are eligible for the Dean's Honor List of the college in which they are enrolled during that semester. For these acknowledgments, students must be enrolled for at least 12 hours, excluding any courses that are graded pass–fail.

Students taking between 7 and 11 hours and otherwise qualifying for the President's or Dean's lists for academic recognition, and who are enrolled in the South Plains

College Spanish courses taught on the TTU campus (SPCS 1501, 1502), may count those hours to accumulate enough hours to qualify for those academic lists. The SPC grades are not sufficient to advance one to qualify for the President's or Dean's list; the courses can be used to acquire the necessary number of hours (minimum of 12) to qualify, with TTU grades and SPC grades sufficient to *keep* the student eligible. This is retroactive to fall 2000.

Graduation With Honors. Members of a graduating class who complete their work with a cumulative grade point average of 3.9 or above are graduated *Summa Cum Laude*; those who complete their work with a GPA of 3.7 to 3.89 are graduated *Magna Cum Laud*e; and those who complete their work with a GPA of 3.5 to 3.69 are graduated *Cum Laude*. Appropriate designation of the honor is made on the diploma and on the commencement program. No person is considered for graduation honors unless at least one-half of the degree credit has been completed at this institution, and the half must include the senior year. Only grades earned at Texas Tech are counted, and only the cumulative GPA is used to calculate honors.

Honors Studies. Honors courses are available to students in all undergraduate colleges. Interested students should consult the Dean of Honors or their college advisors.

Academic Status. Students may continue enrollment according to the regulations described below.

Students are expected to maintain cumulative and current semester grade point averages or adjusted grade point averages of 2.0 or above. Some academic programs have requirements over and above the cumulative GPA of 2.0. A student whose cumulative GPA is above 2.0 but whose current semester GPA is below 2.0 should seek advice and counsel from his or her academic dean.

Scholastic Probation. A student whose adjusted GPA is below 2.0 will be placed on "scholastic probation." Such a student may not enroll for more than 16 hours without prior approval of the academic dean. In addition, the student must continue to seek regularly scheduled advice and counsel from an academic advisor or the dean. Any freshman whose fall semester GPA is below 2.0 is required to successfully complete XL 0201, Strategies for Learning, in the immediately following spring semester. A nonrefundable fee of $150 will be collected for this course.

Continued Scholastic Probation. A probationary student whose current GPA is 2.0 or higher but whose adjusted GPA is below 2.0 will be placed on "continued scholastic probation." A student will remain on continued scholastic probation until the adjusted GPA is 2.0 or higher.

Scholastic Suspension. A probationary student who has a current and an adjusted GPA below 2.0 at the end of a fall and spring semester will be on suspension unless grade replacements by courses completed at that time raise the adjusted GPA above 2.0. All grade replacements must be initiated by the student in the Registrar's Office. Any courses that are completed after probation or sus-pension status has been determined for a particular semester will not alter that probation or suspension. A suspended student who attains an adjusted GPA of 2.0 or higher after official grades have been submitted and academic status has been determined may be allowed to attend Texas Tech upon appeal to the associate academic dean.

Students on scholastic suspension may seek reinstatement after a minimum of one semester. Both summer terms are considered to be a semester for the purpose of serving a suspension. Students who have received more than one suspension may seek reinstatement after two semesters. Reinstatement granted after suspension will be probationary. Students who apply for readmission following suspension will be required to undergo such testing and counseling as the academic dean considers necessary. Students who are readmitted after first suspension will be required to successfully complete XL 0201, "Strategies for Learning," during the first semester of their readmission. A nonrefundable fee of $150 will be collected for this course. *Attendance in XL 0201 is mandatory from the first day of classes. Absences accumulate from the beginning of the semeste*r. Three absences will result in a student being withdrawn from the university.

Applications for readmission should be received in the Office of Admissions and School Relations at least 60 days before the beginning of the anticipated term of enrollment. Students who do not qualify for admission and then attend another college will be considered transfer students and must meet transfer admission policies in order to be readmitted to the university.

Graduation Requirements. Graduation requirements include a minimum adjusted cumulative GPA of 2.0 for all courses, including repeated courses, attempted in the degree program in which students seek graduation. In order to obtain a degree granted by the university, at least 25 percent of the total semester credit hours must be earned through instruction offered by Texas Tech University.

Graduation Rates. Federal regulations require that the university disclose graduation rates for men and women who are full-time, degree-seeking undergraduate students. Disclosure of graduation rates for various student populations, including athletes, is also required. These are the same rates as those supplied by Texas Tech to the National Collegiate Athletic Association (NCAA). Detailed graduation rates are available from the Office of News and Publications.

Withdrawal From the University. Students who find it necessary to withdraw from the university before the end of a semester or summer term must apply to the Office of the Registrar in 100 West Hall, no later than five class days before the first day of the final examination period. Students under 18 years of age should first consult their parents and should secure from them a written statement that they have their permission to withdraw. The grades of W or WF are recorded in keeping with the regulations set forth in the section on Grading Practices and are based on the student's standing on the last day of enrollment in each course in which he or she is registered.

A student who withdraws from a residence course with a grade of W may complete the course through the Division of Outreach and Extended Studies by registering for correspondence work, provided the course is regularly offered through correspondence and provided the instructor who taught the residence course is assigned as the correspondence instructor. Credit received through the process just described is recorded as correspondence credit.

International students must receive clearance from the Director of International Programs as a part of the withdrawal procedure.

Teacher Education

The preparation of teachers and the provision of knowledge and skills for teachers are important functions of the university at both the undergraduate and the graduate levels. The coordination of the teacher education program is a responsibility of the Dean of the College of Education.

General advice on specific degree requirements is available in the office of the academic dean of the college in which the student is enrolled. The student will be advised on certification requirements by an appropriate advisor in the College of Education. Selection of courses in the student's teaching field is determined by an advisor in the academic department involved.

Due to changes in state laws, teacher education at Texas Tech has undergone many revisions. Majors using the term "education" (e.g., secondary education, art education) are not offered at Texas Tech University. Individuals will be certified to teach in elementary, middle, and secondary schools, but they must complete an academic major.

Texas Tech University reports to the U. S. Department of Education passing rates on licensing exams taken by students seeking initial teaching certificates. The certification rate for students taking their exams in 1999-2000 was 87 percent. The cumulative passing rate on all tests for students taking licensing exams in 1999-2001 was 91.67 percent.

Students preparing to teach in secondary schools will generally complete an academic major in Agricultural Sciences and Natural Resources, Arts and Sciences,

Visual and Performing Arts, or Human Sciences, with additional courses in professional education required for certification. Students interested in teaching composite science (certified to teach all sciences in grades 8–12) may complete a Multidisciplinary Science major through the College of Education or an academic major in one of the teaching fields. Students preparing to teach grades 4–8 will complete a Multidisciplinary Studies major in the College of Education. Students seeking early childhood certification do so through a degree in the College of Human Sciences. Students wishing to teach young children, pre-kindergarten through grade 4, should enroll in the early childhood program.

Degree and Teacher Certification Programs. Degree and teacher certification programs are two distinct programs. Freshmen or transfer students are admitted to a degree program in an appropriate college, leading to a bachelor's degree. Eligible students at the junior level are admitted to a teacher certification program that leads to a Texas teaching certificate. The certification program culminates with the state-mandated Texas Examinations of Educator Standards (TExES) exams. Students must pass all appropriate TExES exams for certification, but not for the bachelor's degree. Language related certification also requires passage of the Texas Oral Proficiency Test (TOPT).

Admission to the Teacher Certification (Education) Program. The College of Education seeks to maintain rigorous academic programs to prepare outstanding educators for Texas and the nation. Admission to College of Education certification programs is open to all individuals on the basis of academic preparation, achievement, and availability of space in the program selected. When there are more qualified applicants than can be adequately instructed by the available faculty or accommodated in available facilities, the college will control enrollment in specific programs by limiting the admission of new students. The number of students accepted into the undergraduate Early Childhood, Middle-Level Education, and All-Level, Secondary, Career and Technology programs is limited. Therefore, admission into a teacher education program is competitive and based on GPA and other criteria. A complete description of eligibility requirements is available in the Educator Certification Office in the College of Education. (Entrance criteria may be subject to change.)

Admission to a college degree program does not insure admission to an upper-division teacher certification program. Students seeking teacher certification may apply through a twice-per-year admission process. Application forms from the College of Education should be completed during the second semester of the sophomore year. Application deadlines are generally early February (for the fall semester) and mid-September (for the spring semester). For specific details, consult a College of Education advisor. To be considered for admission to teacher certification programs, students must meet the following minimum prerequisites:

1. Individuals must have a minimum acceptable scholastic grade point average. Students seeking early childhood certification (through a degree in the College of Human Sciences) must have a 2.7 or higher overall GPA. Students seeking other certificates (middle level, secondary, career and technology, and all-level), must have a 2.5 or higher overall GPA.
2. A satisfactory level of performance on the Texas Academic Skills Program (TASP).
3. Good character and high ethical standards. All applicants for Texas certification are screened for a record of felony or misdemeanor convictions through the Texas Department of Public Safety. All potential certificate applicants with criminal felony or misdemeanor convictions should immediately contact the Texas Tech Certification Office to seek clarification of their certification status.
4. Possess the ability to speak and understand the English language sufficiently to use it easily and readily in conversation and teaching.
5. Possess college level skills in critical thinking.
6. Possess such personal and social qualities and physical and mental health to indicate a fitness for the education profession.

Admission to upper division teacher education programs is subject to additional entrance criteria, depending on availability of space in the program selected.

No otherwise qualified student will be denied admission to a degree program, certification program, or student teaching

because of race, religion, national origin, age, gender, or disabling condition.

Under some circumstances a student may be requested to leave a certification program. Such a request can be initiated by the college or by the student. Due process will be observed during this time.

Individuals who lack the minimum GPA or have not passed the TASP examination due to extenuating circumstances may also apply for admission to teacher education. The Admission Committee will review each such request.

Transferability. Developmental courses (e.g., basic–introductory reading and mathematics courses) and vocational courses (auto mechanics, nursing) will not transfer for degree or certification programs. Courses with D grades may or may not transfer, depending on Coordinating Board, university, and college guidelines.

Certification Plan. Any undergraduate student working toward a teacher's certificate should file a certification plan in the College of Education *during the freshman year* or, for transfer students, during the first semester of attendance at Texas Tech. Students seeking certification in agricultural science, art, family and consumer science, or music must consult their department advisor regarding the proper time to file this certification plan. The student's advisors will assist in completing the certification plan. Any graduate student (either a degree or nondegree student) working toward a certificate should file a certification plan in the College of Education following admission to the Graduate School. The requirement for filing a certification plan applies regardless of the degree sought, the subject that the student expects to teach, or the level (early childhood, middle level, secondary, or all-level) at which he or she expects to be certified. Degree plans and certification plans are not to be confused because they may be two separate documents. The degree plan is to be filed in the office of the student's academic dean, whereas the certification plan must be filed in the College of Education.

Certification plan forms must be obtained from the College of Education. Once the form is secured, the student is responsible for consulting with the appropriate advisors to complete the plan.

Admission to Student Teaching. The completion of 12 semester hours in the student teaching semester, including all-day student teaching for one full semester, is required for certification. Normally a student will take the student teaching course in a single semester during fall or spring of the senior year. Because student teaching requires a major portion of the student's time during the semester, the student should plan to register only for student teaching and any corequisite education course required. Any request for an additional course with student teaching must be approved by the Certification Officer. The following are prerequisites for admission to student teaching:

1. The applicant must have completed a minimum of 90 semester hours of college work. A student seeking admission to student teaching in secondary schools must have completed at least 75 percent of the semester hours required in each of the teaching fields and the prerequisite professional education courses. For those seeking admission to student teaching in the middle grades, the 90 hours must include the completion of the three prerequisite semesters of professional education courses. For those seeking to student teach to fulfill requirements for the early childhood certificate, all course work except student teaching should be completed. The prospective all-level student teacher must have completed 75 percent of the course work in the specialization area plus the prerequisite hours of professional education courses.
2. Each student, unless enrolled in agricultural science, family and consumer science, or music, must file an application for student teaching in the Certification Office. To apply for fall student teaching, applications must be received between October 15 and December 15 in the year before. To apply for spring student teaching, applications must be received between April 15 and July 15 in the year before. Students in agricultural education, family and consumer sciences education, or music must consult their department chairperson regarding the proper time to file this application.
3. The student must have a grade point average of 2.5 or higher in professional education courses, in the teaching field(s) for middle level and secondary teaching. Students seeking early childhood certification must have

a 2.7 or higher overall GPA. Students seeking middle level, secondary, and all-level certificates must have a 2.5 or higher overall GPA.
4. The student must be able to speak and understand the English language sufficiently to use it easily and readily in conversation and teaching.
5. The student must possess such personal and social qualities and physical and mental health to indicate a fitness for the education profession.
6. The student must have met all other criteria that may be established for the teacher certification program.

Under some circumstances a student may be requested to leave a student teaching placement. Such a request can be initiated by the college, by the student, or by the school district. Due process will be observed in considering whether an alternate placement will be made or the student teaching experience terminated.

Recommendation for Teacher Certification. An individual who has maintained the levels of performance stated as prerequisites for admission to student teaching, and who has demonstrated knowledge and understanding related to the nature of our multicultural society and the education of pupils with exceptionalities, is eligible to apply during the last semester of certification work to the College of Education for a recommendation to the State Board for Educator Certification for the appropriate teaching certificate. A $75 fee is required by the state. Upon completing all requirements, including the appropriate TExES examinations, the student is recommended for certification. The Texas Oral Proficiency Test (TOPT) is also required of individuals seeking language related certificates.

While completing the requirements, a student must maintain a 2.5 GPA in the professional education courses and a 2.5 GPA in the teaching field(s). Grades of D are not acceptable in the professional education courses or in the teaching field(s). An acceptable overall GPA is required (2.7 for early childhood; 2.5 for middle level, secondary, all-level, and career and technology).

All persons completing teacher training programs who are candidates for initial Texas certification (i.e., those who do not hold a current valid Texas teaching certificate) must pass proficiency tests—Texas Examinations of Educators Standards (TExES)—in their fields of certification and endorsement. All candidates for initial teacher certification must pass a professional development test at the appropriate level) and a content specialization test in each area for which certification is sought. The Texas Oral Proficiency Test (TOPT) is also required of individuals seeking language related certificates. A fee is associated with all such examinations ($72 per test).

Contact the College of Education for information about the proficiency tests.

Certificate Programs. Certificate programs have been approved for Texas Tech University at the early childhood, middle, and secondary levels. In addition, all-level programs have been approved in certain fields (art, music, and physical education) which qualify the individual for certification at both the elementary and secondary levels.

The certificate programs for early childhood, middle, secondary, career and technology, and all-level education have similar Core Curriculum requirements consistent with those of the university. However, Core Curriculum requirements may vary slightly. Consult an advisor.

The State Board for Educator Certification has recently approved a set of new teaching certificates. These certificates will go into effect after September 1, 2002. Preparation for the following certificates is currently offered at Texas Tech:

Early Childhood Certificates: Early Childhood—Grade Four Generalist; Bilingual Generalist

Middle Level Certificates: Grades 4–8 Bilingual Generalist; English Language Arts; Social Studies; Math; Science; English Language Arts–Social Studies

Secondary Certificates: Grades 8–12 English Language Arts; Speech; Journalism; Social Studies; History; Science; Life Science; Physical Science; Mathematics; Technology Applications; Computer Science

All Level Certificates: All Level Physical Education; Art; Music

Please consult an advisor in the College of Education to match your academic background and career goals with certificates available at Texas Tech University.

Explanation of Course Offerings

Courses are designated by a subject prefix and number along with a descriptive title. The first digit in the number indicates the academic level of the course. First digits of 1, 2, 3, or 4 indicate that the course is primarily designed for the freshman, sophomore, junior, or senior year, respectively. A number of 5 or above designates a graduate course. The second digit indicates the semester-hour credit of the course. The remaining digits are the distinguishing numbers of the particular course. Thus, MATH 1350 is a freshman course carrying 3 semester hours of credit. Remedial courses begin with "0" (e.g., MATH 0301).

Courses are listed in the following section of the catalog under the name of the college and department in which they are taught. The courses are arranged numerically.

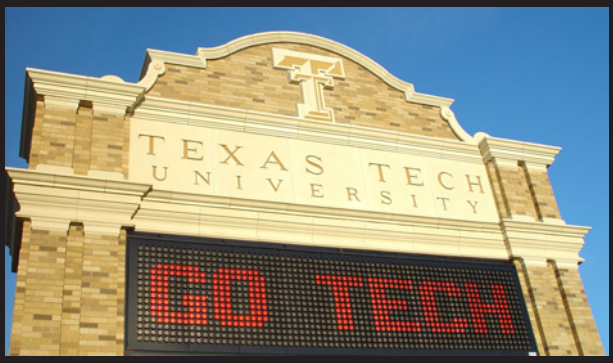
In the departmental course lists, certain information is placed in parentheses following the course title. The first figure in the parentheses indicates the semester-hour credit of the course; the second figure shows the number of lecture hours per week attended by a student enrolled in the course; and the third figure indicates the number of hours per week during which the student is in a laboratory, practice session, or other activity related to the course. For example, (3:1:4) following the listing of GEOG 3300, Introduction to Mapping, means that the course carries 3 semester hours' credit, that 1 hour per week is spent in lecture section, and that 4 hours per week are spent in the laboratory. Where only one figure appears in the parentheses, the course value in semester hours is indicated.

Several courses are identified by the Texas Common Course Numbering System to facilitate transfer between Texas colleges and universities. These courses are identified by the Texas Common Course Number in brackets following the course description.

The following index may be helpful in interpreting the subject prefixes used in the curriculum sections of this catalog.

AAEC	Agricultural and Applied Economics
ACCT	Accounting
ACOM	Agricultural Communications
ADV	Advertising
ADPR	Advertising and Public Relations
AERS	Aerospace Studies
AGED	Agricultural Education
AGSC	Agricultural Science
AGSM	Agricultural Systems Management
ANSC	Animal Science
ANTH	Anthropology
ARCH	Architecture
ART	Art
ASTR	Astronomy
ATMO	Atmospheric Science
B A	Business Administration
BINF	Biological Information
BIOL	Biology
BLAW	Business Law
BOT	Botany
BTEC	Biological Technology
C E	Civil Engineering
CEED	Consumer Economics and Environmental Design
CH E	Chemical Engineering
CHEM	Chemistry
CHIN	Chinese
CLAS	Classics
C LT	Comparative Literature
CMLL	Classical and Modern Languages and Literatures
COIN	Cooperative Internship
COMS	Communication Studies
C S	Computer Science
CTEC	Construction Technology
CT&M	Clothing, Textiles, and Merchandising
DAN	Dance
ECO	Economics
EDBL	Bilingual Education
EDCI	Educational Curriculum and Instruction
EDEC	Early Childhood Education
EDEL	Elementary Education
EDHE	Higher Education
EDIT	Educational Instructional Technology
EDLD	Educational Leadership
EDLL	Language Literacy Education
EDSE	Secondary Education
EDSP	Special Education
E E	Electrical Engineering
EET	Electrical–Electronics Engineering Technology
E GR	Engineering Graphics
EM&C	Electronic Media and Communications

ENGL	English
ENGR	Engineering
ENTX	Environmental Toxicology
ENVE	Environmental Engineering
EPCE	Counselor Education
EPSY	Educational Psychology
ESL	English as a Second Language
ESS	Exercise and Sports Science
F A	Fine Arts
FADS	Fashion Design
FCSE	Family and Consumer Sciences Education
FD T	Food Technology
FFP	Family Financial Planning
FIN	Finance
F&N	Food and Nutrition
FREN	French
G CH	Geochemistry
GEOG	Geography
GEOL	Geology
GERM	German
G PH	Geophysics
GRK	Greek
G ST	General Studies
GTEC	General Engineering Technology
HDFS	Human Development and Family Studies
HIST	History
HLTH	Health
HMGT	Heritage Management
HONS	Honors
HUM	Humanities
HUSC	Human Sciences
I B	International Business
I D	Interior Design
I E	Industrial Engineering
I S	Interdisciplinary Studies
ISQS	Information Systems and Quantitative Sciences
ITAL	Italian
JAPN	Japanese
JOUR	Journalism
LAIS	Latin American and Iberian Studies
LARC	Landscape Architecture
LAT	Latin
LAW	Law
LING	Linguistics
LPMD	Land-Use Planning, Management, and Design
L S	Library Science
MATH	Mathematics
MBIO	Microbiology
MCOM	Mass Communications
MD S	Multidisciplinary Studies
M E	Mechanical Engineering
MER	Merchandising
MFT	Marriage and Family Therapy
MGT	Management
MILS	Military Science
MKT	Marketing
MSE	Manufacturing and Systems Engineering
MTEC	Mechanical Engineering Technology
MUAL	Music Student Teaching—All-Level
MUAP	Music, Applied
MUCP	Music Composition
MUED	Music Education
MUEN	Music Ensemble
MUHL	Music History and Literature
MUSE	Music Student Teaching—Secondary
MUSI	Music
MUSM	Museum Science
MUTH	Music Theory
NHH	Natural History and Humanities
NURS	Nursing
PETR	Petroleum Engineering
PF&W	Personal Fitness and Wellness
PHIL	Philosophy
PHOT	Photography
PHYS	Physics
POLS	Political Science
PORT	Portuguese
P R	Public Relations
PRAG	Pragmaticism
PSS	Plant and Soil Science
PSY	Psychology
PUAD	Public Administration
RHIM	Restaurant, Hotel, and Institutional Management
RUSN	Russian
RWFM	Range, Wildlife, and Fisheries Management
S E	System Engineering
SLAV	Slavistics
SOC	Sociology
SPAN	Spanish
STAT	Statistics
S W	Social Work
TELE	Telecommunications
TH A	Theatre Arts
TOX	Toxicology
VIET	Vietnamese
W S	Women's Studies
ZOOL	Zoology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UNIVERSITY
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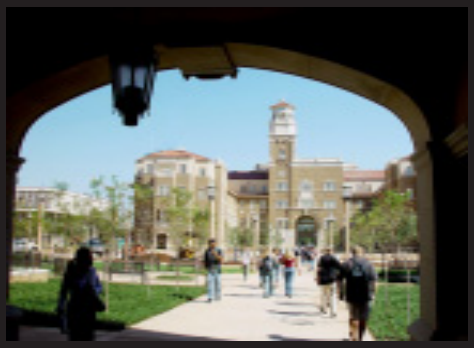

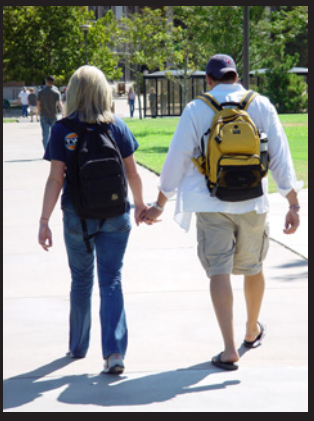

Graduate School

Professor Ronald M. Anderson, *Dean*

Web Site: www.ttu.edu/gradschool

Graduate study is much more than a continuation of undergraduate work. It is distinguished by the spirit of inquiry and the desire to increase human knowledge. Graduate study should be contemplated, therefore, only by students who have demonstrated in their undergraduate programs unusual intellectual ability and the capacity for independent thought and investigation. For this reason, nearly all graduate schools exercise some type of selectivity in their admission of students. Selective entrance requirements are partly for the maintenance of high standards that must characterize graduate study and partly for the benefit of students in helping them decide whether they should undertake such work.

The Graduate School of Texas Tech University recognizes its obligations to the standards mentioned above and to the citizens of Texas by requiring appropriate evidence of an applicant's intellectual ability and reserves the right to decline to accept any applicant whose admission would not be to his or her best interest or that of the university.

For more particulars and details on courses and degree requirements refer to the *Graduate Catalog.*

Majors and Degrees

Accounting
Master of Science in Accounting
Agricultural and Applied Economics
Master of Science
Doctor of Philosophy
Agricultural Education
Master of Science
Doctor of Education
Agriculture
Master of Agriculture
Agronomy
Doctor of Philosophy
Anatomy
Master of Science
Doctor of Philosophy
Animal Science
Master of Science
Doctor of Philosophy
Anthropology
Master of Arts
Applied Linguistics
Master of Arts
Applied Physics
Master of Science
Architecture
Master of Architecture (Professional)
Master of Science (Postprofessional)
Art
Master of Fine Arts
Art Education
Master of Art Education
Athletic Training
Master of Athletic Training
Atmospheric Science
Master of Science
Audiology
Doctor of Audiology
Bilingual Education
Master of Education
Biology
Master of Science
Doctor of Philosophy
Biotechnology
Master of Science
Business Administration
Master of Science
Doctor of Philosophy
Chemical Engineering
Master of Science in Chemical Engineering
Doctor of Philosophy
Chemistry
Master of Science
Doctor of Philosophy
Civil Engineering
Master of Science in Civil Engineering
Doctor of Philosophy
Classics
Master of Arts
Communication Disorders
Master of Science in Communication Disorders
Communication Studies
Master of Arts
Composition
Doctor of Musical Arts

Computer Science
Master of Science
Doctor of Philosophy
Conducting
Doctor of Musical Arts
Counselor Education
Master of Education
Doctor of Education
Crop Science
Master of Science
Curriculum and Instruction
Master of Education
Doctor of Education
Economics
Master of Arts
Doctor of Philosophy
Educational Leadership
Master of Education
Doctor of Education
Educational Psychology
Master of Education
Doctor of Education
Electrical Engineering
Master of Science in Electrical Engineering
Doctor of Philosophy
Elementary Education
Master of Education
Engineering
Master of Engineering
English
Master of Arts
Doctor of Philosophy
Entomology
Master of Science
Environmental Design
Master of Science
Environmental Design and Consumer Economics
Doctor of Philosophy
Environmental Engineering
Master of Environmental Engineering
Environmental Technology Management
Master of Science in Environmental Technology Management
Environmental Toxicology
Master of Science
Doctor of Philosophy
Exercise and Sport Sciences
Master of Science
Family and Consumer Sciences Education
Master of Science
Doctor of Philosophy
Family Financial Planning
Master of Science
Fine Arts
Doctor of Philosophy (Majors in Art, Music, and Theatre Arts)
Fisheries Science
Master of Science
Doctor of Philosophy
Food and Nutrition
Master of Science
Doctor of Philosophy
Food Technology
Master of Science
General Business
Master of Business Administration
Geoscience
Master of Science
Doctor of Philosophy
German
Master of Arts
Health Sciences Research and Management
Master of Science
Heritage Management
Master of Science
Higher Education
Master of Education
Doctor of Education
Doctor of Philosophy
History
Master of Arts
Doctor of Philosophy
Horticulture
Master of Science
Human Development and Family Studies
Master of Science
Doctor of Philosophy
Industrial Engineering
Master of Science in Industrial Engineering
Doctor of Philosophy
Instructional Technology
Master of Education
Doctor of Education
Interdisciplinary Studies
Master of Arts
Master of Science
Land-Use Planning, Management, and Design
Doctor of Philosophy
Landscape Architecture
Master of Landscape Architecture
Language Literacy Education
Master of Education
Manufacturing and Systems Engineering
Master of Science in Manufacturing Systems
Marriage and Family Therapy
Master of Science
Doctor of Philosophy
Mass Communications
Master of Arts
Mathematics
Master of Arts
Master of Science
Doctor of Philosophy
Mechanical Engineering
Master of Science in Mechanical Engineering
Doctor of Philosophy
Medical Biochemistry
Master of Science
Doctor of Philosophy

Medical Microbiology
Master of Science
Doctor of Philosophy
Medicine
Doctor of Medicine
Microbiology
Master of Science
Multidisciplinary Science
Master of Science
Museum Science
Master of Arts
Music Education
Master of Music Education
Music History and Literature
Master of Music
Music Theory
Master of Music
Nursing
Master of Science in Nursing
Doctor of Philosophy
Occupational Therapy
Master of Occupational Therapy
Performance
Master of Music
Doctor of Musical Arts
Petroleum Engineering
Master of Science in Petroleum Engineering
Doctor of Philosophy
Pharmaceutical Sciences
Master of Science
Doctor of Philosophy
Pharmacology
Master of Science
Doctor of Philosophy
Pharmacy
Doctor of Pharmacy
Philosophy
Master of Arts
Physical Therapy
Master of Physical Therapy
Physician Assistant
Master of Physician Assistant Studies
Physics
Master of Science
Doctor of Philosophy
Physiology
Master of Science
Doctor of Philosophy
Piano Pedagogy
Doctor of Musical Arts
Political Science
Master of Arts
Doctor of Philosophy
Psychology
Master of Arts
Doctor of Philosophy
Psychology, Clinical Psychology
Doctor of Philosophy
Psychology, Counseling Psychology
Master of Arts
Doctor of Philosophy
Psychology, General Experimental Psychology
Master of Arts
Doctor of Philosophy
Public Administration
Master of Public Administration
Range Science
Master of Science
Doctor of Philosophy
Restaurant, Hotel, and Institutional Management
Master of Science
Romance Languages
Master of Arts
Secondary Education
Master of Education
Sociology
Master of Arts
Software Engineering
Master of Science
Soil Science
Master of Science
Spanish
Doctor of Philosophy
Special Education
Master of Education
Doctor of Education
Sports Health
Master of Science
Statistics
Master of Science
Systems and Engineering Management
Master of Science in Systems and Engineering Management
Technical Communication
Master of Arts
Technical Communication and Rhetoric
Doctor of Philosophy
Theatre Arts
Master of Arts
Master of Fine Arts
Vocational Rehabilitation
Master of Vocational Rehabilitation
Wildlife Science
Master of Science
Doctor of Philosophy
Zoology
Master of Science
Doctor of Philosophy

School of Law

Professor James R. Eissinger, *Interim Dean*

Web Site: www.law.ttu.edu

Horn Professor Benson; ***George Herman Mahon Professor*** Bubany; ***Alvin R. Allison Professor*** Casto; ***J. Hadley Edgar Professor*** T. Floyd; ***Professor of Commercial Law*** Krahmer; ***Maddox Professor of Law*** Kramer; ***Robert H. Bean Professor*** Phelan; ***George W. McCleskey Professor of Water Law*** Skillern; ***Charles Thornton Professor*** Shannon; ***Professors*** Cochran, D. Floyd, Fortney, Lee, Myhra, Pawlowic, Sutton, Torres, Van Cleave, and Weninger; ***Associate Professors*** Camp, Hartmeister, James, Lopez, Ramírez, Soonpa, and Spain; ***Lecturers*** Conboy, Cook, Fletcher, and Winick; ***Legal Practice Professors*** Fullingim, Jones, Holloway, and Miller; ***Adjunct Faculty*** Baker and Hunt.

An applicant for admission to the School of Law must have received, or have completed all requirements for, a baccalaureate degree from a college or university of approved standing prior to beginning work in the School of Law. An applicant's record must be of sufficiently high quality to demonstrate that he or she is qualified for the study of law. In exceptional cases, the work of the last two college years will be weighed more heavily than that of earlier years.

Additionally, an applicant must take the Law School Admission Test, which is administered four times a year throughout the United States and in many foreign countries by Law School Admission Council.

The School of Law does not prescribe a specific prelegal curriculum for its applicants. The wide range of lawyers' tasks and the difference in offerings from school to school preclude such an approach. However, there are certain goals that all students should keep in mind when planning their college program. They should strive to acquire the ability to read, write, and speak the English language well; to gain a critical understanding of human values and institutions—political, economic, and social; and to develop in themselves the power to think creatively.

Students are admitted only in the fall. Applications for the following year should be submitted to the School of Law at the earliest opportunity after October 1 and no later than February 1.

The Texas Tech University School of Law has earned an excellent reputation in preparing students for the practice of law. Even though the Texas Tech School of Law is one of the youngest law schools in this part of the country, it has always attracted outstanding students. Competing in contests that simulate client counseling, negotiation, trial of cases, and appeal of cases, Texas Tech students have won more national championships in the last decade than the students at any other law school in the United States.

The School of Law has a low student–faculty ratio, enabling greater interaction between student and professor. A small student body and faculty diversity are other assets that promote learning.

For further details, consult the *Law School Catalog.*

All-University Programs

Cooperative Education

The Cooperative Education program integrates classroom study with paid, practical, and supervised work training in public and private employment situations. By applying their academic training in a work setting, students not only enhance their self-confidence while earning wages, but they also gain career direction and may receive offers for future full-time employment. Co-op programs include both the alternating and parallel patterns. The alternating option allows students to alternate semesters of work and school, working a minimum of two semesters. The parallel plan permits students to work at least 15 to 20 hours per week concurrently with their academic progression. Students considering a Co-Op experience should consult with an advisor in the Career Center as early as possible. In addition, the student must obtain approval from his or her departmental advisor before enrolling. Ordinarily a student must have completed the sophomore year to be considered for the program.

Cooperative Internship (COIN)

3000. Cooperative Internship (V1–6). Supervised internship in an approved industrial or professional establishment. Approval of enrollment by Co-op program required.

Institute for Studies in Pragmaticism

The Institute for Studies in Pragmaticism offers a course on methods and logical problems associated with interdisciplinary endeavors in science. The only prerequisite is approval of the instructor. Students in any branch of Texas Tech University or Texas Tech University Health Sciences Center are eligible to enroll.

Contact information: Institute for Studies in Pragmaticism, Box 40002, Texas Tech University, Lubbock, TX 79409-0002, (806) 742-3128.

Pragmaticism (PRAG)

4000. Independent Research in Peirce Studies (V1–6). Prerequisite: Consent of instructor. Directed study of selected interdisciplinary problems in Peirce Studies. May be repeated for credit.

Interdisciplinary Studies (Freshman Seminar)

"Tech Transition: The Freshman Seminar" is designed to smooth the advance of students from high school to the university. The one hour Interdisciplinary Studies course (I S 1100) is taught by regular faculty from throughout the university in a collaborative approach to major concerns of incoming students. This is a general university course; therefore sections are composed of 20–25 students from the freshman class without regard to college or major. The course has a major focus on learning theory and application, the development of critical thinking skills as they apply to the nature of a university, the purposes and values of a university education, and a wide variety of campus issues. The practical matters include time management, essay writing, effective note taking, choosing a major, test taking, and campus resources. The goals of this course are to help students take charge of their education by developing a profound understanding of the philosophy and scope of higher education and to foster the development of a life of learning. It cannot be taken pass–fail.

Interdisciplinary Studies (I S)

1100. Tech Transition: Freshman Seminar (1:1:0). Introduces students to philosophy, history, and applications of higher education.

1200. Life Skills for Student Athletes (2:2:0). Prerequisite or corequisite: I S 1100. Designed to assist first year student athletes with a variety of life skills components including personal, athletic, academic, and career development.

1300. Professional Enterprise (3:3:0). Studies the role and functions of society, emphasizing the profession within that system.

Library Research

The Texas Tech University Library offers a one-hour credit course designed to teach students how to do research in a university library. Information comes in a variety of forms. The plethora of printed publications (e.g. books, newspapers, magazines) and resources available on-line and on micro-form can be overwhelming. That is why it is so important to learn which resources are most appropriate for research assignment needs and how to find and use them. It is also important to know how to evaluate resources. "Introduction to Library Research" has three main objectives. They are to present the physical arrangement and services of the Texas Tech University Libraries, to provide an overview of the range of resources that a university library provides, and to outline a systematic plan for using these resources for a research paper or project. Only a small number of the available resources in the Texas Tech University Library are specifically cited in the course's workbook. However, the librarians teaching this course can direct students to library resources that are appropriate to their specific needs. The course consists of six lecture sessions, five workshops, a mid-term exam, a final exam, and a practicum exam. **Contact information:** Dr. Jon R. Hufford.

Library Research (LIBR)

1100. Introduction to Library Research (1:1:0). Designed to teach students how to do basic research in a university library.

University Writing Center

The mission of the UWC is to assist writers, regardless of their status (undergraduate or graduate students and faculty), their level of proficiency, or their college, during the various stages of their writing projects; to create a supportive environment in which writers and their readers can work effectively one-to-one, both face-to-face as well as on-screen and on-line; and to train writing consultants to become knowledgeable, effective readers of and responders to texts from various disciplines.

Writing consultants will read and respond to texts at any stage of the writing process. Although writing consultants will address sentence-level issues as well as global issues involving focus, organization, and development, they do not proofread or edit documents for clients. Writing consultants will help clients learn to proofread and edit for themselves.

The University Writing Center, located in 175 English/Philosophy Complex, is open 9–5, Monday–Friday. Writers may call the center to make appointments for 30-minute sessions. Writers may bring either hard copy or texts on discs of their writing projects. Writers may access the University Writing Center through its Web pages at http://english.ttu.edu/uwc01 to submit texts electronically.

Women's Studies

The university offers an interdisciplinary minor in women's studies. Goals of the minor include helping students reinterpret traditional views of women's nature and role, training individuals for careers with a special focus on women, and encouraging research dealing with the experience of women. The program is administered by the Women's Studies Council. The minor consists of 18 hours of women's studies electives; three of the courses should be Introduction to Women's Studies (W S 2300), Feminist Thought and Theories (W S 4310), and Women's Studies Seminar (W S 4399). Courses counted toward the major will not count toward the minor.

In addition to courses with a W S prefix, courses may be selected from the following (asterisks denote courses wherein only sections pertaining to women's studies qualify for the minor): C LT *4305, ENGL *2307, *3387, *3389, HDFS *3318, *3319.

Women's Studies. (W S)

1305. Human Sexuality (3:3:0). Examination of the structural and functional traits of sexuality and how they affect well-being; covers relationships, reproduction, and life-style alternatives. (HLTH 1305)

2300. Introduction to Women's Studies (3:3:0). Basic survey of concepts and theories related to the study of women

and to the analysis of gender roles. Fulfills Core Curriculum humanities requirement.

2301. Gender Roles: Life Span Developmental Perspective (3:3:0). Introduction to gender role concepts and to the impact of gender and gender role systems on individual and family developmental processes. (HDFS 2300)

2331. The Sociology of Marriage (3:3:0). History, present status, and current problems of the marriage institution. (SOC 2331)

3306. Women in Culture and Society (3:3:0). A comparative study of sex and gender in human society; biological and cultural factors that influence women's roles, status, and their contributions to cultural institutions. (ANTH 3306)

3307. Gender Issues in Sport (3:3:0). Examination of the ways sport experiences differ for males and females emphasizing historical, social, behavioral, and physiological dimensions. (ESS 3307)

3312. Gender and Communication (3:3:0). A study of the similarities and differences of important communication variables for males and females, with practical communication applications. May be applied toward the social-behavioral science requirement for the B.A. degree. (Writing Intensive) (COMS 3334)

3321. Human Sexuality Through the Family Life Cycle (3:3:0). Human sexuality from a life cycle perspective, with an emphasis on developmental, familial, and societal factors that influence individual sexuality. (HDFS 3321)

3323. The History of Women in America (3:3:0). Examines the gender expectations from 1607 to the present that have produced for women and men entirely different experiences, strengths, and perceptions of American history. (HIST 3323)

3325. Women in the Modern World (3:3:0). Prerequisite: SOC 1301. Course treats women as a group with unique sex role socialization, work, family, and political experience. Emphasis on women in contemporary United States. (SOC 3325)

3326. Women in Politics (3:3:0). A study of female political participation in the United States, including voting, campaign activity, interest group activity, and office holding. (POLS 3326)

3331. Sociology of the Family (3:3:0). Changing family life styles, mate roles, parent–child relationships, adoption, abortion, population–control, technical–industrial impact on American family unit. (SOC 3331)

3332. Feminism and Philosophy (3:3:0). Discussion of issues involving women in moral, political, and legal philosophy, including the ethic of care, sexual harassment and discrimination, gender neutrality, and meaning of equality. (PHIL 3332)

3337. Inequality in America (3:3:0). Inequality as expressed in occupational, class, ethnic, and sexual hierarchies is examined from varying sociological perspectives. (SOC 3337)

3341. Women in European Civilization (3:3:0). What women were supposed to do; what women did, from prehistory to the vote in 1920. (HIST 3341)

3382. Women Writers (3:3:0). Significant works by women. (ENGL 3382)

4302. Psychology of Human Sexual Behavior (3:3:0). Prerequisite: PSY 2306 and junior standing. Study of human sexual behavior from a psychological viewpoint with emphasis on contemporary research methods and findings. (PSY 4300)

4305. Directed Studies (3:3:0). Prerequisite: Junior or senior standing or consent of instructor. Independent study under the guidance of the instructor.

4310. Feminist Thought and Theories (3:3:0). Prerequisite: Junior standing or consent of instructor. An examination of important theoretical writings and perspectives in women's studies, including the contributions of feminist theory and analysis to traditional disciplines. (Writing Intensive)

4325. Major Issues in U.S. Women's History (3:3:0). Prerequisite: HIST 2300 and 2301 or HIST 3323. In-depth study of the evolution of gender roles, women in literature, the suffrage movement, and modern feminism. (HIST 4325)

4327. Gender, Race, and Class in U.S. Law (3:3:0). Prerequisite: Junior standing or consent of instructor. Examines law's treatment of gender, race, and class; legal impact of struggles of women, African-Americans, and workers; meaning of liberty, citizenship, public–private spheres. (Writing Intensive) (HIST 4327)

4374. Love, Death, and Magic in Europe, 1500–1800 (3:3:0). Prerequisite: Junior standing or consent of instructor. Topics in social and cultural history. Underside of civilization, population, social structure, family and household, economic growth, and crisis. Attitudes toward love and death, popular religion and culture, witchcraft, violence, revolt. (Writing Intensive) (HIST 4374)

4399. Women's Studies Seminar (3:3:0). Prerequisite: W S 2300, junior standing, or consent of instructor. An exploration of women's experience and gender definitions from the perspective of several disciplines, including biology, psychology, anthropology, human development, communication studies, history, literature, art, sociology, political science, and economics.

Division of Outreach and Extended Studies

Professor Rosslyn Smith, *Director*

Web Site: www.dce.ttu.edu

Distance Learning. For more than 70 years Texas Tech has offered distance learning courses in which the teacher and student interact at a distance. Current distance learning opportunities include K-12 options, college credit courses, degree programs, and noncredit programs. Flexibility and convenience are achieved through a variety of learning formats that include Web-based instruction, independent study (print and online, when available), CD-ROM, two-way interactive television, video, e-mail, audio, and face-to-face. These options enable students to take both credit and non-credit courses at their convenience, choosing the appropriate time and place to meet their needs. All college credit courses meet the same academic standards as Texas Tech's campus-based courses and are often taught by the same faculty. The distance learning program offers one undergraduate and eight graduate distance learning degree programs with additional programs under development. For information about these programs or professional development opportunities, contact Outreach and Extended Studies (www.dce.ttu.edu) at (806) 742-7200. For information about specific graduate degree programs and semester-based distance learning courses, contact the individual college.

Extended Studies. Extended Studies is one of two departments in the Division of Outreach and Extended Studies. Extended Studies administers (1) print and Web-based distance learning college courses, including an external Bachelor of General Studies degree; (2) Texas Tech University Independent School District (TTUISD); and (3) noncredit professional development and community outreach offerings, conference management services, and the TTU Ropes Course. Interested students may request information about any of these programs by contacting Extended Studies at (806) 742-7200 or by visiting the office on the second floor of McClellan Hall or at 6901 Quaker Avenue.

The Bachelor of General Studies External Degree Program, offered by the College of Arts and Sciences through Extended Studies, is a challenging program for exceptional students. Students taking this Extended Studies program must meet the same academic requirements as students in the resident program. Interested students may obtain an External Degree Application from Extended Studies. The application form and a $65 evaluation fee should be submitted to Texas Tech University External Degree, Box 42191, TTU, Lubbock, TX 79409. Additionally, students should request that transcripts from all high schools and colleges attended be sent to the above address.

College-level credit courses are offered in an asynchronous print-based format and, when available, online. The self-paced design of the courses allows many students to stay on track with their degree plans when scheduling conflicts occur. Academic departments ensure that all Extended Studies college credit courses are equivalent in quality to courses taken in residence.

A Texas Tech resident student may apply up to 18 hours of course work completed at a distance through Extended Studies toward a bachelor's degree. Such a student may not enroll in or complete an Extended Studies course during the last semester or summer term before graduation unless the enrollment is approved by his or her academic dean. No more than 6 hours of the final 30 hours may be completed at a distance through Extended Studies, and none of the 6 hours may be part of the major or minor resident degree requirements. A student who has failed a course taken in residence may take that course or a degree-plan alternative through Extended Studies with approval of the academic dean.

Students must take a final exam at least 30 days before the semester ends to receive a grade for that semester. Final examinations are administered after all graded lessons have been returned to the Extended Studies office. Exceptions require instructor approval.

To enroll in an Extended Studies distance education course, the enrollment form located in the back of the *Extended Studies Catalog* or on the Web site (www.dce.ttu.edu) must be completed. All Texas Tech students must have the signature of their academic deans on the enrollment forms. An Extended Studies college-level course is $93 per semester hour for print-based instruction and $103 per semester hour for an online course. In addition, students must pay a $25 administrative fee for each course and the cost of any textbooks or materials.

University students may take elective courses through Extended Studies on a pass–fail basis under the same regulations governing resident students. Extended Studies must receive the pass–fail form, signed by the student's dean, before the first course lesson may be submitted. Once a lesson has been submitted, a student cannot switch from the pass–fail option to a letter-grade option. Students enrolling in Extended Studies college courses must adhere to the provisions outlined in the *Undergraduate Catalog* concerning the Texas Academic Skills Program (TASP) test. Contact the TASP Office in Admissions, 136 West Hall, for additional information.

Extended Studies courses are used to fulfill full-time student status on occasion. To petition use of such course hours toward full-time status (for financial aid, scholarships, health services, student services, etc.), obtain a computer printout of resident courses from the Registrar's Office, attach a receipt for Extended Studies courses, and submit documentation to the appropriate department (e.g., Financial Aid, Student Business Services) for a decision on the petition.

The following courses are available through Extended Studies:

College of Agricultural Sciences and Natural Resources

Agricultural Science (AGSC)
- 1111. The Agricultural Industry

Agricultural and Applied Economics (AAEC)
- 3303. Cooperatives in Agriculture

Plant and Soil Science (PSS)
- 1411. Principles of Horticulture
- 4331. Soil and Water Conservation
- 4335. Soil Fertility Management

College of Arts and Sciences

Anthropology (ANTH)
- 2302. Cultural Anthropology

Communication Studies (COMS)
- 2300. Public Speaking

Economics (ECO)
- 2301, 2302. Principles of Economics I, II

English (ENGL)
- 1301. Essentials of College Rhetoric
- 1302. Advanced College Rhetoric
- 2301. Literature Before 1700
- 2302. Literature After 1700
- 2311. Technical Writing
- 3326. American Novel
- 3389. Short Story

Geography (GEOG)
- 2351. Regional Geography of the World

History (HIST)
- 1300, 1301. Western Civilization I, II
- 2300. History of the United States to 1877
- 2301. History of the United States Since 1877
- 3339. The History of Baseball: A Mirror on America

Interdisciplinary Studies (IS)
- 1300. Professional Enterprise

Journalism (JOUR)
- 3350. History of American Journalism

Mass Communications (MCOM)
- 1300. Introduction to Mass Communications

Mathematics (MATH)
- 0302. Intermediate Algebra
- 1320. College Algebra
- 1330, 1331. Introductory Mathematical Analysis
- 1351, 1352. Calculus I, II
- 2300. Statistical Methods
- 2345. Introduction to Business Statistics
- 2350. Calculus III

Music History and Literature (MUHL)
2309. Heritage of Music

Music Theory (MUTH)
1300. Songwriting

Political Science (POLS)
1301. American Government, Organization
2302. American Public Policy

Psychology (PSY)
1300. General Psychology
3304. Introduction to Social Psychology
4300. Psychology of Human Sexual Behavior
4305. Abnormal Psychology
4325. Drugs, Alcohol, and Behavior

Sociology (SOC)
1320. Current Social Problems

Spanish (SPAN)
1507. Comprehensive Spanish Review–First Year

Telecommunications (TELE)
3310. Introduction to Telecommunications

College of Business Administration

Accounting (ACCT)
2300. Financial Accounting
2301. Managerial Accounting

Business Law (BLAW)
3391. Business Law I

Information Systems and Quantitative Sciences (ISQS)
3344. Introduction to Production and Operations Management

Marketing (MKT)
3350. Introduction to Marketing

College of Education

Educational Instructional Technology (EDIT)
2318. Computing and Information Technology
5318. Introduction to Small Computers in Education

College of Engineering

Engineering (ENGR)
4092. Professionalism and Ethics in Engineering

College of Human Sciences

Food and Nutrition (F&N)
1325. Nutrition, Foods, and Healthy Living
1410. Science of Nutrition

Human Development and Family Studies (HDFS)
2303. Life Span Human Development
2322. Courtship and Marriage

Restaurant, Hotel, and Institutional Management (RHIM)
2312. Introduction to Beverage Management
2322, 3322. Hospitality Control I, II
3350. Travel and Tourism I
3460. Food Systems Management

To check on the availability of these courses, please contact the Extended Studies office or visit the Extended Studies Web site (www.dce.ttu.edu).

Reserve Officer Training Corps

Web Site: www.ttu.edu/afrotc

The Department of Military Science and the Department of Aerospace Studies conduct senior division Reserve Officer Training Corps (ROTC) programs under the auspices of the College of Arts and Sciences. These programs provide students the opportunity to learn more about the United States military and its place in American society today. They also allow qualified students to pursue a program of studies and learning experiences leading to an officer's commission in either the Army or Air Force.

The first two years of courses in the Army and Air Force ROTC programs are open to all students. There is no military commitment or obligation incurred with these courses unless the student has an ROTC scholarship. The courses may be substituted for the College of Arts and Sciences health and physical fitness course requirements.

Army ROTC offers a four-year and two-year commissioning program. To enter the junior and senior level Army Advanced Course, students must have completed the freshman and sophomore level basic course or have received constructive credit by having completed either a four-year JROTC program, an Army ROTC Basic Camp, Armed Forces Basic Training, or be an honorably discharged veteran.

Air Force ROTC offers four-year and two-year commissioning and a one-year program. Four-year students competing for selection to the Air Force Professional Officer Course (POC) must have completed the freshman and sophomore level General Military Course (GMC) or have received constructive credit by having completed Junior ROTC, Civil Air Patrol, or prior active duty. Four-year cadets normally attend four-week field training. Qualified one- and two-year applicants without the GMC, JROTC, CAP, or active duty will attend five-week field training. Attendance at field training is contingent upon selection to the Professional Officer Course and is normally scheduled between the sophomore and junior years.

Detailed information about the alternative programs is available from the chair of the respective departments. Advanced Course, Professional Officers Course, and scholarship students receive a monthly allowance. In addition to completing the above requirements, students who wish to enroll in the ROTC commissioning program must be citizens of the United States, be not less than 17 years of age, and be able to complete work for a baccalaureate degree and all other requirements for commissioning prior to their 30th birthday (34th birthday with waiver for prior service). For the Air Force, students must finish their baccalaureate degree and all other requirements for commissioning by the time they are 29 1/2 years old if they are programmed for flight training; up to 34 years old with waiver if programmed for other than flight training. All ROTC program students must have a cumulative GPA of 2.0 or better, pass all military aptitude tests as required, be physically qualified, be enrolled as a full-time student, and be approved by the Professor of Military Science, or Professor of Aerospace Studies, as appropriate. Upon admission into the Advanced Course or Professional Officers Course, students sign a contract to seek a commission as a second lieutenant.

Scholarships. The departments of Army and Air Force offer competitive 4-year ROTC scholarships to selected high school seniors. Additionally, the Army offers 3- and 2-year scholarships to outstanding students selected by faculty in the program. Eligible freshmen and sophomores may be nominated for Air Force ROTC 3- or 2-year scholarships. ROTC scholarships provide textbook reimbursement, tuition, and fees as well as a monthly allowance. Starting October 1, 2002, the monthly allowance will be $250 for freshmen, $300 for sophomores, $350 for juniors, and $400 for seniors.

Commissioning. Upon receiving a commission, the Army ROTC lieutenant will enter full-time active duty service or part-time service with the U.S. Army, the Army Reserve, or the Army National Guard.

Selection for active duty is competitive. For those who wish to combine a career with part-time military service, contracts are available guaranteeing that cadets can serve all of their commitments in the Army Reserve or National Guard. Cadets may also apply for educational delays for graduate training. Air Force cadets agree to serve 4 years on active duty if in a nonflying career field, 10 years upon completion of undergraduate pilot training, or 6 years upon completion of undergraduate navigator training. All Air Force commissions are for active duty assignment only.

Military Studies Minor. A Military Studies minor is available in the College of Arts and Sciences and the College of Business Administration with the General Business major. It consists of 18 semester hours taken in Aerospace Studies, Military Science, Military History, or a combination of the choices.

Department of Aerospace Studies

Chair: Professor Col. Raymond O. Knox

Assistant Professors Maj. Ball, Maj. Bass, and Capt. Creech.

The Air Force Reserve Officer Training Corps (ROTC) curriculum is designed to educate university men and women for careers as Air Force officers and to develop quality graduates with a sense of professionalism and dedication. The ability to think and communicate effectively in their preparation for and acceptance of officer responsibilities is of utmost importance in the Department of Aerospace Studies.

The purposes and specific objectives of the Air Force ROTC program are (a) to select and motivate cadets to serve as career officers in specialty areas required by the U.S. Air Force; (b) to develop in cadets by example, discussion, and participation the character, personality, and attitudes essential for leadership; (c) to develop in cadets an interest in and understanding of the Air Force mission, organization, operations, and techniques; and (d) to provide military education that will give cadets a general background and sound foundation on which to build an officer career.

General Military Course. This course, consisting of the first two years of Air Force ROTC, examines the role of the U.S. military forces in the contemporary world with particular attention to the U.S. Air Force and its organization and mission. During the first year, students take AERS 1105 and 1106, which emphasize the organizational structure of the Air Force, missions of selected military organizations, and professionalism and officership. In the second year they study the historic development of air power (AERS 2103 and 2104).

Professional Officer Course. A student must be accepted into the POC to enroll in AERS 3305, 3306, 4303, and 4304. This course introduces the cadet in the first year to the study of Air Force leadership at the junior officer level, including its theoretical and professional aspects, and a study of military management functions, principles, and techniques. The second year is a study of national security policy and strategy. Additional subjects cover the military profession and its relationship to American society. This program devotes attention to developing communicative skills and providing leadership experiences in officer-type activities.

Entrance to the professional officer course is limited to those who are regularly enrolled in the university as full-time students; have completed the necessary screening, testing, and physical examination; and have completed the general military course or the preenrollment field training or received credit for prior military service and were selected by HQ AFROTC through a competitive screening process.

Cadets who complete the Air Force ROTC Professional Officer Course are commissioned upon graduation and enter active duty as Air Force second lieutenants.

Awards and Recognition. A number of awards, trophies, and decorations are presented each year to outstanding Air Force ROTC cadets during a suitable

military ceremony by military and civilian leaders. The awards, presented to recognize achievement and encourage competition, are given to recipients chosen by the Professor of Aerospace Studies, detachment staff, and the Cadet Staff. The President's Award is presented annually by the president of the university to the outstanding professional officer course cadet who has achieved a high academic standing and materially contributed to student life during his or her university career. The Colonel Bernard F. Fisher Leadership Awards are awarded each regular semester to the freshman, sophomore, junior, and senior cadets who have demonstrated outstanding leadership within the Cadet Corps. The recipients are rewarded with jet aircraft incentive rides.

Sabre Flight Drill Team. The Sabre Flight Drill Team is an integral part of the program, and its basic mission is to promote interest in the Air Force ROTC. Members of the flight participate regularly in color and honor guard formations and precision drill activities.

Arnold Air Society. This professional honorary service organization of selected Air Force ROTC cadets participates in a variety of service functions for the university and the community. Its objective is to create a closer and more efficient relationship within the Air Force ROTC and to promote interest in the Air Force.

Silver Wings. The Silver Wings is a national, coed, professional organization dedicated to creating proactive, knowledgeable, and effective leaders through community service and education about national defense.

Summer Training. Air Force ROTC field training is offered during the summer months at selected Air Force bases throughout the United States. Students in the four-year program participate in four weeks of field training during the summer, usually between the sophomore and junior year. The major areas of study in the field training program include junior officer training, aircraft and aircrew orientation, career orientation, survival training, base functions and Air Force environment, and physical conditioning. There are numerous program opportunities available for cadet participation on a voluntary basis within the Professional Development Training (PDT) Program. PDT is a collection of summer programs available for Air Force ROTC cadets. These programs are conducted at a variety of locations in the United States and overseas. Travel to training location is provided. Room and meals are provided during training. Cadets can expect to shadow Air Force officers to see their day-to-day responsibilities. There are numerous opportunities to interact with flying, engineering, medical, legal, and many other career fields. Flying and parachuting opportunities are available for freshman cadets.

Aerospace Studies (AERS)

FIRST YEAR

1105. The Air Force Today (1:1:1.5). A survey course that deals with the mission, organization, and function of the American military, especially as it applies to the United States Air Force.

1106. The Air Force Today (1:1:1.5). A survey course that deals with the Air Force in the contemporary world through a study of the total force structure, strategic offensive and defensive forces, general purpose forces and aerospace support forces.

SECOND YEAR

2103, 2104. Development Air Power I and II (1:1:1.5 each). A survey course designed to examine general aspects of air and space power through a historical perspective. Historical examples are provided to analyze the development of the Air Force capabilities and missions as well as to demonstrate the evolution of today's air and space power. Students also focus on basic verbal and written communication skills and USAF core values.

THIRD YEAR

3305. Air Force Leadership and Management (3:3:1.5). Prerequisite: Acceptance into the Professional Officer Course. An introductory management course emphasizing the individual as a manager in the Air Force. Individual motivation and behavioral processes, leadership, communication, and group dynamics are covered to provide a foundation for the development of the junior officer's professional skills as an Air Force leader.

3306. Air Force Leadership and Management (3:3:1.5). Prerequisite: Acceptance into the Professional Officer Course. Leadership theory and management practice are amplified through study of

management of forces in change, organizational power, managerial strategy and tactics, and leadership ethics.

FOURTH YEAR

4303, 4304. National Security Force for American Society (3:3:1.5 each). Prerequisite: Acceptance into the Professional Officer Course. AS 400 examines the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Special topics of interest focus on the military as a profession, officership, military justice, civilian control of the military, preparation for active duty, and current issues affecting military professionalism. Within this structure, continued emphasis is given to the refinement of communication skills.

Leadership Laboratory. Instruction is within the framework of an organized cadet corps with a progression of experiences designed to develop each student's leadership potential. Leadership Laboratory involves a study of Air Force customs and courtesies; drill and ceremonies; career opportunities in the Air Force; and the life and work of an Air Force junior officer. Students develop their leadership potential in a practical, supervised laboratory that typically includes field trips to Air Force installations and visits by Air Force officers in various job specialties. Students who enroll in aerospace studies courses must also enroll in a corresponding Leadership Laboratory section. Contact the Aerospace Studies Department for details.

Department of Military Science

Chair: Professor LTC David S. Reid

Assistant Professors Maj. Black, Maj. Kroeger, and Capt. Peters; ***Instructors*** MSG DeCavele and SFC Mudd.

The Army Reserve Officer Training Corps (ROTC) program of instruction is designed to prepare university students for commissioning as officers for the active Army, the Army Reserve, and the Army National Guard. This is an integral aspect of our national security because Army ROTC provides over 70 percent of the commissioned officers serving in the Army Reserve components and the active Army. It is for this reason that Army ROTC seeks quality men and women who are willing to accept the responsibilities inherent with officership. The training program is designed to teach military skills and enhance the individual's abilities in communications, leadership, and physical aptitude.

The four-year Army ROTC program is divided into the basic course (first two years) and the advanced course (the last two years). Students who are not scholarship winners incur no military obligation during the first two years.

Basic Course. Enrollment in the basic course is open to all full-time students who are U.S. citizens or immigrant aliens. During the first two years, students are trained in military leadership and problem-solving techniques that will assist them in their adjustment to the university environment. ROTC also provides a tutorial program to assist students in making the academic transition to higher education. Course content including wilderness survival skills, land navigation with a compass and topographic map, weapons marksmanship, safety, first aid, rappelling, and physical conditioning are taught both in the classroom and in outdoor settings. It also includes the structure of the Army and its relationship to American society, the customs and courtesies of the Army, leadership, values, and interpersonal communications. Eligible students may be able to test out of basic courses (MILS 1101, 1102, 2201, and 2202) and receive credit for the courses. Eligibility requirements include prior military service, completion of the leader's training course, or similar qualifications that would illustrate mastering basic skills and content. Consent of the instructor must be obtained prior to attempting to test out of a military science course.

Advanced Course. The junior and senior level courses offer an in-depth study of leadership and individual and group behavior. During the junior year the emphasis is on individual- and small-unit combat tactics, physical training, and basic soldier skills. This culminates with attendance at the National Advanced Leadership Camp

between the junior and senior years. During the senior year, students study ethics and leadership and prepare for becoming a lieutenant. In addition, they participate in planning and executing training for the other cadets. Students are required to develop skills in oral and written communications as well as techniques of instruction.

Military Science Organizations. This department sponsors the local chapter of Scabbard and Blade, the national military honor society. It also sponsors intramural athletic teams and the following organizations:

Ranger Challenge Team. This 6-member team represents the Texas Tech Army ROTC program at competitive meets. The purpose of the Ranger Challenge Team is to test the abilities of the top cadets in small-unit competition designed to promote exciting, challenging training and the opportunity to compete with the top cadets from other schools. Team members are selected competitively based on physical fitness, endurance, and proficiency in basic soldier skills.

Ranger Company. Members of the unit are afforded the opportunity to apply leadership and tactics instruction in realistic situations. In addition to weapons and tactics instruction, participation in the unit develops confidence in each member's leadership ability, teamwork, and spirit. Membership is open to all Army ROTC students who meet unit and university standards.

Grey Scouts. The club offers students the opportunity to participate in a self-paced, recreational shooting sports program that recognizes and rewards skill development from a basic performance-level Marksman rating up to a nationally recognized performance-level Distinguished Expert. Membership is open to all interested students.

Pershing Rifles. Students in this organization are trained to proficiency in dismounted drill and ceremonies. Members of the color guard routinely participate in opening ceremonies of sporting and formal events. Membership is open to all Army ROTC cadets who meet membership requirements.

Awards and Recognition. Awards and decorations are presented each semester to Military Science students in recognition of outstanding performance in academics, military science, athletics, and physical training. Awards range from cadet ribbons and certificates to organization decorations and scholarships.

Simultaneous Membership Program (SMP). Advanced course students who are eligible to enlist in either an Army Reserve or Army National Guard unit may serve in both ROTC and the reserve component simultaneously. The financial benefits generally exceed $1,100 per month.

Supplemental Course Requirements. Prior to graduation, a student seeking an Army commission must complete three professional military education courses that are in addition to the military science classes. These courses may be part of the student's degree plan and include a minimum of one course from each of the following: written or oral communication, military history, and computer literacy.

Field Training Exercises. Field Training Exercises (FTXs) are conducted during one weekend each semester. FTX includes such activities as rappelling, land navigation, marksmanship, and small-unit tactics. These weekend activities are optional for basic course students but are required for advanced course cadets and intended to reinforce skills learned in the classroom and lab environment.

Leadership Laboratory. All students enrolled in Military Science are required to enroll in the Leadership Lab 501. Students are given the opportunity during lab to practice skills learned in the classroom. Each student is assigned to a specific cadet company within the cadet battalion and is normally advanced in leadership position in accordance with class level and experience. The laboratory location will vary from the classroom to a field training area. Lab training includes such activities as rappelling, rope bridging, poncho rafting, land navigation, and first aid training. With approval of the department chairperson, those students whose schedules conflict with Leadership Lab 501 may enroll in Leadership Lab 502.

Summer Training

Leaders Training Course. Students who desire to enter the Military Science program, have no prior military service, and have only 2 to 2.5 years remaining until graduation may choose to attend a five-week ROTC Leaders Training Course at Ft. Knox, Kentucky. Satisfactory completion of this camp satisfies the requirements for the basic course. Upon completion of Leaders Training Course, students may then contract and enter the advanced course. Transportation, room and board, and an allowance are paid for the five-week period.

National Advanced Leadership Camp. All advanced course students must complete this five-week camp at Ft. Lewis, Washington, between their junior and senior years or immediately following completion of their senior year. Transportation, room and board, and an allowance are paid for the period. The program of instruction is designed to be the culmination of the military education up through and including the junior year.

Nurses Summer Training Program. Students seeking a B.S.N. and a commission in the Army Nurse Corps attend the regular National Advanced Leadership Camp. Students are then assigned to an Army hospital for four weeks. During this time, nursing students work one-on-one with an Army nurse putting into practice the clinical skills learned in college. Students participating in this program can receive college credit from the TTUHSC School of Nursing.

Special Schools. Army ROTC students may apply for summer training in Army Airborne, Air Assault, or Northern Warfare Schools. In addition, junior level students may request assignment to a Cadet Troop Leadership Training (CTLT) position for actual experience training with an active Army unit. CTLT training is normally for 3 weeks; however, a few positions may be available for extended training (5 weeks) overseas.

Military Science (MILS)

BASIC COURSE–FIRST YEAR

1101. Introduction to Military Subjects (1:1:1). Designed to acquaint students with the basic customs, courtesies, and traditions of the Army. Training is introductory in scope and includes leadership, written and oral communications, physical fitness, and general military subjects to include land navigation, rappelling, marksmanship, and weapons safety. Student's role is principally one of becoming a good follower, team member, and peer leader.

1102. Introduction to Military Subjects (1:1:1). Provides practical application of individual tactical techniques and skills. Classroom instruction and field training focuses on applied leadership and management techniques from the Army perspective.

SECOND YEAR

2201. A Study of Military Organization and Affairs (2:2:1). Prerequisite: MILS 1101 and 1102 or consent of instructor. Continues development of basic leadership and critical survival skills. Designed to build proficiency and confidence in the student's own leadership abilities. The student's role is principally one of team leader and assistant student instructor. Course places additional emphasis on physical fitness and applied management skills.

2202. Military Traditions and Basic Soldier Skills (2:2:1). Prerequisite: MILS 2201 or equivalent. Intensified leadership training, with emphasis on leadership, ethics, operations and tactics, first aid, general military subjects and physical fitness.

2203. Individual Studies in Military Subjects (2). Prerequisite: Consent of instructor. Individualized studies of military organization, affairs, traditions, and basic soldier skills.

ADVANCED COURSE–THIRD YEAR

3301. A Study of Senior-Subordinate Relations, Decision Making, and Military Skills (3:3:1). Prerequisite: Lower division military science courses or equivalent or consent of department chairperson. The course is designed to prepare the student for a successful military career as a United States Army Officer. It studies proven leadership techniques, examines the Army decision-making and orders process, provides a basic understanding of small-unit tactics, and improves the student's understanding of basic soldiering skills. Physical training is conducted three days a week and a field training exercise is conducted to complement the classroom and lab training.

3302. Practical Applications of Military Leadership and Planning (3:3:1). Prerequisite: Lower division military science course or equivalent or consent of department chairperson. The course is designed to prepare the student for a successful military career as a United States Army Officer. It expands upon the student's knowledge of small-unit tactics, leadership techniques, and basic soldiering skills. The course focuses on the employment of platoon and squad size units and practices the military application of land navigation and basic rifle marksmanship. Physical training is conducted three days a week and a field training exercise is conducted to complement the classroom and lab training.

3303. Individual Studies in Military Leadership and Planning (3). Prerequisite: Consent of instructor. Individualized studies of military leadership and planning.

FOURTH YEAR

4301. Military Leadership and Ethics (3:3:1). Prerequisite: MILS 3301 and 3302. Studies military leadership, ethics, and professionalism in depth by seminar, case reviews, and practical applications. Also addresses operational planning, training, and military correspondence.

4302. Professional Military Subjects (3:3:1). Prerequisite: MILS 3301 and 3302. Studies contemporary subjects of interest to the professional officer including U.S. military law and the Army personnel management system. Also covers the Army supply system, financial planning, and the professional and social environment of the military installation.

University Honors College

Professor Gary M. Bell, *Dean*

Web Site: www.honr.ttu.edu

Texas Tech offers a special program for highly motivated and academically talented students who want to maximize their college education. The University Honors College (also known as Honors Studies) is designed to provide such students with a unique and broadly integrated intellectual experience that is complementary to virtually every major and career path. Students accepted into the Honors College are also enrolled concurrently in the college that houses their major area of study. Enrollment in the Honors College provides access to some financial support for eligible students through merit-based and special Honors scholarships, provides an opportunity to interact with similarly motivated students, and provides a number of special benefits at the university. Among these are early registration, an opportunity to live in special residence facilities, extended library privileges, a variety of enriching co-curricular activities, and closer contact with the faculty. In addition, Honors students are encouraged to engage in the greatest possible range of educational experiences, such as the Honors Undergraduate Research program, which enables students to take part in undergraduate research with faculty in many disciplines; international study, which enhances marketability and provides opportunities for personal growth and acquisition of cultural knowledge and language skills; and competition for national scholarships such as Goldwater, Truman, Udall, Marshall, and Rhodes, which assists students in clarifying educational and career goals as well as potentially providing substantial scholarship assistance.

At the heart of the University Honors College experience is a series of departmental classes, taught by some of the more talented professors on campus. These courses, which include those fulfilling both Core Curriculum and specific major or minor requirements, are generally limited to 25 students, are modestly faster paced, much more interactive, more writing intensive, and more personalized than their regular-section counterparts. The program also offers a variety of seminars on special topics that explore, in depth, an area in a specific subject. An Honors specialization, the Honors Program in Management, is offered through collaboration between the area of Management in the College of Business Administration and the Honors College and leads to a B.B.A. degree. In addition, the 150 Hour Honors Program in Management allows students to pursue an Honors specialization and to earn both a B.B.A. and an M.B.A. degree. Finally, the Honors College encourages interdisciplinary work and presents a range of courses and programs that offer interdisciplinary opportunities. The Honors College emphasis on breadth of education extends to a multidisciplinary Bachelor of Arts degree in Natural History and Humanities. This degree is founded upon a broadly based, multidisciplinary curriculum designed to enable a student to gain a working knowledge of the natural sciences, philosophy, and the humanities. It is unique in that it emphasizes the application of science knowledge to a creative endeavor. For more information see the Natural History and Humanities section below. Breadth of education, development of critical thinking and methodological skills, and the encouragement of a spirit of intellectual independence are the ultimate goals of the University Honors College at Texas Tech.

Those who graduate from the Honors College after acquiring at least 24 Honors credit hours (including two seminars), graduate with “Honors,” a distinction noted on diplomas, transcripts, and by special recognition at graduation ceremonies. Those who complete, in addition, a senior thesis consisting of 6 additional hours graduate with “Highest Honors.”

To be considered for admission to the University Honors College, either as an entering freshman or as a continuing Texas Tech or transfer student, one must make special application to the University Honors College. Threshold application require-

ments for incoming freshmen are a composite SAT1 score of 1200 or above, or a composite ACT score of 28 or better, or graduation in the top 10 percent of the high school class. For continuing Texas Tech or transfer students, eligibility to apply is based on a college cumulative GPA of 3.4 or better. The college will also consider for admission students who do not meet the above criteria, but who can provide a compelling reason why they should be part of the program. Admission is competitive and is contingent upon the pool of applicants for any given year. Admission deadlines and information are posted on the Honors Web site.

Once accepted into the Honors College, a student must maintain a minimum 3.25 cumulative GPA while at Texas Tech in order to continue participation. For specific requirements for Honors students, see the *Honors Student Handbook,* available in the Honors College office.

Contact information: Honors College, 103 Holden Hall, Texas Tech University, Box 41017, Lubbock, TX, 79409-1017, (806) 742-1828, e-mail honors@ttu.edu, or www.honr.ttu.edu.

Honors (HONS)

2115. Honors Integrated Science Laboratory I (1:0:2). Corequisite: HONS 2305. A lab designed to supplement HONS 2305.

2116. Honors Integrated Science Laboratory II (1:0:2). Corequisite: HONS 2306. A lab designed to supplement HONS 2306.

2305. Honors Integrated Science I (3:3:0). Corequisite: HONS 2115. An integrated science course introducing students, in an interdisciplinary way, to physics and chemistry. Satisfies Core Curriculum natural science requirement. Not open to science majors. Part of a two-semester integrated presentation.

2306. Honors Integrated Science II (3:3:0). Corequisite: HONS 2116. An integrated course introducing students to biology and geosciences. Satisfies Core Curriculum natural science requirement. Not open to science majors. Part of a two-semester integrated presentation.

3115. Honors Integrated Science Laboratory III (1:0:3). Corequisite: HONS 3305. A lab designed to supplement HONS 3305.

3116. Honors Integrated Science Laboratory IV (1:0:3). Corequisite: HONS 3306. A lab designed to supplement HONS 3306.

3300. Individual Honors Research (3). Prerequisite: Enrollment in the Honors College and approval from the Honors Dean. Contents will vary to meet the needs of students. May be repeated once for credit. Independent work under the individual guidance of a faculty member, who must be either a member of the graduate faculty or approved by the Honors Dean.

3301. Honors Seminar in Humanities (3:3:0). Prerequisite: Enrollment in the Honors College or approval from the Honors Dean. An in-depth study of major literary works emphasizing the interrelationships of literature and philosophy. Satisfies the Core Curriculum humanities requirement. May be repeated once for credit with permission of the Honors Dean.

3302. Honors Seminar in Sciences (3:3:0). Prerequisite: Enrollment in the Honors College or approval from the Honors Dean. Considers the developments and applications of modern science as they affect living today, directed toward cultivating sound individual judgments in a technological society. Satisfies the Core Curriculum technology and applied science requirement. May be repeated once for credit with permission of the Honors Dean.

3303. Honors Seminar in Social Sciences (3:3:0). Prerequisite: Enrollment in the Honors College or approval from the Honors Dean. Study of techniques, principles, and methodology of the social sciences as applied to a central topic to demonstrate the interrelationships of the various disciplines. Satisfies the Core Curriculum individual or group behavior requirement. May be repeated once for credit with permission of the Honors Dean.

3304. Honors Seminar in Fine Arts (3:3:0). Prerequisite: Enrollment in the Honors College or approval from the Honors Dean. Study of the history, development, and terminology of the fine arts, emphasizing functional relationships between disciplines in an effort to provide bases for aesthetic evaluation of specific artistic entities. Satisfies the Core Curriculum visual and performing arts requirement. May be repeated once for credit with permission of the Honors Dean.

3305. Honors Integrated Science III (3:3:0). Prerequisite: HONS 2305, 2306; corequisite: HONS 3115. An integrated study of ecology includes further development of the principles of ecology introduced in HONS 2306. Topics such as composition, diversity, and structure of

ecological communities as well as some emphasis on the integration of ecology with other science and with societal and historical issues will be discussed. Content will include current issues including applied environmental ethics.

3306. Honors Integrated Science IV (3:3:0). Prerequisite: HONS 2305, 2306; corequisite: HONS 3116. An integrated study of evolution building on the principles of evolution covered in the first year of the integrated science sequence. Topics will include current evolutionary theory, the history of life, human evolution, and genetics as well as some emphasis on the integration of theory with societal and historical issues.

4300. Individual Honors Research (3). Prerequisite: Enrollment in the Honors College and approval from the Honors Dean. Contents will vary to meet the needs of students. May be repeated once for credit. Independent work under the individual guidance of a faculty member, who must be either a member of the graduate faculty or approved by the Honors Dean.

Natural History and Humanities. The Natural History and Humanities degree administered by the Honors College is a broadly based undergraduate liberal arts degree designed to enable a student to gain working knowledge of the natural sciences, philosophy, and the humanities. It is unique in that it emphasizes the application of science knowledge to a creative endeavor. The knowledge and skills obtained through this degree will enable the student to pursue a number of post-graduate options including graduate school, science journalism, nature writing, nature photography, museum science, documentaries, and other careers that require a merging of science and humanities disciplines.

A true interdisciplinary degree, the natural history and humanities curriculum is designed to ultimately direct each student toward an individual course of study. Course work is common to all students in the first two years of the degree plan in order to give students a broad understanding of the sciences (chemistry, physics, biology, geosciences) and how they integrate as well as a sampling of several different creative paths. The foundation of the freshman and sophomore years is 4 semesters of Honors Integrated Science and 3 semesters of special Natural History and Humanities seminars designed to verse the student in the philosophy, history, and theories and practices of natural history and the humanities. At the start of the junior year the student will, under the guidance of the director, begin to customize a course of study that reflects a specific career direction. This ensures that sound working knowledge can be obtained in a particular field by the time of graduation. In addition to selecting a field of study during the junior and senior years, students will also be guided toward the production of a senior portfolio. Students are required to spend two Intersession semesters during which they will work on the production of this portfolio. These Intersession experiences will be under guidance of the director as well as a faculty mentor in the field of the student's choice. Intersession experiences may include, but are not limited to, study under a faculty mentor at other research institutions. Students will also be encouraged to seek out summer internships in the field of their choice beginning in the summer of their junior year.

Contact information: Dr. Susan Tomlinson, University Honors College, Box 41017, Lubbock, TX, 79409-1017, (806) 742-1828, e-mail honors@ttu.edu.

Natural History and Humanities (NHH)

1301. Natural History and Humanities Seminar I: The Natural History and Humanities Tradition (3:3:0). An introductory course to the natural history and humanities degree program. Includes academic objectives, opportunities, and resources but focuses primarily on the historic tradition of the relationship between the sciences and humanities.

1302. Natural History and Humanities Seminar II: Personal Development of the Natural History and Humanities Tradition (3:3:0). Prerequisite: NHH 1301. A reading and writing intensive course with special emphasis on learning to develop a personal approach to the natural history and humanities tradition. Outside assignments and projects are required.

2301. Natural History and Humanities Seminar III: An Introduction to Theories and Practices in Natural History and Humanities (3:3:0).

Prerequisite: NHH 1302. Modes of combining science with the creative process with an emphasis on helping the student define a creative direction. May include guest lectures from persons working as interpreters of science and nature. Outside assignments and projects are required.

3300. Research Methods I (3). An introduction to the methods of work relating to the student's planned course of study during the extramural fieldwork experience for NHH 3350. Curriculum will be designed to meet the student's needs as they relate to the project to be completed during the Field Methods/Artist in Residence course and may include instruction on library research methods, field methods, photographic methods, etc.

3350. Field Methods/Artist in Residence I (3). Prerequisite: NHH 3300. An introductory, individual course of intensive, directed study in professional methods designed to expose the student to various field/laboratory experiences and how the planned creative endeavor relates to that experience. Portfolio projects required.

4300. Research Methods II (3). Prerequisite: NHH 3300. A continuation of NHH 3300.

4350. Field Methods/Artist in Residence II (3). Prerequisite: NHH 4300. A continuation of NHH 3350.

College of Agricultural Sciences and Natural Resources

Professor John R. Abernathy, *Dean*

Web Site: www.casnr.ttu.edu

The College of Agricultural Sciences and Natural Resources is dedicated to providing programs of excellence in teaching, research, and public service. These educational programs are designed to qualify the student for the dynamic agricultural and renewable natural resources industry—an industry that encompasses five closely related segments: (1) producing agricultural products; (2) supplying agricultural chemicals, feed, seed, and other production resources; (3) processing, storing, distributing, and other marketing functions for agricultural products; (4) planning and managing programs for renewable natural resources; and (5) providing technical assistance, financing, services, education, research, and communications in all sectors of the food, fiber, and natural resource complex.

As the size and complexity of farms and ranches continue to increase, more technology and management information is needed by students who plan careers as producers of farm and ranch products. Through proper selection of courses, opportunity is provided for training in the business aspects of agriculture in several subject-matter departments. Most students interested in scientific aspects of the industry will receive more training in mathematics, computers, and the basic sciences, followed by well-planned courses in agricultural technology. Students interested in natural resource use will receive training in the ecology and conservation of natural resources and the various facets of environmental quality. Food safety and quality are covered in these courses. Microcomputer laboratories allow students to use the latest information-processing technology for class exercises and research projects.

The College of Agricultural Sciences and Natural Resources provides excellent teaching, research, and public service facilities. These include a large number of well-equipped laboratories, design studios, and classrooms. A research-teaching land site adjacent to the campus, a livestock arena, a meat laboratory, and a campus greenhouse-experimental garden complex are used as teaching laboratories as well as for research in plant and soil science, animal science, integrated pest management, horticulture, and range management. The agricultural field laboratories in northeast Lubbock County include the Burnett Center for Beef Cattle Research and Instruction, a 980-acre experimental farm, and facilities for teaching and research in swine, horses, sheep, feed manufacturing, and crop production. Laboratory facilities also include a 15,822-acre unit at the Texas Tech University Center at Amarillo. Field trips and participation in intercollegiate contests are also a part of the training program.

The research program in agriculture and renewable natural resources complements the teaching mission of the college by providing the information and knowledge necessary to keep faculty members current in their respective fields. Research projects provide essential training for graduate students and advanced undergraduates as well as solutions to problems facing the industry. Various forms of public service are provided by the College of Agricultural Sciences and Natural Resources through numerous short courses, conferences, and workshops conducted throughout the year.

The College of Agricultural Sciences and Natural Resources has six departments that offer a number of degree programs, minors, and areas of specialization. The programs for each department are described on the following pages along with listings of courses offered.

Core Curriculum Requirements. The university has established Core Curriculum requirements for all students. These requirements will ensure breadth in each academic program.

Students may consult their academic dean regarding specific Core Curriculum requirements; however, these requirements are incorporated in each major in the college. Students may find a listing of Core Curriculum requirements in the Academic Information section of this catalog.

Academic Counseling. Each student in the college is assigned an academic advisor. Students who have not selected a major will be assigned an academic counselor by the Dean of the College of Agricultural Sciences and Natural Resources.

Selecting a Major. If students know which course of study they wish to pursue, they should select that major field when they initially enroll. Students who are undecided about a major will be classified as agriculture-undecided but will be assigned to a department and an academic advisor. During the first semester, several introductory courses in agricultural sciences should be selected to assist in determining or confirming the preferred area for a major. Students who enter as freshmen should select a major by the end of their fourth semester. Transfer students will be required to make a major selection within two semesters after entering Texas Tech. Some departments offer the opportunity for a dual major program. Students interested in such a program should contact the chairperson of the specific departments involved.

Selecting a Minor. Minors are available in all departments for students majoring in the College of Agricultural Sciences and Natural Resources as well as those majoring in other colleges within the university. Minors are offered in the following areas: Agribusiness Management, Agricultural Leadership, Animal Science, Food Technology, Landscape Studies, Agronomy, Horticulture, Integrated Pest Management, and Natural Resource Management. A minimum of 18 hours is required for a minor. At least 9 hours in a minor must consist of upper division courses. The maximum number of transfer hours in any minor is 9. Courses in a major but outside a student's department may be used in the minor. A student must earn a grade of C or better in each course counted toward a minor. Students are encouraged to seek early advisement from the chair of the minor department in order to plan for courses that will best meet their educational and career objectives.

General Standards and Requirements. Minimum standards and requirements of the College of Agricultural Sciences and Natural Resources are the same as those for the university, with certain additions. Students are encouraged to read the Academic Information section of this catalog.

Other requirements include the following:

1. Students must file an application for Senior Audit with the Dean's office before or during the semester in which they are enrolled for their 90th semester hour. Substitution and elective sheets must also be filed prior to or during the semester the students are enrolled for their 90th semester hour.

2. Transfer students who plan to request the use of provisional elective transfer courses as a substitution for required courses must make such a request by the end of their first semester in the College of Agricultural Sciences and Natural Resources.

3. Any deviation from the approved curriculum for a particular degree must have prior approval from the chairperson of the department and the Dean of the College of Agricultural Sciences and Natural Resources.

New Students. All new students should carefully read the sections on Admissions and Registration. Entering freshmen are encouraged to take examinations in English, mathematics, and similar courses for credit by examination. These are usually given prior to the beginning of the fall semester. Transfer students should also read the subsections on "Admission of Transfer Students" and "Transfer of Credits from Other Colleges and Universities."

Graduate Study. Programs are available through the college leading to the degree of Doctor of Philosophy in Agricultural and Applied Economics, Agronomy, Animal Science, Fisheries Science, Range Science, and Wildlife Science. The Master of Science degree is also offered with majors in Agricultural and Applied Economics, Agricultural Education, Animal Science, Crop Science, Entomology, Fisheries Science, Food Technology, Horticulture, Range Science, Soil Science, and Wildlife Science. The Master of Landscape Architecture degree is available through the Department

of Landscape Architecture. The interdisciplinary Master of Agriculture degree is offered through the college with emphasis in several departments. The college also cooperates with the College of Business Administration in the Master of Business Administration degree with a concentration in agricultural business management. Details concerning these programs are in the *Graduate Catalog.*

Courses

Agricultural Science (AGSC)

1111. The Agricultural Industry (1:1:0). An overview of agriculture with special topics including orientation, career guidance, and current trends. F, S. [AGRI 1131]

2300. Computers in Agriculture (3:3:0). An introduction to use of computer systems and networks in agricultural applications. Includes networks, spreadsheets, word processing, and data base software. F, S, SSII. [AGRI 1309]

2301. Computers in Agriculture II (3:3:0). Prerequisite: AGSC 2300 or satisfactory performance on placement exam. Introduction to data base management applications, extended application of spreadsheet software, and networked systems. F, S.

3301. Agricultural Leadership Principles (3:3:0). Leadership principles with emphasis on styles of leadership, types of management, group dynamics, managing change, and the adoption process as applied to agriculture and agribusiness.

4300. Research Methodology in Agricultural Sciences and Natural Resources (3:3:0). Prerequisite: Junior or senior standing. Introduction to conceptual issues for organizing, planning, designing, and conducting research in agricultural disciplines.

Department of Agricultural and Applied Economics

Chair: Professor Don E. Ethridge

Professor Segarra; ***Associate Professors*** Elam, Johnson, Misra, and Ramirez; ***Assistant Professors*** Lansford, Lyford, Malaga, Mohanty, and Willis; ***Instructor*** Middleton; ***Adjunct Faculty*** M. D. Ethridge, Harman, Phillips, and Smith.

This department supervises the following degree programs: AGRIBUSINESS, *Bachelor of Science;* AGRICULTURAL AND APPLIED ECONOMICS, *Bachelor of Science, Master of Science*, and *Doctor of Philosophy*.

Agricultural and applied economics applies economic methods to contemporary problems in production, distribution, and consumption of commodities and resources. This field is concerned with decision making in the public sector and in firms that provide materials and services, credit, processing, marketing and distribution of products, as well as analysis of economic behavior in the food and fiber industries, including the effects of government policies.

The major objective of the department is to teach students to think analytically and base decisions on economic principles. Students develop skills in economics, mathematics, statistics, and communication. Training in policy, price analysis, and marketing is also provided. The department prepares graduates to manage business and financial firms, farms, ranches, and related organizations and direct land and property development and real estate activities.

The B.S. degree in Agricultural and Applied Economics provides a strong foundation in economics and mathematics and emphasizes writing and communication skills. There is enough flexibility in the program to allow students to earn a minor in areas such as management and finance. Minors are also available in other departments in the College of Agricultural Sciences and Natural Resources as well as in economics and other fields. The department offers a B.S. degree in Agribusiness in conjunction with the College of Business Administration. This degree program combines the core courses in agricultural and applied economics with those in business administration to provide a strong foundation for careers in businesses related to agriculture. In addition, a dual degree is offered in combination with the College of Business Administration. This program leads to a B.S. in Agricultural and Applied Economics and a B.B.A. in General Business. Students may also prepare to study toward advanced

degrees in economics, law, business administration, and other related areas.

The department's programs also emphasize international economics, particularly with respect to trade in commodities. Students completing these plans of study will be better educated for the world economy of the future and will have opportunities for a wide range of careers. Local, regional, and national processing and marketing firms offer many applied economists their first positions. Others become self-employed business operators or managers. State Cooperative Extension Services, financial institutions, the United States Department of Agriculture, utility companies, and many state and government agencies also hire graduates.

A prestigious honors program, which includes a select set of analytical courses—AGSC 4300 and AAEC 4301, 4302, 4312, and 4315—is available for students who demonstrate high academic achievement. The honors program may be elected with any emphasis and, upon successful completion, will be designated on the student's academic transcript. A 3.00 overall GPA and 3.25 in agricultural and applied economics courses at the end of the junior year (89 hours) is required for eligibility. Prerequisite courses are ECO 3311 and ENGL 3365. Students electing the honors program in agricultural and applied economics may also participate in the University Honors College.

The department offers a minor in agribusiness management for nondepartmental majors. The agribusiness minor consists of 18 hours of course work including AAEC 2305, 9 hours from 3000-level AAEC courses, and 6 hours from 4000-level AAEC courses. Students must satisfy course prerequisites before registering for courses.

Bachelor of Science in Agricultural and Applied Economics

FIRST YEAR

Fall		*Spring*	
AGSC 1111, Agricultural Industry	1	*Lab. Science	4
*Lab. Science	4	ENGL 1302, Adv. Coll. Rhetoric	3
ENGL 1301, Ess. Coll. Rhetoric	3	MATH 1331, Intro. Math. Anal. II	3
MATH 1330, Intro. Math. Anal. I	3	AAEC 2305, Fund. of Ag. & Appl. Eco.	3
POLS 1301, Amer. Govt., Org.	3	AGSC 2301, Comp. in Agr. II	3
Ag. Elective	3	TOTAL	16
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
ECO 2302, Prin. of Economics II	3	AAEC 3301, Agribus. Marketing	3
POLS 2302, Amer. Pub. Pol.	3	AAEC 3302, Agribus. Finance	3
ENGL 2311, Technical Writing	3	HIST 2301, Hist. of U.S. Since 1877	3
HIST 2300, Hist. of U.S. to 1877	3	COMS 2300, Public Speaking	3
†Hum., Multicult., or Vis. & Perf. Arts	3	†Hum., Multicult., or Vis. & Perf. Arts	3
Elective	3	Elective	3
TOTAL	18	TOTAL	18

THIRD YEAR

Fall		*Spring*	
AAEC 3315, Ag. Price Theory	3	ACCT 2301, Elem. Acct. II	3
AAEC 3304, Farm and Ranch Bus. Mgt.	3	AAEC 3316, Prod. Eco.	3
ACCT 2300, Elem. Acct. I	3	AAEC 3401, Ag. Stat.	4
ECO 3311, Int. Macroeconomics	3	Electives	6
Electives	6	TOTAL	16
TOTAL	18		

FOURTH YEAR

Fall		*Spring*	
AGSC 4300, Research Methodology	3	AAEC 4100, Seminar	1
**AAEC Group 1	6	AAEC 4301, Prbs. Appl. Eco. Anal.	3
AAEC 4312, Appl. Math. Econ.	3	**AAEC Group 2	6
or AAEC 4302, Stat. Meth.		Elective	6
Elective	3	TOTAL	16
TOTAL	15		

Departmental CORE Policy: Includes AAEC 3315, 3316, and 3401. All students expecting to graduate on schedule are strongly advised to complete the CORE with grades of C or better before they reach 90 hours of completed course work. Students failing to do so may delay their graduation date.
Minimum hours required for graduation—134. (Students must fulfill the university multicultural requirement.)

*Laboratory Science—8 hours must be from PSS 1411, 2401, ATMO 1300-1100, BIOL 1401, 1402, CHEM, or PHYS. Agriculture electives must be selected from PSS 1321, RWFM 2301, 2302, or ANSC 1401.
†Humanities, Multicultural, and Visual and Performing Arts: There are three university Core Curriculum requirements for these subjects. The requirements may be met individually or by completing a course that satisfies more than one. A list of approved courses is available from the Dean's office.
**AAEC GROUPS: Select 2 courses from Group 1—AAEC 4305, 4306, 4313, and 4320; select 2 courses from Group 2—AAEC 4303, 4315, 4316, and 4317.
All courses in AAEC and MATH must be completed with a grade of C or better.
Electives: The degree program consists of 27 elective hours including 9 hours of required electives (chosen from upper-level B A, ECO, or AAEC courses not required elsewhere) and 18 hours of free electives (chosen from any other courses not used elsewhere in the degree program). Suggested courses for students interested in specific areas are as follows:
Agricultural Business Management: Choose electives from AAEC 3303, 4317, and appropriate upper level courses in BA or ECO, such as FIN 3320, 3323; MGT 3370; MKT 3350; BLAW; ECO 3320.
Agricultural Production (Farm or Ranch) Management: Select electives from AAEC 4317 and appropriate courses in PSS, ANSC, RWFM, and BLAW 3393.
Agricultural Finance: Choose electives from AAEC 4303, 4316, 4317 and appropriate courses in BA or ECO such as ACCT 3304, 3305, 3306, 3315; FIN 3320, 3323, 4323; MGT, BLAW.
Real Estate: Choose electives from AAEC 4303, 4313, 4316, appropriate courses in CASNR, and appropriate courses in BA such as FIN 3332, 3334, 4333, 4336.
Students may earn a minor by using electives carefully.

Bachelor of Science in Agribusiness

A Bachelor of Science Degree in Agribusiness is a joint program administered by the College of Agricultural Sciences and Natural Resources and the College of Business Administration.

FIRST YEAR

Fall		*Spring*	
AGSC 1111, Agricultural Industry	1	*Lab. Science	4
*Lab. Science	4	ENGL 1302, Adv. Coll. Rhetoric	3
ENGL 1301, Ess. Coll. Rhetoric	3	MATH 1331, Intro. Math. Anal. II	3
MATH 1330, Intro. Math. Anal. I	3	AAEC 2305, Fund. of Ag. & Appl. Eco.	3
POLS 1301, Amer. Govt., Org.	3	***Ag. Elective	3
***Ag. Elective	3	TOTAL	16
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
ECO 2302, Prin. of Eco. II (Macro)	3	ECO 3311, Int. Macroeconomics	3
AGSC 2301, Computers in Ag. II	3	AAEC 3401, Ag. Stat.	4
HIST 2300, Hist. of U.S. to 1877	3	HIST 2301, Hist. of U.S. since 1877	3
ACCT 2300, Elem. Acct. I	3	ACCT 2301, Elem. Acct. II	3
†Sophomore English	3	**Visual & Performing Arts	3
POLS 2302, Amer. Publ. Pol.	3	TOTAL	16
TOTAL	18		

THIRD YEAR

Fall		*Spring*	
AAEC 3315, Ag. Price Theory		AAEC 3316, Prod. Eco.	3
or ECO 3312, Inter. Eco. Theory	3	†††AGBS Group 2	3
FIN 3320, Corp. Finance I	3	FIN 3323, Prin. of Mo., Bank., and Cr.	3
ISQS 3344, Intro. to Prod. Op. Mgt.	3	MGT 3370, Org. and Mgt.	3
MGT 3373, Mgt. Comm.	3	AAEC 4316, Ag. Fin. Anal.	3
MKT 3350, Intro. to Mkt.	3	TOTAL	15
BLAW 3391, Bus, Law I	3		
TOTAL	18		

FOURTH YEAR

Fall		*Spring*	
AGSC 4300, Research Methodology	3	AAEC 4100, Seminar	1
†††AGBS Group 1	3	AAEC 4301, Prbs. Appl. Eco. Anal.	3
AAEC 4302, Stat. Meth.	3	MGT 4380, Strategic Mgt.	3
AAEC 4315, Agribus. Mgt.	3	MGT 4375, Inter. Mgt.	3
MKT 4358, International Mkt.	3	FIN 4328, Inter. Finance	3
Electives	2	††BA Course	3
TOTAL	17	TOTAL	16

Departmental CORE Policy: Includes AAEC 3315, 3316, and 3401. All students expecting to graduate on schedule are strongly advised to complete the CORE with grades of C or better before they reach 90 hours of completed course work. Students failing to do so may delay their graduation date.

All courses in AAEC, MATH, ECO, ENGL, B A and AGSC 2301 must be completed with a grade of C or better.
*Laboratory Science—at least 4 of the 8 hours of Natural Laboratory Science must be selected from PSS 2401 and 1411; the remaining hours must be selected from university Core Curriculum requirements.
**Choose from university Core Curriculum requirements.
***Ag. Electives must be selected from PSS 1321, RWFM 2301, 2302, or ANSC 1401.
†Sophomore English—Choose one course from ENGL 2305, 2306, 2307, 2308, or 2351.
††B A Courses—Select one additional upper level course in ACCT, FIN, ISQS, MGT, or MKT.
†††AGBS Groups: Select 1 course from Group 1—AAEC 4305, 4306, or 4313; select 1 course from Group 2—AAEC 4303, or 4317.
Minimum hours required for graduation–133. (Students will fulfill the university multicultural requirement by completing FIN 4328, MGT 4375, or MKT 4358.)
To advance to the upper division of the business administration program, satisfactory completion of the first and second year courses and a cumulative 2.5 GPA at Texas Tech is required.

Dual-Degree Curriculum, Bachelor of Science in Agricultural and Applied Economics and Bachelor of Business Administration. This unique and progressive program leads to two undergraduate degrees—Bachelor of Science in Agricultural and Applied Economics and Bachelor of Business Administration in General Business. Students completing this program will be better educated for the world economy of the future and will have enhanced marketability for a wide range of careers. Students will also be prepared to enter the Master of Business Administration program with a concentration in agricultural business management if desired. The following curriculum provides a common body of knowledge for students in agricultural and applied economics and business administration.

FIRST YEAR

Fall		*Spring*	
AGSC 1111, Agricultural Industry	1	*Lab. Science	4
*Lab. Science	4	ENGL 1302, Adv. Coll. Rhetoric	3
ENGL 1301, Ess. Coll. Rhetoric	3	MATH 1331, Intro. Math. Anal. II	3
MATH 1330, Intro. Math. Anal. I	3	POLS 2302, Amer. Public Pol.	3
POLS 1301, Amer. Govt., Org.	3	AGSC 2301, Comp. in Agr. II	3
††Ag. Elective	3	TOTAL	16
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
ECO 2302, Prin. of Economics II	3	AAEC 3301, Agribus. Marketing	3
AGSC 3301, Ag. Lead. Princ.	3	AAEC 3401, Ag. Statistics	4
ENGL 2311, Technical Writing	3	HIST 2301, Hist. of U.S. Since 1877	3
ACCT 2300, Elementary Acct. I	3	ACCT 2301, Elem. Acct. II	3
AAEC 2305, Fund. of Ag. & Appl. Eco.	3	**Sophomore English	3
HIST 2300, Hist. of U.S. to 1877	3	Electives	2
TOTAL	18	TOTAL	18

SUMMER

FIN 3320, Corp. Finance I	3	MKT 3350, Intro. to Marketing	3
MGT 3373, Managerial Comm.	3	MGT 3370, Organ. and Mgt.	3
TOTAL	6	TOTAL	6

THIRD YEAR

Fall		*Spring*	
AAEC 4316, Ag. Fin. Anal.	3	AAEC 3304, Farm & Ranch Bus. Mgt.	3
AAEC 3315, Ag. Price Theory	3	AAEC 3316, Prod. Eco.	3
ECO 3311, Int. Macroeconomics	3	FIN 4328, International Fin.	3
BLAW 3391, Business Law I	3	MKT 4358, International Mkt.	3
FIN 3323, Prin. of Mon. Bank, Cre.	3	ISQS 3344, Intro. to Prod. and Oper.	3
MGT 4375, International Mgt.	3	Upper Level BA Elective	3
TOTAL	18	TOTAL	18

FOURTH YEAR

Fall		*Spring*	
AGSC 4300, Research Methodology	3	AAEC 4100, Seminar	1
†††AGGB Group	12	AAEC 4301, Prbs. Appl. Eco. Anal.	3
TOTAL	15	AAEC 4302, Stat. Meth.	3
		†††AGGB Group	3
		MGT 4380, Admin. Policy	3
		†Visual & Performing Arts	3
		TOTAL	16

Departmental CORE Policy: Includes AAEC 3315, 3316, and 3401. All students expecting to graduate on schedule are strongly advised to complete the CORE with grades of C or better before they reach 90 hours of completed course

work. Students failing to do so may delay their graduation date.
Both degrees may be granted on completion of all 148 hours.
See the College of Business Administration section of the catalog for information on lower division requirements.
Students interested in pursuing a BBA degree in majors other than general business should visit with a COBA advisor about additional course requirements.
*Select at least 4 hours of Lab. Science courses from PSS and the other 4 hours from Core Curriculum requirements.
**Sophomore English must be from ENGL 2305, 2306, 2307, 2308, or 2351.
†Choose from university Core Curriculum requirements.
All courses in AAEC, MATH, ECO, ENGL, B A, and AGSC 2301 must be completed with a grade of C or better.
††Ag. Electives must be selected from PSS 1321, RWFM 2301, 2302, or ANSC 1401.
†††AGGB Group: Select 5 courses from AAEC 4303, 4305, 4306, 4312, 4313, 4315, and 4317.
To advance to the upper division of the business administration program, satisfactory completion of the first and second year courses and a cumulative 2.5 GPA at Texas Tech is required.

Agricultural and Applied Economics (AAEC)

2305. Fundamentals of Agricultural and Applied Economics (3:3:0). Fundamental economic principles and their application to problems and issues in the food, fiber, and natural resource sectors of the economy. F, S, SS. [AGRI 2317]

3301. Agribusiness Marketing (3:2:3). Prerequisite: AAEC 2305 and ENGL 1302. Marketing of raw materials and processed products from the management perspective. Market structure, conduct, performance. Marketing channels. F, S. (Writing Intensive) [AGRI 1325]

3302. Agribusiness Finance (3:3:0). Prerequisite: AAEC 2305 and MATH 1320 or 1330. Basic principles of finance emphasizing the mathematics of finance, credit, and financial analysis. F, S.

3303. Cooperatives (3:3:0). Prerequisite: AAEC 3301. Organization and operation of agricultural and other cooperatives. S or by correspondence. (Writing Intensive)

3304. Farm and Ranch Business Management (3:2:3). Prerequisite: AAEC 2305 or equivalent. Organization and management of the individual small business including farms, ranches, input suppliers, commodity processors, etc. F, S.

3305. Introduction to Sales (3:3:0). Prerequisite: AAEC 2305 or equivalent. Principles and methods used in professional selling for the business environment. Includes concepts of human behavior and professional selling techniques. F.

3315. Agricultural Price Theory (3:3:0). Prerequisite: AAEC 2305, MATH 1331, and junior standing. Basic economic principles with applications to agricultural pricing problems and resource allocations. F, S, SS.

3316. Production Economics (3:3:0). Prerequisite: AAEC 3315. Economic theory and tools for analyzing problems facing the firm. Decision-making process using production functions, costs, linear programming, and time considerations. F, S, SS.

3401. Agricultural Statistics (4:3:3). Prerequisite: College algebra or higher mathematics. Principles and procedures involved in the analysis of agricultural data including indices of central tendency and dispersion; probability; sampling; significance tests; analysis of variance; and simple linear correlation. F, S, SS.

4000. Internship in Agricultural and Applied Economics (V1-12). Prerequisite: Sophomore standing and approval. Supervised study providing in-service training and practice in business and organizations. F, S, SS.

4100. Seminar (1:1:0). Prerequisite: Senior standing. Assigned readings, informal discussion, outside speakers, and written and oral reports on subjects relating to agricultural and applied economics. F, S.

4101. Current Problems in Agricultural and Applied Economics (1). Prerequisite: Senior standing. Topics may vary. May be repeated twice for credit. F, S, SS.

4300. Agricultural Economics Methodology for Research and Management (3:3:0). Prerequisite: AAEC 3316, 3401, sophomore English or ENGL 2311, and senior standing. Introduction to conceptual issues for research, applications of designing, planning, and conducting economic research. F. (Writing Intensive)

4301. Special Problems in Applied Economic Analysis (3). Prerequisite: AGSC 4300 or approval. Individual instruction in analysis of a research problem. May be repeated with the approval of the department. S. (Writing Intensive)

4302. Statistical Methods in Agricultural Research (3:3:0). Prerequisite: AAEC 3401 and MATH 1331. Advanced agricultural statistical analysis related to research methods using probability theory; tests of statistical significance; multiple correlation and regression; analysis of covariance; and experimental design. S, SS.

4303. Property Appraisal (3:3:0). Prerequisite: AAEC 2305, sophomore English or ENGL 2311, and senior standing or approval. Factors governing property

prices and valuation. Appraisal of property for use, sale, and other purposes. F. (Writing Intensive)

4305. Agricultural and Public Policy (3:3:0). Prerequisite: AAEC 3315. Historical development and economic analysis of public programs and policies affecting the food and fiber sector and the environment. F. (Writing Intensive)

4306. International Agricultural Trade (3:3:0). Prerequisite: Junior standing and AAEC 3315. Economic principles of interregional and international trade, location, and inter-area competition in products and services. S.

4309. Special Problems in International Agricultural Development (3). Prerequisite: Departmental approval. Individual instruction and independent study in international development and management in the agricultural sector in advanced and developing nations.

4312. Applied Mathematical Economics (3:3:0). Prerequisite: AAEC 3316. Mathematical tools for analysis of basic economic relationships involving prices and quantities, inputs and outputs, and costs and revenues. F, SS.

4313. Natural Resource Economics (3:3:0). Prerequisite: AAEC 3315 and junior standing. Economics of natural resource use and allocation including land economics, economics of water development, and environmental economics. S. (Writing Intensive)

4315. Agribusiness Management (3:2:3). Prerequisite: AAEC 3316 and 3401. Case studies emphasizing managerial techniques applied to decision-making problems of business firms. F, S. (Writing Intensive)

4316. Agricultural Financial Analysis (3:3:0). Prerequisite: AAEC 3302 or FIN 3320. Principles and procedures in managing financial and credit resources; nature, purposes, and use of financial statements, budgets, and credit instruments; and criteria for decision making in borrowing and lending. S.

4317. Commodity Futures Trading and Analysis (3:3:0). Prerequisite: Junior standing and AAEC 2305. History and characteristics of commodity futures markets, hedging and speculation, and use of futures as a management tool. F, S.

4320. Agribusiness Law (3:3:0). Prerequisite: AAEC 2305 and junior standing. Federal regulatory programs, market orders, Packers and Stockyards Act, bankruptcy. Administrative, environmental, antitrust law, Uniform Commercial Code, in an agribusiness context. F.

Department of Agricultural Education and Communications

Chair: Professor Matt Baker

Professors Cepica and Lawver; ***Associate Professor*** Fraze; ***Assistant Professors*** Akers, Lockaby, and Smith; ***Instructor*** Bullock; ***Visiting Faculty*** Hogg; ***Emeritus Faculty*** Eggenberger.

This department supervises the following degree programs: INTERDISCIPLINARY AGRICULTURE and AGRICULTURAL COMMUNICATIONS, *Bachelor of Science;* AGRICULTURAL EDUCATION, *Master of Science* and *Doctor of Education.*

The department administers the agricultural education certification program. The teacher certification program involves courses from most departments in the College of Agricultural Sciences and Natural Resources. Elective courses can be selected in areas of special interest. Job placement in high schools and junior colleges offers a life-long career for many graduates and alternative employment opportunities for others. Students seeking teacher certification may also receive a degree in another agricultural area and, with proper planning, receive certification in agricultural education. Students seeking teacher certification should also refer to the section entitled “Teacher Education.”

Agricultural communications allows students to specialize in both mass communications and agriculture. The communications component consists of prescribed courses in journalism, speech, telecommunications, photography, and advertising. Selection of technical agriculture courses allows students to specialize in areas of interest and to reinforce their general knowledge in agriculture.

This department offers a minor in agricultural leadership for students majoring outside the department. For more information, refer to “Selecting a Minor” in the introductory information about this college or contact the departmental chair.

Interdisciplinary Agriculture (Agricultural Education) Curriculum—Teacher Certification

FIRST YEAR

Fall		*Spring*	
AGSC 1111, The Ag. Industry	1	PSS 1321, Agronomic Plant Sc.	3
BIOL 1401 or 1402	4	ENGL 1302, Adv. Coll. Rhetoric	3
ENGL 1301, Ess. Coll. Rhetoric	3	HIST 2300, Hist. of U.S. to 1877	3
MATH 1320, Coll. Algebra	3	CHEM 1305, Ess. Chem. I	3
ANSC 1401, Gen. Animal Sci.	4	CHEM 1105, Exp. Gen. Chem. I	1
TOTAL	15	MATH 1321, Trigonometry	3
		TOTAL	16

SECOND YEAR

Fall		*Spring*	
Free Elective	3	*PSS 1411, Prin. of Hort.	4
ACOM 2302, Sci. Communications	3	COMS 2300, Public Speaking	3
POLS 1301, Amer. Govt., Org.	3	AAEC 2305, Fund. Ag. & Appl. Eco.	3
HIST 2301, Hist. of U.S. Since 1877	3	POLS 2302, Amer. Pub. Pol.	3
AGSM 2303, Welding & Metalwork	3	*Ag. Elective	3
TOTAL	15	†Vis. & Perf. Arts and/or Multicultural	3
		TOTAL	19

THIRD YEAR

Fall		*Spring*	
AGED 2300, Intro. to Ag. Ed.	3	AAEC 3304, Farm & Ranch Bus. Mgt.	3
PSS 2432, Prin. & Pract. Soils	4	ANSC 3305, Appl. Animal Nutrition	3
AGSM 3303, Engine Theory	3	AGED 2302, Ag. Data Base	3
ANSC 3402, Animal Genetics or	4	AGSM 4302, Ag. Bldgs.	3
PSS 3421, Plant Genetics		AGED 3330, Ag. Agencies	3
ENGL 2301 or 2307	3	Ag. Elective	3
TOTAL	17	TOTAL	18

FOURTH YEAR

Fall		*Spring*	
EDSE 4322, Diversity Learn. Envir.	3	AGSM 4305, Cond. Ag. Mech. Prog.	3
EDSE 4310, Learn. Cogn. & Instr.	3	AGED 4304, Meth. of Tchg. Ag. Sci.	3
AGED 3313, Mgmt. of SAEPs	3	AGED 4306, Student Tchg.	9
AGED 3331, Prin. of Ag. Leadership	3	EDSE 4311, Curr. Development	3
EDLL 4380, Literacy in Content Area	3	TOTAL	18
Ag. Elective	3		
TOTAL	18		

Minimum hours required for graduation—136. (Students must fulfill the university multicultural requirement.)
*Students will select one of the plans listed below according to their interest. Selection of one of these plans will not prevent a student from teaching in the other agriscience areas.
†Choose from Core Curriculum requirements.
Production Agriculture: At least 3 hrs. of advanced agricultural credit.
Preemployment Laboratory in Meats Processing: ANSC 2301, 3403.

Agricultural Communications Curriculum

FIRST YEAR

Fall		*Spring*	
AGSC 1111, The Ag. Industry	1	ANSC 1401, Gen. Animal Science	4
BIOL 1401 or 1402	4	ENGL 1302, Adv. College Rhetoric	3
ENGL 1301, Ess. College Rhetoric	3	HIST 2300, Hist. of U.S. to 1877	3
MATH 1320, College Algebra	3	CHEM 1305, Ess. Chem. I	3
ACOM 2301, Intro. Ag. Com.	3	CHEM 1105, Exp. Gen. Chem. I	1
Electives	2	MATH 1321, Trigonometry or	
TOTAL	16	MATH 2300, Statistics	3
		TOTAL	17

SECOND YEAR

Fall		*Spring*	
AGED 2302, Ag. Data Base	3	PSS 1321, Agronomic Plant Science	3
AAEC 2305, Fund. Ag. & Appl. Eco.	3	HIST 2301, Hist. of U.S. Since 1877	3
POLS 1301, Amer. Govt., Org.	3	ACOM 3300, Commun. Ag. to Public	3
ACOM 2302, Sci. Communications	3	AGED 2300, Intro. to Ag.	3
Basic Science Elective	4	PHOT 2410, Basic Photography	4
TOTAL	16	*Humanities and/or Multicultural	3
		TOTAL	19

THIRD YEAR

Fall		*Spring*	
JOUR 2310, News Writing	3	JOUR 3312, Reporting	3
COMS 2300, Public Speaking	3	**PSS 1411, Prin. of Horticulture	4
ADV 2310, Prin. of Advertising	3	POLS 2302, Am. Public Pol.	3
RWFM 2301, Introductory Wildlife	3	TELE 3310, Intro. to Telecomm.	3
Advanced Ag. Elective	3	Advanced Ag. Elective	3
*Visual & Performing Arts	3	TOTAL	16
TOTAL	18		

FOURTH YEAR

Fall		*Spring*	
JOUR 3380, Editing	3	ACOM 3301, Video Prod. in Ag.	3
Basic Ag.	3	Advanced Ag. Elective	3
RWFM 2302, Ecol. & Conservation	3	Electives	1
Advanced Ag. Elective	3	Communications Electives	3
AGED 4302, Transfer of Ag. Tech.	3	ACOM 4310, Dev. of Ag. Pub.	3
ACOM 4100, Sem. in Ag. Comm.	1	ACOM 4300, Adv. Computer	3
TOTAL	16	TOTAL	16

Minimum hours required for graduation—134. (Students must fulfill the university multicultural requirement.)
*Choose from Core Curriculum requirements.
**PSS 1411 can be used as basic science or basic agriculture but not both.
Broadcast emphasis requires completion of JOUR 3314 and TELE 3350.

Agricultural Communications (ACOM)

2301. Introduction to Agricultural Communications (3:3:0). An overview of information systems and media associated with the agricultural industry.

2302. Scientific Communications in Agriculture and Natural Resources (3:3:0). Improve written, visual, and oral communications. Development of press releases, scientific papers, popular press articles, poster presentations, technical presentations, and grant applications.

3300. Communicating Agriculture to the Public (3:2:2). Principles and procedures in communicating agricultural news and information to general and specialized audiences through presentations and various media. S.

3301. Video Production in Agriculture (3:3:0). Prerequisite: JOUR 2310. Basics in producing an agricultural video. Students learn scripting, shooting, and digital video editing.

4000. Internship in Agricultural Communications (V1-12).

4001. Agricultural Communications Problems (V1-3). Prerequisite: Consent of instructor. Individual study of advanced application of principles of agricultural communications.

4100. Seminar in Agricultural Communications (1:1:0). Prerequisite: Senior standing or departmental approval. Overview and analysis of the history, development, issues, and trends of traditional agricultural and related information outlets. May be repeated once for credit. F.

4300. Advanced Computer Applications in Agricultural Media Production (3:3:0). Prerequisite: AGED 3302 or equivalent. Computer applications used in development of agricultural media. Emphasis on desktop publishing, presentation packages, and the use of the Internet.

4310. Development of Agricultural Publications (3:2:2). Prerequisite: JOUR 3310. Students integrate various skills including writing, editing, and layout in producing agricultural publications. Emphasis upon computer software applications in agricultural publishing.

Agricultural Education (AGED)

2300. Introduction to Agricultural Sciences Development (3:3:0). Prerequisite: Sophomore standing or departmental approval. History and principles of vocational education, community assessment of agricultural programs planning, and development of agricultural youth organization. (Writing Intensive)

2302. Agricultural Data Base Networks, Information Systems, and Populace (3:3:0). Computer hardware and software used in agricultural data base networks, and the interface with the agricultural populace. F, S, SS.

3313. Management of Supervised Agricultural Experience Programs (3:3:0). Provide students with the theory and application for working with youth in the selection, management, and record keeping procedures used with supervised agricultural experience programs and youth projects.

3330. Interrelationships of Agricultural Agency Information Systems (3:2:2). Prerequisite: Sophomore standing or departmental approval. Utilization of agricultural service systems to disseminate information to traditional and nontraditional agricultural clientele. Emphasis on USDA organizations.

3331. Principles of Agricultural Leadership (3:3:0). Application of leadership principles with emphasis on interpersonal and personal skills, dynamics of organizational structure, and institutional and agency leadership. For student teaching only.

4000. Internship (V1-12).

4301. Agricultural Education Problems (3). Prerequisite: Senior standing and approval of department chairperson. Individual investigation. May be repeated for credit. F, S, SS.

4302. Transfer of Agricultural Technology (3:3:0). Prerequisite: Junior standing or departmental approval. Examination of processes by which professional agriculturalists influence the introduction, adoption, and diffusion of technological change. F.

4304. Methods of Teaching Agriscience in the Secondary School (3:2:3). F, S.

4306. Student Teaching (3). Prerequisite: Senior standing in agricultural education.

Agricultural Systems Management (AGSM)

2302. Agricultural Surveying and Land Conservation (3:2:3). Basics of traversing; computing of curves, land areas, construction layout and staking; and establishing grades and elevations for landscape architecture and agricultural purposes. Includes uses and care of equipment, application of stadia measurement, and the rudiments of land measurement systems. F.

2303. Welding and Metalwork (3:2:3). Metal fabrication and repair using hand tools, power tools, and welding equipment. Includes metallurgy pertaining to welding processes and heat treating.

3303. Internal Combustion Engine Theory and Operation (3:2:3). Fundamentals of internal combustion engines, principally small gasoline engines. Emphasis on adjustments, repair, and routine maintenance to include tractors and other power units. F, S.

4301. Agricultural Mechanization Problems (3). Prerequisite: Consent of instructor. Individual study of an advanced phase of agricultural mechanization. Research report required. F, S, SS.

4302. Agricultural Buildings and Environmental Control (3:2:3). Determining agricultural building requirements, materials, design, and construction. Includes construction, tools and equipment, framing, environmental control, and necessary utilities. S.

4305. Conducting Agricultural Mechanics Programs (3:2:2). Organizing, equipping, and managing agriscience laboratories.

Department of Animal and Food Sciences

Chair: Professor K. R. Pond

Thornton Distinguished Professor Galyean; ***Professors*** Albin, McGlone, M. F. Miller, and Richardson; ***Associate Professors*** Brady, Herring, Jackson, R. M. Miller, Prien, and Thompson; ***Assistant Professors*** Blanton, Brashears, Kim, and Vizcarra; ***Instructors*** Brock, Elliott, and Guay; ***Adjunct Faculty*** Allen, Cole, McCollum, Pence, Rooney, and Thomson.

This department supervises the following degree programs: ANIMAL SCIENCE, *Bachelor of Science*, *Master of Science,* and *Doctor of Philosophy;* FOOD TECHNOLOGY, *Bachelor of Science* and *Master of Science*. Two areas of specialization in food technology are offered—science and industry.

Animal Science Program. Students majoring in animal science for the B.S. degree may choose from three emphases: business, production, or science. The business option prepares students for careers in all facets of livestock production and subsidiary support services by blending animal science with business and economics courses. The production option provides the latest scientific principles for efficient livestock production, marketing, and processing. The science option provides training in advanced basic sciences to prepare students for study towards an advanced degree. The department also directs the preprofessional course preparation for veterinary medicine.

This department offers minors in animal science or food technology for students majoring outside the department. For more information on requirements for completing a minor, refer to "Selecting a Minor" in the introductory information about this college or contact the departmental chair.

Students must earn a grade of C or better in all animal science courses that are required for graduation. All electives are subject to departmental approval. Degree requirements are given below.

Animal Science Curriculum

FIRST YEAR

Fall		*Spring*	
AGSC 1111, The Ag. Industry	1	AAEC 2305, Fund. Ag. & Appl. Eco.	3
ANSC 1401, Gen. Anim. Sci.	4	CHEM 1306 Prin. Chem. II	3
CHEM 1305, Prin. of Chem. I	3	CHEM 1106 Prin. Chem. II (Lab.)	1
CHEM 1105, Prin. Chem. I (Lab.)	1	(CHEM 1308, 1108 req. for Sci. Emp.)	
(CHEM 1307, 1107 req. for Sci. Emp.)		ENGL 1302, Adv. Coll. Rhetoric	3
ENGL 1301, Ess. Coll. Rhetoric	3	ANSC 2301, Lvstk. & Meat Eval. I	3
MATH 1320 or 1330	3	MATH 1321 or 1331	3
(MATH 1350 or 1321 req. for Sci. Emp.)		(MATH 1351 or 2300 req. for Sci. Emp.)	
PSS 1321, Agro. Plant Science	3	TOTAL	16
TOTAL	18		

SECOND YEAR

Fall		*Spring*	
POLS 1301, Amer. Gov. Org.	3	POLS 2302, Amer. Pub. Pol.	3
BIOL 1402, Biol. of Animals	4	FD T 2300, Prin. Food Tech.	3
ENGL 2311, Patt. of Reports	3	HIST 2300, Hist. of U.S. to 1877	3
CHEM 2303, Intro. Org. Chem.	3	ANSC 2401, Anat. & Phys. Dom. An.	4
CHEM 2103, Intro. Org. Chem. Lab.	1	**Approved Elective	3-4
(CHEM 2305, 2105 req. for Sci. Emp.)		TOTAL	16-17
**Approved Elective	3-4		
TOTAL	17-18		

THIRD YEAR

Fall		*Spring*	
ANSC 3401, Repro. Physiol.	4	HIST 2301, Hist. of U.S. Since 1877	3
ANSC 3301, Prin. Nutr.	3	**Approved Elective	8-9
ANSC 3402, Anim. Brd. & Genetics	4	ANSC 3307, Feeds & Feeding	3
COMS 2300, Public Speaking	3	*Humanities and/or Multicultural	3
ANSC 3403, Sel., Proc. Meats	4	TOTAL	17-18
TOTAL	18		

FOURTH YEAR

Fall		*Spring*	
ANSC 4100, Anim. Sci. Seminar	1	Production Electives	8
Production Elective	4	Free Electives	7-10
*Visual & Performing Arts	3	TOTAL	15-18
**Approved Elective	7-8		
TOTAL	15-16		

Minimum hours required for graduation—134. (Students must fulfill the university multicultural requirement.)
*Choose from Core Curriculum requirements.
Production electives:—Students will select 12 hours from the following: ANSC 4401, 4402, 4403, or 4406.
**Students will select one of the emphases listed below according to their area of interest:
Animal Business: Additional required courses—ACCT 2300, BLAW 3391, AAEC 3301, 3302, 3304 and 3401 or MATH 2345, 3 hours from AAEC 3303, 4303, 4317, or 4320; free electives—10-11 hours.
Animal Production: Additional required courses—MBIO 3400, ANSC 3306 or 4400; approved electives—ANSC 2205, 2302, 2303, 2304, 3203, 3204, 3303, 3304, 3308, 3309, 3310, 4000, 4001, 4202, 4302, 4306, 4400, 4401, 4402, 4403,4406, FD T 3303, AAEC 3301, 3302, 3304, 3401, 4317, 4320, PSS 2432, 3321, 3322, or 4421, AGSC 2300 or 2301, plus other approved electives for a total of 12 hours; free electives—9-11 hours.
Animal Science: Additional required courses—CHEM 2306, 1106, AAEC 3401, PSS 3421; approved electives—ANSC 3306, 4000, 4001, 4202, 4300, 4400, MBIO 3400, 3401, BIOL 1401, 3302, 3420, ZOOL 3405, 3401, 4304, 4306, 4312, 4409, PHYS 1306, 1103, 1307, 1104, CHEM 3311, 3312, 3402, or 4303, plus other approved electives under animal production option for a total of 12 hours; free electives—8-9 hours.

Food Technology Program. Food technology provides the basic course work for a comprehensive background in the properties and preservation of foods. Food technology graduates may be employed in areas concerned with food systems management, design and development of new food products, strategies for quality assurance and food safety, or research in basic constituents of food. The increasing pressure of world population growth on available food supply assures a stable, growing job market for food technology students. Positions in private industry, educational institutions, and governmental agencies offer excellent potential for rapid advancement. The Food Technology section provides course work suggested by the Institute of Food Technologists and emphasizes processing and quality control aspects. A pilot plant and associated chemical and microbiological laboratories allow the student practical experience in development, manufacture, and analysis of food products. Degree requirements are given below.

Food Technology Curriculum

FIRST YEAR

Fall		*Spring*	
AGSC 1111, The Ag. Industry	1	AAEC 2305, Fund. Ag. & Appl. Eco.	3
BIOL 1402, Biol. of Animals	4	CHEM 1308, Prin. Chem. II	3
ENGL 1301, Ess. Coll. Rhetoric	3	CHEM 1108, Prin. Chem. II (Lab.)	1
MATH 1330 or 1351	3	ENGL 1302, Adv. Coll. Rhetoric	3
(Math 1320 or 1330 req. for Ind. Emp.)		**Approved Electives	3
CHEM 1307, Prin. Chem. I	3	ANSC 1401, Gen. Anim. Science	4
CHEM 1107, Prin. Chem. I (Lab.)	1	TOTAL	17
TOTAL	15		

SECOND YEAR

Fall		*Spring*	
CHEM 2305, Org. Chem.	3	**Approved Electives	6
CHEM 2105, Org. Chem. Lab.	1	FD T 2302, Elem. Anal. Foods	3
(CHEM 2303, 2103 may be selected for Industry Emphasis)		HIST 2301, Hist. of U.S. Since 1877	3
		*Humanities and/or Multicultural	3
MATH 1331 or 1352	3	ENGL 2311, Patt. of Repts.	3
(MATH 1321 or 1331 req. for Ind. Emp.)		TOTAL	18
FD T 2300, Prin. Food Tech.	3		
COMS 2300, Public Speaking	3		
HIST 2300, Hist. of U.S. to 1877	3		
TOTAL	16		

THIRD YEAR

Fall		*Spring*	
POLS 1301, Amer. Govt., Org.	3	**Approved Elective	4
F&N 3340, Human Nutrition	3	POLS 2302, Amer. Pub. Pol.	3
FD T 3302, Adv. Food Anal. or FD T 4303	3	FD T 3301, Food Microbiology or FD T 4305	3
MBIO 3400, Microbiology	4	**Approved Elective	5
**Approved Elective	3	FD T 3303, Food Sanitation	3
TOTAL	16	TOTAL	18

FOURTH YEAR

Fall		*Spring*	
FD T 4303, Food Chem. or FD T 3302	3	FD T 4306, Dairy Prod. Mfg.	3
FD T 4304, Field Studies	3	FD T 4305, Proc. Oilseed & Cer. Grains or FD T 3301	3
AAEC 3401, Ag. Statistics	4	**Approved Elective	3
*Visual & Performing Arts	3	Elective	7
Electives	4	TOTAL	16
TOTAL	17-18		

Minimum hours required for graduation—134. (Students must fulfill the university multicultural requirement.)
*Choose from Core Curriculum requirements.
**Students will select one of the emphases listed below according to their area of interest:
Science: 28 hours of the 37 hours of electives must be selected from Adv. CHEM, PHYS 1306 and 1103, CHEM 3251 and 3351, 9 hours of approved science electives, 3 hours of approved departmental electives, and 3 hours of basic agriculture courses.
Industry: 24-25 hours of the 36-37 hours of electives must be selected from ACCT 2300 or Adv. CHEM, FD T 3304; 3 hours from ANSC 3403 or PSS 2311; 6 hours of basic agriculture courses; and 9 hours of approved departmental electives.

Preveterinary Medicine Option. Although Texas Tech does not offer a degree in preveterinary medicine, students may still prepare for veterinary school by completing the minimum admission requirement of 64 credit hours. The following courses are included in the minimum admission requirement: ANSC 3301; BIOL 1402; CHEM 1307, 1107, 1308, 1108, 2305, 2105, 4303; COMS 2300; ENGL 1302, 2301, 2311; MATH 2300 or 1351; MBIO 3401; PHYS 1306, 1103, 1307, 1104; PSS 3421; and at least 11 credit hours of electives. A preveterinary medicine advisor is available to assist students in selecting courses and degree programs.

Animal Science (ANSC)

1401. General Animal Science (4:3:3). The application of basic scientific principles to the efficient production of domestic animals. Students must enroll in lecture, lab, and discussion concurrently. F, S.

2201. Animal Science Practicum (2:0:4). Hands-on management practices for farm animal care. Students will develop proficiency in care, handling, and routine procedures for swine, sheep, beef cattle, and horses. F, S, SS.

2205. Introduction to Animal Science Industries (2:2:0). Study of current opportunities in the animal science industry. Includes field trips, speakers, and class demonstrations.

2301. Livestock and Meat Evaluation I (3:2:3). Evaluation and selection of breeding and market animals, carcass evaluation and grading, breed characteristics. Field trips to ranches and meat packing plants. S.

2302. Livestock and Meat Evaluation II (3:1:6). Advanced training in evaluating, selecting, pricing, and grading of breeding and market livestock, carcasses, and wholesale cuts. Field trips to ranches and meat packing plants. Livestock and meat judging teams originate from this course. May be repeated for credit. F.

2303. Care and Management of Companion Animals (3:3:0). Principles and practices of proper selection, feeding, and care of companion animals, with emphasis on the dog and cat. Nutrition, health care, behavior, training, and reproduction are discussed. F, S.

2304. Selection and Evaluation of Horses (3:2:3). Prerequisite: Sophomore standing. Criteria for evaluation and selection of breeding and show animals. Evaluation of breed types and show ring characteristics. Field trips to various breed operations. Horse judging teams will originate from this course. S.

2401. Anatomy and Physiology of Domestic Animals (4:3:3). Introduction to anatomy and physiology of domestic animals. The anatomy and physiology of the nervous, skeletal, muscular, circulatory, digestive, urinary, reproductive, and endocrine systems. Students must enroll in lecture, lab, and discussion concurrently. S.

3203. Livestock and Meat Judging (2:0:6). In-depth special training in livestock and meat judging, grading, and evaluation for students who wish to become members of the livestock or meat judging teams. May be repeated for credit. S. (Writing Intensive)

3204. Advanced Livestock, Horse, and Meat Judging (2:0:6). Advanced training in judging, grading, and evaluating performance for members of the senior livestock, horse, or meat judging teams. May be repeated for credit once. F. (Writing Intensive)

3301. Principles of Nutrition (3:3:0). Prerequisite: ANSC 1401, CHEM 2303, 2103, or 2305, 2105. Nutritional roles of carbohydrates, proteins, lipids, minerals, vitamins, and water. Digestion, absorption, and use of nutrients and their metabolites. F.

3302. Livestock Production (3:3:0). The application of scientific and technological advances to production practices in range beef cattle, sheep and goats, swine production, and feedlot practices. Not open to animal science majors. S.

3303. Introductory Horse Management (3:3:0). An introduction to all aspects of equine management including selection, herd health, reproduction, nutrition, behavior, and marketing. F.

3304. Management and Training of Horses (3:0:6). Prerequisite: ANSC 3303 or consent of instructor. Practical application of the science of equine behavior to training young ranch horses. Emphasis on training, communication, and progressive learning of ranch skills.

3305. Applied Animal Nutrition (3:3:0). Prerequisite: ANSC 1401, CHEM 1305, 1306. The fundamental metabolic principles of nutrition will be developed into concepts applicable to problem solving and situation use in the field. Nutrition-disease involvement. Not open to animal science majors. Will not qualify as prerequisite to ANSC 3307. S, SSI.

3306. Animal Diseases (3:3:0). Diseases of farm animals, both infectious and noninfectious, parasites, parasitic diseases, and the establishment of immunity through the use of biological products. S.

3307. Feeds and Feeding (3:2:2). Prerequisite: ANSC 3301. Characteristics of feedstuffs used in livestock enterprises. Ration formulation and nutritional management of beef and dairy cattle, sheep, goats, swine, and horses. Methods of processing and evaluating feeds. S.

3308. Quality Control and Management of Feed Manufacturing (3:1:3). Application of scientific principles and practices to quality control and management of feed manufacturing with respect to their effects on animal performance.

3309. Principles of Therapeutic Riding (3:2:2). An interdisciplinary overview of therapeutic riding with primary emphasis on the horse as therapy, riders with disabilities, and the intervention process. (RLS 3309)

3310. Principles of Equine Sales Preparation and Marketing (3:2:2). Prerequisite: ANSC 3303. Principles of equine management as related to fitting, presentation, and marketing of horses.

3401. Reproductive Physiology (4:3:3). Prerequisite: ANSC 2401. Physiological approach to reproductive processes in farm animals. Study includes anatomy, endocrinology, estrous cycles, egg and sperm physiology, fertilization, gestation, parturition, and artificial insemination. F.

3402. Animal Breeding and Genetics (4:3:2). Prerequisite: MATH 1320 or higher. Fundamental principles of cellular, population, and quantitative genetics applied in selection and mating systems to make genetic improvements in farm animals. Majors only. F. (Writing Intensive)

3403. Selection, Care, Processing, and Cooking of Meats (4:3:3). A general course in selecting, preserving, inspecting, grading, and cooking meats. F.

3404. Consumer Selection and Utilization of Meat Products (4:3:3). A course for nonmajors who desire general knowledge of meat purchasing, selection, and cookery. Aspects of hazard analysis, food safety, and sanitation will be studied.

4000. Internship (V1-12). Prerequisite: Consent of department chairperson. A supervised study course providing in-service training and practice in the various areas of animal science. F, S, SS.

4001. Special Problems in Animal Science (V1-6). Prerequisite: Senior standing and approval of department chair. Individual investigation. May be repeated for credit. F, S, SS.

4100. Animal Science Seminar (1:1:0). Assigned subjects. Review of recent investigations. Reports and discussions. May be repeated once for credit. F, S.

4202. Artificial Insemination of Livestock (2:1:3). Prerequisite: ANSC 3401 and consent of instructor. Anatomy and physiology of reproductive organs, palpation, insemination techniques, handling frozen semen, estrous detection, synchronization of estrus and ovulation, and pregnancy determination. S.

4302. Beef Cattle Feedyard Management (3:3:0). Prerequisite: Junior or senior standing. The analysis of feedyard operations—design, economics, projections, bank relationships, procurement, and marketing. Customer relations and commodity hedging techniques. F.

4310. Contemporary Issues in Animal Agriculture (3:3:0). In-depth discussion, lecture, and seminars on contemporary issues facing animal agriculture and the meat industry. F.

4400. Meat Science and Muscle Biology (4:3:3). Prerequisite: ANSC 3403 or consent of instructor. Study of meat components, their development, and their effect on meat characteristics and processing properties. Emphasis on industry issues. S.

4401. Swine Production (4:3:2). Prerequisite: ANSC 3307, 3401, 3402 (majors only) or consent of instructor; may take only one of the above concurrently. Understanding pig biology, management of the pig's environment and genetics to maximize profits. Include genetics, nutrition, reproduction, housing, herd health, and management practices. Laboratory and field trips. F. (Writing Intensive)

4402. Horse Production (4:3:2). Prerequisite: ANSC 3303, 3401, or consent of instructor. An advanced study of equine anatomy, reproductive physiology, nutrition, disease, and management. S. (Writing Intensive).

4403. Beef Production (4:3:3). Prerequisite: ANSC 3307, 3401, 3402 (majors only) or consent of instructor; may take only one of above concurrently. The breeding, feeding, and managing of beef herds for profitable production of slaughter cattle. Emphasis on commercial cow-calf herds. Field trips to ranches. S.

4404. Processed and Cured Meat Science (4:3:3). Prerequisite: ANSC 3403, 4400, or consent of instructor. Introduction to manufactured meat products and muscle ingredients, processing technologies, storage conditions, and stability of cured muscle foods. S.

4406. Sheep and Goat Production (4:3:3). Prerequisite: ANSC 3307, 3401, 3402 (majors only) or consent of instructor; may take only one of above concurrently. Sheep, goat, wool, and mohair production

management and marketing practices. Field trips to ranches and feedlots. S.

Food Technology (FD T)

2300. Principles of Food Technology (3:3:0). Basic information necessary to understand technological aspects of modern industrial food supply systems. A fundamental background in food classification, modern processing, and quality control. F, S, SS II.

2302. Elementary Analysis of Foods (3:2:3). Basic laboratory practice in food product testing. Should have had a course in chemistry or other lab science. S. (Writing Intensive)

3301. Food Microbiology (3:2:3). Prerequisite: MBIO 3400 or permission of instructor. Microorganisms important in food spoilage and in food preservation. Study of methods for preservation of food with respect to control of microbiological growth and activity. S, even years. (Writing Intensive)

3302. Advanced Food Analysis (3:2:3). Prerequisite: CHEM 2305, 2105, FD T 2302, or permission of instructor. Study of laboratory techniques fundamental to establishing the nutritional value and overall acceptance of foods. Investigation of food constituents and methods used in their analysis. F, even years.

3303. Food Sanitation (3:3:0). Principles of sanitation in food processing and food service applications. Chemical, physical, and microbiological basis of sanitation. Equipment and food product care. F, S, and SSII.

3304. Fruit and Vegetable Processing (3:2:3). Practice in preserving fruits and vegetables. Suitable for nonmajors. F.

3309. Food Safety (3:3:0). Food safety and sanitation in food manufacturing and/or processing. Topics include FDA and USDA regulations, HACCP principles, and good manufacturing practices. F, even years.

4001. Food Technology Problems (V1-6). Taught on an individual basis. May be repeated for credit with permission. F, S, SSI.

4303. Food Chemistry (3:2:3). Prerequisite: CHEM 2305, 2105 or permission of instructor. Chemical and physiochemical properties of food constituents. A comprehensive study of food components, their modification, and technology applications in food. F, odd years.

4304. Field Studies in Food Processing and Handling (3:1:4). Visits to food processing and handling facilities and discussions of operations. F.

4305. Processing Oilseeds and Cereal Grains for Foods (3:2:3). Physical and chemical characteristics of oilseeds and grains and their effects on processing. Introduction to processing principles and techniques. S, odd years.

4306. Dairy Products Manufacturing (3:2:3). Physical and chemical characteristics of milk and milk products. Principles involved in processing dairy foods. S.

Department of Landscape Architecture

Chair: Professor Alon Kvashny

Associate Professors Billing and Kavanagh; ***Assistant Professors*** Coffee, Hamed, Mills, and Sherrod.

This department supervises the following degree programs: LANDSCAPE ARCHITECTURE, *Bachelor of Landscape Architecture, Master of Landscape Architecture.* Offices and most classroom facilities are located in the Plant Science Building and the Landscape Architecture Pavilion.

The landscape architecture program exposes students to the basic skills and knowledge required to enter the profession in either the public or the private sector. This program emphasizes physical design and planning in the natural and urban environment. Students are urged to intern in the offices of registered landscape architects, planners, and associated professionals the summer prior to the student's last year.

The department is a member of the Council of Educators in Landscape Architecture, and the Bachelor of Landscape Architecture curriculum is accredited by the American Society of Landscape Architects.

The department and faculty are associated with the American Society of Landscape Architects, American Planning Association, Council of Educators in Landscape Architecture, American Horticultural Therapy Association, Landscape Institute, International Division of APA, and the Association of Egyptian-American Scholars.

The department reserves the right to retain, exhibit, and reproduce work submitted by students. Work submitted for grade is the property of the department and remains such until it is returned to the student.

This department offers a minor in landscape studies for students majoring outside the department. For more information on completing a minor, refer to "Selecting a Minor" in the introductory information about this college or contact the departmental chair.

A scholarship program for students with potential for high academic performance is available. Contact the department for information and application forms.

Landscape Architecture Curriculum

FIRST YEAR

Fall		*Spring*	
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
MATH 1320, Coll. Algebra	3	MATH 1321, Trig.	3
HIST 2300, Hist. of U.S. to 1877	3	BIOL 1313, Eco. & Environ. Prob.	3
*LARC 1401, L.A. Drawing	4	BIOL 1113, Environmental Prob. Lab.	1
LARC 1302, Intro. to Land. Arch.	3	*LARC 1402, LA Graphics	4
TOTAL	16	TOTAL	14

SECOND YEAR

Fall		*Spring*	
HIST 2301, Hist. of U.S. Since 1877	3	PSS 1411, Prin. of Horticulture	4
*CTEC 2301, Surveying & Surveys	3	*LARC 2402, LA Design Process	4
AAEC 2305, Fund. of Ag. & Appl. Eco or Ind. or Group Behavior	3	*LARC, 2200, LA Portfolio Prep.	2
		*LARC 3302, Develop. of LA	3
*LARC 2401, Basic Design Land. Arch.	4	*LARC 2309, Advanced CAD in LA	3
*LARC 2308, Comp. Aid. Des. in LA	3	TOTAL	16
TOTAL	16		

THIRD YEAR

Fall		*Spring*	
ENGL 2311, Technical Writing	3	*RWFM 4314, Watershed Planning.	3
*PSS 3318, Woody Plants	3	*LARC 3402, Master Planning	4
RWFM 2302, Ecology & Conservation	3	*LARC 3403, Planting Design	4
*LARC 3401, LA Site Design	4	*LARC 3404, LA Site Cons. & Dev.	4
*LARC 2404, LA. Grading & Drainage	4	TOTAL	15
TOTAL	17		

FOURTH YEAR

Fall		*Spring*	
PSS 2330, Urban Soils	3	COMS 2300, Public Speaking	3
GEOG 3300, Geo. Info. Systems	3	*LARC 4402, Reg. Plan & Design	4
*LARC 4401, Urban Design	4	*LARC 4303, Environmental Mgt.	3
*LARC 4404, LA Materials & Details	4	Directed Electives	6
LARC 4302, Env. Planning	3	TOTAL	16
TOTAL	17		

FIFTH YEAR

Fall		*Spring*	
POLS 1301, Am. Gov. Org.	3	POLS 2302, Am. Gov. Policy	3
RWFM 4403, Aerial Photo. Interp.	4	*LARC 4405, LA Sen. Project Studio	4
*LARC 4406, Collaboration Studio	4	LARC 4100, Seminar	1
LARC 4311, Professional Practice	3	Directed Electives	6
*LARC 4101, Proposal Writing in LA	1	TOTAL	14
TOTAL	15		

Minimum hours required for graduation—155. (Students will fulfill the university multicultural requirement by completing LARC 3302.)
An internship, approved in the previous semester, must be completed prior to graduation.
*Must be passed with a minimum grade of C or better.
No LARC or required prerequisite may be taken pass-fail.
Directed electives are subject to approval of the academic advisor and department chairperson.

Landscape Architecture (LARC)

1302. Introduction to Landscape Architecture (3:3:0). An introduction to the multidisciplinary field of landscape architecture exploring its historical evolution, highlighting its interaction with arts and science, and examine its contemporary leaders.

1401. Landscape Architecture Drawing and Drafting (3:2:1). Prerequisite: LA majors only. Introduction to drafting equipment, drafting and drawing. Construction of one-point and two-point perspective, shade and shadow, elements of visual composition. F.

1402. Landscape Architecture Graphics (4:1:6). Prerequisite: LARC 1401, LA majors only. Develop knowledge and skills for effective graphic expression of design. Emphasis on scaled drawings, three-dimensional representation and color graphics. S.

2200. Landscape Architecture Portfolio Preparation (2:1:2). Introduction to professional portfolio development for landscape architecture and preparation of individual portfolio for faculty review.

2308. Computer-Aided Design in Landscape Architecture (3:1:4). Prerequisite: LARC 1402, LA majors only or consent of instructor. Hands-on introduction to current computer-aided design technology most applicable to landscape architecture. F.

2309. Advanced Computer-Aided Design in Landscape Architecture (3:1:4). Prerequisite: LARC 2308, LA majors only. Exploration of contemporary applications of CAD in the profession of landscape architecture. S.

2401. Basic Design in Landscape Architecture (4:1:6). Prerequisite: LARC 1402. LA majors only. A basic course in landscape architecture incorporating the principles of art and landscape architecture in design. F.

2402. Landscape Architecture Design Process (4:1:6). Prerequisite: LARC 2401 and 1402. A continuation of basic design with additional emphasis on site inventory, analysis, and programming in their relationship to the design process. Collaboration. S.

2404. Landscape Architecture Grading and Drainage (4:2:4). Prerequisite: Surveying and LARC 2402. Introduction to site layout, grading and drainage, earthwork and runoff computations, and site implementation drawing techniques. F.

3302. Development of Landscape Architecture (3:3:0). History of landscape architecture. Design as expression of culture and society's relationship to nature. Geographical, historical, and cultural context of major movements in landscape architecture. F.

3401. Landscape Architecture Site Design (4:1:6). Prerequisite: LARC 2200 and 2402. Site analysis and design as they apply to projects of various scale, scope, and resolution. F.

3402. Master Planning (4:1:6). Prerequisite: LARC 3401 and LARC 2404. Comprehensive design problems integrating aspects of site design, planting design and construction. S.

3403. Planting Design (4:1:6). Prerequisite: LARC 3401 and PSS 3318. Theory and practice including plants in site design, planting design techniques, planting plans and technical specifications.

3404. Landscape Architecture Site Construction and Development (4:2:4). Prerequisite: LARC 2404. Complex grading and drainage, drainage structures, horizontal and vertical circulation alignment in large scale site development. S.

4000. Internship (V1-6). Minimum 8 weeks and prior departmental approval.

4001. Landscape Architecture Problems (V1-4). An investigation of a problem in the profession of special interest to the student. Open to all advanced students.

4100. Seminar (1:1:0). Prerequisite: Senior standing. Assigned readings, informal discussions, oral reports, and papers. F.

4101. Proposal Writing in Landscape Architecture (1:1:0). Comprehensive writing for landscape architecture final project thesis. The course includes program development methodology and the framework for proposal writing.

4302. Environmental Planning for Sustainable Development (3:3:0). Prerequisite; RWFM 2302 or consent of instructor. An introduction to environmental planning issues with emphasis on the integration of related disciplines to attain environmentally and socially sustainable development. F.

4303. Environmental Management for Sustainable Development (3:3:0). Prerequisite: LARC 1407. Environmental management principles and procedures. An investigation of land planning, environmental law, resource economics, and public policy to achieve sustainable development. S.

4311. Professional Practice (3:3:0). Prerequisite: Fifth-year standing. Methods, procedures, and ethics of professional practice of landscape architecture. F.

4401. Urban Design (4:1:6). Prerequisite: LARC 3402, LARC 3403 and LARC 3404. Public urban spaces and their surrounding built edges. Organization, form, and character of streets, parks, and plazas. F.

4402. Regional Planning and Design (4:1:6). Prerequisite: LARC 2309 and 4401. Regional landscape planning and design in landscape architecture based on natural and cultural resource factors. F. (Writing Intensive)

4404. Landscape Architecture Materials and Details (4:2:4). Prerequisite: LARC 3404. Introduction of landscape architecture construction systems, materials, irrigation, retaining walls, lighting, structures, joining of materials, and implementation drawings. F.

4405. Landscape Architecture Senior Project (4:1:6). Prerequisite: LARC 4406 and 4401. Individual design demonstration project representing comprehensive skilled synthesis of knowledge and professional skills developed in study of landscape architecture. (Writing Intensive)

4406. Collaboration Studio (4:1:9). Prerequisite: LARC 2309 and 4402. An interdisciplinary studio for the design professions which address the process and skills necessary for collaboration and teamwork. F.

Department of Plant and Soil Science

Chair: Professor Dick Auld

Horn Professor Nguyen; ***Thornton Distinguished Professor*** V. Allen; ***Rockwell Professor*** B. L. Allen; ***Leidigh Professor*** Krieg; ***Piper Professor*** Hopper; ***Professors*** Abernathy, R. Allen, Maas, Peffley, Thorvilson, and Zartman; ***Associate Professors*** Armstrong, Dotray, Hellman, Green, and Phillips; ***Assistant Professors*** Burow, Maurer, McKenney, Montague, Parajulee, and Xu; ***Adjunct Faculty*** Abidi, Acosta-Martinez, Baughman, Blum, Boman, Brashears, Bronson, Burke, Calhoun, Gannaway, Hequet, Keeling, Lascano, Leser, Mahan, Mauget, Maunder, McMichael, Oliver, Payton, Peterson, Porter, Ramkumar, Rosenow, Rummel, Rush, Schubert, Sheetz, Stout, Trolinder, Trostle, Upchurch, Velten, Wanjura, Wheeler, Xin, and Zobeck; ***Emeritus Faculty*** Dregne, Matches, Tereshkovich, and Zukauckas.

This department supervises the following degree programs: AGRONOMY, HORTICULTURE, and INTEGRATED PEST MANAGEMENT, *Bachelor of Science*; CROP SCIENCE, ENTOMOLOGY, HORTICULTURE, and SOIL SCIENCE, *Master of Science*; AGRONOMY, *Doctor of Philosophy*. A minimum of 134 hours are required for graduation.

Students in the departmental areas of agronomy, horticulture, and integrated pest management investigate the basic biological, physical, and social sciences. More importantly, they bring such knowledge to focus on problems in pest control and plant development through genetics; plant growth through management; and plant material use for food, fiber, or the aesthetic good of humankind.

Agronomy includes the study of soil, plant genetics, breeding, biotechnology, molecular biology, physiology, biochemistry, weed and pest control, and crop management as applied to the efficient and economical production of field crops. Students study how to use and manage soils, which includes the application of biological, chemical, and physical sciences with regard to natural and man-affected environments.

Horticulture today is the application of basic scientific information to the growing and use of edible (fruits, nuts, and vegetables) and ornamental plants (annual and perennial flowers and woody plants). Today's horticulture students focus on the challenges and practices of genetics and breeding, propagation, biotechnology, production, management, handling and storage, marketing, and use of horticultural plants.

Integrated pest management students learn how insects, weeds, and pathogens impact plant growth and learn how to control these pests in an environmentally benign manner. Increased modification of the plant genome is a focus of this discipline.

Students taught in the Department of Plant and Soil Science are educated to meet the challenges of efficiently producing plants for food, fiber, and aesthetic beauty while preserving our natural resources and environmental integrity. Graduates serve in a vast array of responsible positions in private industry, as well as with local, state, and federal agencies.

This department offers a choice of minors in agronomy, horticulture, or integrated pest management for students majoring outside the department. For more information on requirements for completing a minor, refer to "Selecting a Minor" in the introductory information about this college or contact the departmental chair. Students must earn a grade of C or better in all departmental courses required for graduation.

Agronomy Curriculum

FIRST YEAR

Fall		*Spring*	
ENGL 1301, Ess. College Rhetoric	3	ENGL 1302, Adv. College Rhetoric	3
PSS 1321, Agr. Plant Sci.	3	AGSC 2300, Comp. in Ag.	3
BIOL 1401, Biol. of Plants	4	MATH 1321, Trigonometry or	
MATH 1320, Coll. Algebra or		MATH 1331, Intro. Math. Anal.	3
MATH 1330, Intro. Math. Anal.	3	CHEM 1308, Prin. of Chem. II	3
CHEM 1307, Prin. of Chem. I	3	CHEM 1108, Prin. of Chem. II (Lab.)	1
CHEM 1107, Prin. of Chem. I (Lab.)	1	Elective	3
TOTAL	17	TOTAL	16

SECOND YEAR

Fall		*Spring*	
CHEM 2303, Intro. Organ. Chem. or		HIST 2301, U.S. Since 1877	3
CHEM 2305, Organic Chem. I	3	PSS 2401, Intro. Ento.	4
CHEM 2103, Intro. Organ. Chem. Lab.		**Required Elective	3
or CHEM 2105, Organic Chem. Lab.	1	**Directed Elective	4
HIST 2300, U.S. to 1877	3	Free Elective	3
ENGL 2311, Rpts. & Corresp., or		TOTAL	17
ENGL 3365, Prof. Rpt. Writ.	3		
AAEC 2305, Fund. Ag. & Appl. Eco. or			
ECO 2301, Prin. of Econ.	3		
PSS 2432, Prin. & Prac. Soils	4		
TOTAL	17		

THIRD YEAR

Fall		*Spring*	
**Required Elective	6	AAEC 3401, Ag. Stats.	4
POLS 1301, Am. Gov. Org.	3	POLS 2302, Am. Pub. Pol.	3
MBIO 3400, Microbiology	4	PSS 4301, Ag. Compounds	3
Free Elective	3	**Required Electives	6
TOTAL	16	TOTAL	16

FOURTH YEAR

Fall		*Spring*	
PSS 4100, Seminar	1	COMS 2300, Public Speaking	3
PSS 4415, Ag. Biotech.	4	*Visual & Performing Arts	3
*Humanities or Multicultural	3	**Required Electives	8
**Required Electives	6	Free Elective	3
Free Electives	4	TOTAL	17
TOTAL	18		

Minimum hours required for graduation—134. (Students must fulfill the university multicultural requirement.)
*Choose from Core Curriculum requirements.
**Students will select one of the options listed below according to their area of interest.
Directed and required electives are subject to approval of the academic advisor.
Agronomy: Required electives—PSS 3421 plus 25 hours from the following: PSS 3321, 3322, 3323, 3324, 4321, 4325, 4332, 4335, 4336, 4337, or 4421; directed electives (4 hours from the following)—atmospheric science, chemistry, geology, mathematics, or physics.
Environmental Soil Science: Required electives—PSS 4332, 4335, 4336, 4337, and 9 hours from any other PSS courses; directed electives (9 hours from the following)—BIOL 2313, ENVE 1301, 3203, GEOL 3323, or RWFM 4314.

Horticulture Curriculum

FIRST YEAR

Fall		*Spring*	
PSS 1411, Prin. of Hort.	4	AAEC 2305, Fund. of Ag. & Appl. Eco.	3
CHEM 1307, Prin. Chem. I	3	BIOL 1401, Biol. of Plants	4
CHEM 1107, Prin. Chem. I (lab.)	1	CHEM 1308, Prin. Chem. II	3
MATH 1320, Coll. Alg.	3	CHEM 1108, Prin. Chem. II (lab.)	1
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
POLS 1301, Amer. Govt., Org.	3	MATH 1330, Intro. Math. Anal.	3
TOTAL	17	TOTAL	17

SECOND YEAR

Fall		*Spring*	
HIST 2300, Hist. of U.S. to 1877	3	HIST 2301, Hist. of U.S. Since 1877	3
ENGL 2311, Pat. & Rept. Cor.	3	PSS 2312, Propagation Meth.	3
PSS 2401, Intro. Ento.	4	PSS 2432, Prin. & Pract. Soils	4
PSS 2313, Herb. Plants	3	POLS 2302, Amer. Pub. Pol.	3
PSS 3318, Woody Plants	3	Free Electives	3
TOTAL	16	**Directed Elective	3
		TOTAL	19

THIRD YEAR

Fall		*Spring*	
CHEM 2303, Intro. Org. Chem.	3	PSS 3421, Genetics	4
CHEM 2101, Intro. Org. Chem. (lab)	1	BOT 3401, Plant Physiology or	
COMS 2300, Public Speaking	3	PSS 3323, Crop Growth	3-4
*Humanities or Multicultural	3	*Vis. & Perf. Arts	3
**Directed Elective	3	**Required Elective	6
**Required Elective	3	TOTAL	16-17
TOTAL	16		

FOURTH YEAR

Fall		*Spring*	
PSS 4425, Ag. Plant Path.	4	PSS 4301, Ag. Compounds	3
PSS 4100, Seminar	1	**Directed Elective	6
**Directed Elective	3	**Required Elective	6
**Required Elective	6	Free Elective	1-2
Free Elective	3	TOTAL	16-17
TOTAL	17		

Minimum hours required for graduation—134. (Students must fulfill the university multicultural requirement.)
*Choose from Core Curriculum requirements.
**Students will select one of the emphases listed below according to their area of interest. Directed and required electives are subject to approval of the academic advisor.
Horticultural Science: Required electives—15 hours from PSS 2210, 2311, 3309, 3310, 3317, 4000, 4001, 4313 with a minimum of 6 hours from PSS 4314, 4411, 4415; directed elective—15 hours from the following areas of study: Business Administration, AAEC, BIOL, CHEM, F S, LARC, MBIO, PSS, PSY, RWFM, SOC.
Turfgrass Management: Required electives—PSS 3309, 4313, 4314, 4316, 4335, 4421, and 2 hours from any other PSS course; directed electives—15 hours from AGSM 2302, 3302, 3303, LARC 2401, 3304, 3306, PSS 3317, 4000, 4001, 4305, 4411, 4415, or other approved electives.

Integrated Pest Management Curriculum

FIRST YEAR

Fall		*Spring*	
ENGL 1301, Ess. College Rhetoric	3	ENGL 1302, Adv. College Rhetoric	3
HIST 2300, Hist. of U.S. to 1877	3	HIST 2301, Hist. of U.S. Since 1877	3
BIOL 1403, Biology I	4	BIOL 1404, Biology II	4
PSS 1321, Agr. Plant Sci.	3-4	Visual & Performing Arts	3
or PSS 1411, Princ. of Hort.		PSS 2401, Intro. Entomology	4
*Elective	2	TOTAL	17
TOTAL	15-16		

SECOND YEAR

Fall		*Spring*	
MATH 1330, Intro. Math. Analysis or		MATH 1331, Intro. Math. Analysis or	
MATH 1320, College Algebra	3	MATH 1330, Intro. Math. Analysis	3
CHEM 1307, Prin. Chem. I	3	CHEM 1308, Prin. Chem. II	3
CHEM 1107, Prin. Chem. I (lab.)	1	CHEM 1108, Prin. Chem. II (lab.)	1
ENGL 2311, Technical Writing	3	COMS 3308, Bus. & Prof. Speech or	
POLS 1301, Amer. Gov., Org.	3	COMS 2300, Public Speaking	3
Humanities or Multicultural	3	POLS 2302, Amer. Public Politics	3
TOTAL	16	TOTAL	13

THIRD YEAR

Fall		*Spring*	
CHEM 2303, Intro. Organic Chem.	3	PSS 2432, Prin. & Prac of Soils	4
CHEM 2103, Intro. Org. Chem. Lab.	1	*Electives	12
MBIO 3400, Microbiology	4	TOTAL	16
PSS 4421, Prin. Weed Science	4		
*Electives	6		
TOTAL	18		

FOURTH YEAR

Fall		*Spring*	
*Electives	9-10	AAEC 3401, Ag. Statistics or	
PSS 4305, Integrated Pest Mgt.	3	MATH 2300, Statistical Math.	3-4
PSS 4415, Agric. Biotechnology	4	PSS 3421, Genetics	4
PSS 4100, Seminar	1	PSS 4301, Agric. Compounds	3
TOTAL	17-18	*Electives	8
		TOTAL	18-19

Minimum hours required for graduation—134. (Students must fulfill the university multicultural requirement.)
Students will select one of the emphases listed below according to their area of interest.
*Directed, required, and free electives within an emphasis are subject to approval of the academic advisor.
Integrated Pest Management Science: Required electives—AGSC 2300, PSS 3304, 3307, 3401; directed electives

(22-24 hours from the following)—PSS 2311, 2313, 3309, 3321, 3322, 3323, 3324, 3402, 4321, 4335, 4425; RWFM 3302; BIOL 3303, 3307, 4305, 4306; ZOOL 3406, 4312; ATMO 1300 and 1100, BOT 3302, 3401; free electives 6 hours.

Plant Biotechnology: Required electives—AAEC 2305 or ECO 2301, BIOL 3320 or PSS 4425, BOT 3401 or PSS 3323, BOT 4304, CHEM 3311, 3312, 3313; directed electives—7-14 hours from any 2000 or above PSS course; free electives—6 hours. Specialization in one of the three disciplines within PSS is encouraged.

Plant and Soil Science (PSS)

1321. Agronomic Plant Science (3:3:0). Importance, distribution, and use of major world agronomic crops. Fundamentals of growth, structure, and improvements are also stressed. [AGRI 1307]

1411. Principles of Horticulture (4:3:2). Principles and practices of growth and development, structure, nomenclature, use of horticultural plants and how they are affected by the environment. [AGRI 1415] Fulfills laboratory science requirement.

2130. Urban Soils Laboratory (1:0:2). Prerequisite: PSS 2330 or concurrent. Discussion and practical experience with soils in the urban environment.

2210. Floral Design (2:1:2). Floral design as a commercial enterprise. Emphasis on principles of floral design, patterns of arrangements, and elements of color composition. Field trips required.

2311. Vegetable Crops (3:2:3). Principles and practices in home vegetable gardening, with an introduction to commercial production and marketing of major vegetable crops. Fulfills science and technology requirement.

2312. Propagation Methods (3:2:2). Prerequisite: PSS 1411. Propagation techniques of commercial nurseries and greenhouse ranges; study of the physiological reaction and cutting material. (Writing Intensive)

2313. Herbaceous Plant Materials (3:2:2). Prerequisite: PSS 1411. Study of the principal herbaceous plants and plant families, palms, roses, and subtropic landscape plants.

2330. Urban Soils (3:3:0). Utilization of soils in urban environments with emphasis on nutrients, water management, and physical properties. (Credit not given for PSS 2432.)

2401. Introductory Entomology (4:3:2). An introduction to the arthropods with major emphasis on the insects. Insect structure, function, identification, and relationships to man, plants, and animals with be discussed. [AGRI 1413]

2432. Principles and Practices in Soils (4:3:2). Prerequisite: CHEM 1305 and 1105. Formation and composition, physical and chemical properties, hydraulic and thermal relationships of soil. Role of soil in ecosystems. (Writing Intensive)

3304. Horticultural and Urban Arthropod Pests (3:2:2). Prerequisite: PSS 2401. The life history, biology, and management of arthropod pests of ornamental, vegetable, and fruit crops and of households and industry.

3305. Field Crop Entomology (3:2:2). Prerequisite: PSS 2401. Introduction to insects of agricultural importance, their identification, and management strategies. Pest sampling and recognition of damage to major crops will also be discussed.

3307. Insect Anatomy and Physiology (3:2:3). Prerequisite: PSS 2401. A study of the structure and function of insect systems. (Writing Intensive)

3309. Turf Culture and Management (3:3:0). Prerequisite: PSS 1411. Study of the principal turfgrass species and their cultural management. Field trips required.

3310. Wine Production in the World (3:2:3). Introduction to winemaking. History, geography, fundamental science, and modern technology involved in worldwide wine production.

3317. Interior Plants (3:2:3). Selection and maintenance of interior plants and planting facilities.

3318. Woody Plants (3:2:2). Prerequisite: PSS 1411. Discussion and selection of woody plants used for ornamental purposes in the landscape setting. The course will be divided between deciduous and evergreen plants.

3321. Forage and Pasture Crops (3:3:0). The production and use of forage and pasture crops.

3322. Grain, Fiber, and Oilseed Crops (3:3:0). History, distribution, use, plant form, growth and development, and cultural and production practices of important agronomic crops.

3323. Crop Growth and Culture (3:3:0). Study of the growth and development sequences of crop plants as related to production. Emphasis will be placed on anatomical, morphological, and physiological characteristics.

3324. Seed Science (3:3:0). Analysis of seed for planting. Seed quality as related to production, processing, storing, and handling. Study of federal and state seed laws.

3401. Insect Taxonomy (4:3:3). Prerequisite: PSS 2401 or an introductory course in entomology. A study of the major families of insects with emphasis on their

identifying features and biologies. An insect collection is required.

3421. Fundamental Principles of Genetics (4:4:0). Prerequisite: PSS 1321 or BIOL 1401 or consent of instructor. Mendelian genetic principles and chromosomal basis of heredity and genetic analysis based on recombinant DNA. (Writing Intensive)

4000. Internship (V1-3). Prerequisite: Approval of department chair. A supervised study course providing in-service training and practice in various areas of plant science. May be repeated for credit.

4001. Problems (V1-3). Prerequisite: Approval of instructor. An assigned problem and individual instruction in a specific area, Plant Science. May be repeated for credit with approval of department chair.

4100. Seminar (1:1:0). Prerequisite: Senior standing or approval of instructor. Utilization of writing and oral presentation skills. Continued enhancement of education skills and adherence to professional ethics.

4131. Soil Fertility Laboratory (1:0:3). Prerequisite: PSS 2432 and concurrent enrollment in PSS 4335. Laboratory analysis of soil and plant samples; interpretation of fertility management data.

4301. Agricultural Compounds (3:3:0). Prerequisite: PSS 2401 and CHEM 3303, 3103. Nature, mode of action, and uses of insecticides, fungicides, herbicides, and other pesticides.

4303. Insect Natural History (3:2:2). A field-oriented study of insect habitats and behavior with emphasis on entomological techniques.

4305. Integrated Pest Management (3:3:0). Prerequisite: An introductory course in entomology. The principles and practices of integration of all available control strategies in the management of arthropod pest populations.

4310. Ecology of Insects (3:3:0). Prerequisite: PSS 2401 and 6 hours of math courses. Synthesis of insect development, chemical communication, organism through ecosystem functions, predator-type relationships, and applied insect modeling.

4313. Arboriculture (3:3:0). Prerequisite: PSS 1411. The physiological principles and industry practices in the production, moving, care, and maintenance of ornamental trees, shrubs, and ground covers. Required field trips.

4314. Garden Center Management (3:3:0). The principles of management, marketing, structures, and distribution for retail establishments. (Writing Intensive)

4316. Turfgrass Science (3:3:0). Prerequisite: PSS 3309. Second course in turfgrass management including turf physiology, nutrition, weed control, insects, and diseases.

4321. Fundamental Principles of Plant Breeding (3:3:0). Prerequisite: PSS 3421. Practical application of genetics and biotechnology in the breeding and improvement of plants.

4325. Crop Water Management (3:3:0). Comprehensive evaluation of soil-plant atmosphere interactions affecting supply and demand of water for crop production.

4332. Soil Classification (3:2:3). Prerequisite: PSS 2432, or approval of instructor for nonagriculture majors. Soil profile morphology. Classification systems with emphasis on the taxonomic system of the United States.

4335. Soil Fertility Management (3:3:0). Prerequisite: PSS 2432. Nutrient availability as influenced by the properties of soils, use of fertilizers and soil amendments; methods and time of application of fertilizer.

4336. Soil Physical Properties (3:3:0). Prerequisite: PSS 2432 and 6 hours of mathematics. Physical properties of soils: structure and movement of water, air, and temperature.

4337. Environmental Soil Science (3:3:0). Prerequisite: PSS 2432. Physical, chemical, and biological properties and processes of soil as they relate to environmental quality.

4411. Principles of Floriculture (4:3:3). Prerequisite: PSS 1411. Greenhouse construction, heating and cooling, growing media, pest management, nutrition and fertility, growth regulation, irrigation, post harvest handling, and marketing of floricultural crops. Required field trips.

4415. Agricultural Biotechnology (4:3:2). The relationship of biotechnology and its impact on agricultural sciences. Examines the place of biotechnology in relation to society, the environment, and agriculture. (Writing Intensive)

4421. Principles of Weed Science (4:3:2). Fundamentals of chemical weed control. Emphasis on herbicide families, names, usage, absorption, translocation, mechanism of action, and factors influencing selectivity and soil persistence. The laboratory will emphasize labels, calculations, equipment, calibrations and usage, and methods of application.

4425. Agricultural Plant Pathology (4:3:2). Identification and management of diseases of agricultural and horticultural plants. Diagnostic methods used to identify basic plant pathogens.

Department of Range, Wildlife, and Fisheries Management

Chair: Professor Ernest B. Fish

Kleberg Professor Smith; ***Professors*** Britton, Parker, Patino, Schmidly, Sosebee, Wester, and Zwank; ***Associate Professors*** Ballard, Dabbert, Mitchell, Villalobos, Wallace, and Wilde; ***Assistant Professors*** Boal, Pope, and Winslow; ***Adjunct Faculty*** Bowman, Cronin, Drawe, Gipson, Haukos, Krausman, Pence, Peterson, Rhodes, and Sullivan.

This department supervises the following degree programs: RANGE MANAGEMENT, WILDLIFE AND FISHERIES MANAGEMENT, and ENVIRONMENTAL CONSERVATION OF NATURAL RESOURCES, *Bachelor of Science*; FISHERIES SCIENCE, RANGE SCIENCE, and WILDLIFE SCIENCE, *Master of Science* and *Doctor of Philosophy*.

The Department of Range, Wildlife, and Fisheries Management is primarily concerned with the application of basic ecological principles to the management and use of natural resources. The range management specialization prepares students for graduate school and meets the Civil Service requirements for positions as range conservationists for agencies such as the Natural Resource Conservation Service, Forest Service, and Bureau of Land Management. The wildlife and fisheries management curriculum prepares students for graduate school and meets the minimum requirements recommended by the Wildlife Society for wildlife biologist certification and by the American Fisheries Society for a fisheries biologist. The wildlife and fisheries curriculum includes a track for those interested in wildlife and a track for those interested in fisheries management.

Students may also simultaneously fulfill the requirements for a second B.S. degree in the department by completing a minimum of 24 hours of course work. Students majoring in either range, wildlife and fisheries management, or environmental conservation of natural resources must make a C or better in departmental courses to be eligible for graduation.

Students are encouraged to become actively involved in the clubs sponsored by the Range, Wildlife, and Fisheries Management Department—the Range, Wildlife, and Fisheries Club and the Soil Conservation Club. These clubs promote involvement in professional societies such as the Wildlife Society, the American Fisheries Society, the Society for Range Management, and the Soil and Water Conservation Society of America. Club activities also include regularly scheduled meetings with guest speakers and social events such as barbecues.

This department offers a minor in natural resource management for students majoring outside the department. For more information on requirements for completing a minor, refer to “Selecting a Minor” in the introductory information about this college or contact the departmental chair.

Range Management Curriculum

FIRST YEAR

Fall		*Spring*	
ENGL 1301, Ess. Coll. Rhet.	3	ENGL 1302, Adv. Coll. Rhet.	3
MATH 1330, Intro. Math. Anal. I or MATH 1350, Anal. Geo.	3	MATH 1331, Intro. Math. Anal. II or MATH 1351, Calculus I	3
CHEM 1307, Prin. Chem. I	3	CHEM 1308, Prin. Chem. II	3
CHEM 1107, Prin. Chem. I (Lab.)	1	CHEM 1108, Prin. Chem. II (Lab.)	1
RWFM 2301, Intro. Wildlife.	3	RWFM 2302, Ecol. & Cons. Nat. Res.	3
RWFM 4100, Seminar	1	AGSC 2300, Computers in Ag.	3
HIST 2300, Hist. of U.S. to 1877	3	TOTAL	16
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
BIOL 1403, Biol. I	4	BIOL 1404, Biol. II	4
AAEC 2305, Fund. Ag. & Appl. Eco.	3	RWFM 3501, Rng., For., Wet. Plants	5
BOT 3404, Tax. Flowering Plants	4	PSS 2432, Prin. & Pract. Soils	4
POLS 1301, Amer. Govt., Org.	3	BOT 3401, Plant Physiol.	4
CHEM 2303, Intro. Org. Chem.	3	TOTAL	17
CHEM 2103, Intro. Org. Chem. (Lab.)	1		
TOTAL	18		

THIRD YEAR

Fall		*Spring*	
RWFM 3302, Range Plant Ecol.	3	RWFM 3304, Prin. Range Mgt.	3
RWFM 3201, Veg. Invent. & Anal.	2	COMS 2300, Public Speaking	3
POLS 2302, Amer. Pub. Pol.	3	AAEC 3401, Ag. Stat.	4
PSS 4332, Soil Class.	3	AAEC 3302, Ag. Finance	3
PSS 3321, For. & Past. Crops	3	HIST 2301, Hist. of U.S. Since 1877	3
ANSC 3301, Prin. Nutri.	3	Electives	2
TOTAL	17	TOTAL	18

FOURTH YEAR

Fall		*Spring*	
RWFM 4302, Range Impr.	3	RWFM 4303, Range. Anal. & Plan.	3
RWFM 4304, Fire Ecol. & Mgt.	3	ENGL 2311, Technical Writing or	
RWFM 4309, Range-Wild. Hab. Mgmt.	3	JOUR 3309, Writ. for Mass Media	3
PSS 3421, Fund. Prin. Gen. or		RWFM 4314, Watershed Plan.	3
BIOL 3416, Genetics	4	ANSC 4403, Beef Prod. or	
*Humanities - Multicultural	3	ANSC 4406 or ANSC 3302	3-4
Elective	2	Visual & Performing Arts	3
TOTAL	18	RWFM 4100, Seminar	1
		TOTAL	16-17

Minimum hours required for graduation—136. (Students must fulfill the university multicultural requirement.)
*Choose from Core Curriculum requirements.

Wildlife and Fisheries Management Curriculum

WILDLIFE MANAGEMENT TRACK

FIRST YEAR

Fall		*Spring*	
ENGL 1301, Ess. Coll. Rhet.	3	ENGL 1302, Adv. Coll. Rhet.	3
MATH 1330, Intro. Math. Anal. I or		MATH 1331, Intro. Math. Anal. II or	
MATH 1350, Anal. Geo.	3	MATH 1351, Calculus I	3
CHEM 1307, Prin. Chem. I	3	CHEM 1308, Prin. Chem. II	3
CHEM 1107, Prin. Chem. I (Lab.)	1	CHEM 1108, Prin. Chem. II (Lab.)	1
RWFM 2301, Intro. Wildlife.	3	RWFM 2302, Ecol. & Cons. Nat. Res.	3
RWFM 4100, Seminar	1	AGSC 2300, Computers in Ag.	3
HIST 2300, Hist. of U.S. to 1877	3	TOTAL	16
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
BIOL 1403, Biol. I	4	BIOL 1404, Biol. II	4
AAEC 2305, Fund. Ag. & Appl. Eco.	3	ZOOL 2406, Comp. Anat. Game Ani.	4
RWFM 3501, Rng., For., Wet. Plants	5	BIOL 3416, Genetics	4
RWFM 2305, Freshwater Eco. and Mgt.	3	*Humanities-Multicultural	3
CHEM 2303, Intro. Org. Chem.	3	***Required Elective	4
CHEM 2103, Intr. Org. Chem. (Lab.)	1	TOTAL	19
TOTAL	19		

THIRD YEAR

Fall		*Spring*	
RWFM 3302, Range Plant Ecol.	3	RWFM 3304, Prin. Range Mgt.	3
BOT 3401, Plant Physiol.	4	***Required Elective	3
POLS 1301, Amer. Govt. Org.	3	AAEC 3401, Ag. Stat.	4
†Elective	5	HIST 2301, Hist. of U.S. Since 1877	3
TOTAL	15	POLS 2302, Amer. Pub. Pol.	3
		TOTAL	16

FOURTH YEAR

Fall		*Spring*	
***Required Electives	10	RWFM 4303, Range. Anal. & Plan. or	3
COMS 2300, Public Speaking	3	LARC 4302 or 4303, or	
*Visual & Performing Arts	3	RWFM 4314 or 4320	
**†Elective	3	RWFM 4408, Wild. Pop. Dyn.	4
TOTAL	19	ENGL 2311, Technical Writing or	
		JOUR 3309, Writ. for Mass Media	3
		AAEC 4302, Stat. Methods in Ag.	3
		RWFM 4100, Seminar	1
		†Elective	3
		TOTAL	17

Minimum hours required for graduation—137. (Students must fulfill the university multicultural requirement.)
*Choose from Core Curriculum requirements.
**Select one course from the following: RWFM 4305, 4306, 4310, 4403.
†Suggested electives for students interested in becoming a game warden are SOC 4325, and POLS 3350. Suggested electives to enhance the wildlife track are RWFM 3201, 4305, 4306, 4310, and 4401.
***Students will select one of the options listed below according to their area of interest. Required electives are subject to approval of the academic advisor:
Conservation Science—RWFM 4322; BIOL 3309, 4303, or 4310; RWFM 4407, 4315, or GEOG 3300; one 4-hour lecture and lab from ATMO 1300 and 1100, GEOL 1301 and 1101, PHYS 1306 and 1103, PSS 2401, or 2432.
Wildlife Management—PSS 2432, ZOOL 4306, 4308, RWFM 4309, 4407.

Wildlife and Fisheries Management Curriculum

FISHERIES MANAGEMENT TRACK

FIRST YEAR

Fall		*Spring*	
ENGL 1301, Ess. Coll. Rhet.	3	ENGL 1302, Adv. Coll. Rhet.	3
MATH 1330, Intro. Math. Anal. I or		MATH 1331, Intro. Math. Anal. II or	
MATH 1350, Anal. Geo.	3	MATH 1351, Calculus I	3
CHEM 1307, Prin. Chem. I	3	CHEM 1308, Prin. Chem. II	3
CHEM 1107, Prin. Chem. I (Lab.)	1	CHEM 1108, Prin. Chem. II (Lab.)	1
RWFM 2301, Intro. Wildlife	3	RWFM 2302, Ecol. & Cons. Nat. Res.	3
RWFM 4100, Seminar	1	AGSC 2300, Computers in Ag.	3
HIST 2300, Hist. of U.S. to 1877	3	TOTAL	16
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
BIOL 1403, Biol. I	4	BIOL 1404, Biol. II	4
AAEC 2305, Fund. Ag. & Appl. Eco.	3	BIOL 3416, Genetics or	
RWFM 2305, Int. to Fresh. Eco. & Fish	3	PSS 3421, Fund. Prin. Genetics	4
RWFM 3501, Rng., For., Wet. Plants or		ZOOL 2406, Comp. Ana. Game Animals or	
BOT 4302, Field Botany or		ZOOL 3405, Vert. Struct. & Dev	4
BOT 3403, Comp. Morph. of Plants or		POLS 1301, Amer. Govt. Org.	3
BOT 3404, Tax. Flower. Plants	3-5	PSS 2401, Intro. Entomology	4
CHEM 2303, Intro. Org. Chem	3	TOTAL	19
CHEM 2103, Intr. Org. Chem. (Lab)	1		
TOTAL	17-19		

THIRD YEAR

Fall		*Spring*	
RWFM 4330, Aquaculture	3	RWFM 4335, Fisheries Science	3
BOT 3401, Plant Physiol. or		AAEC 3401, Ag. Stat.	4
PSS 3307, Insect Ana. & Phys. or		ZOOL 4310, Intro. Ichthyology	3
ANSC 2401, Ana. Phy. Dom. Animals	3-4	RWFM 4320, Nat. Res. Policy	3
HIST 2301, Hist of U.S. Since 1877	3	**Elective	3
POLS 2302, Amer. Pub. Pol.	3	TOTAL	16
**Elective	3-4		
TOTAL	15-17		

FOURTH YEAR

Fall		*Spring*	
RWFM 4407, Wild. Inv. Tech. or ZOOL 4308, Ornithology or BIOL 4301, Herpetology or BIOL 4407, Nat. Hist. Verts.	3-4	Humanities-Multicultural	3
RWFM 4401, Fisheries Management	4	RWFM 4408, Wild. Pop. Dyn. or BIOL 3309, Pop. Comm. Ecosys. or BIOL 4310, Community Ecology	3-4
COMS 2300, Public Speaking	3	ENGL 2311, Technical Writing or JOUR 3309, Writing for Mass Media	3
*Visual & Performing Arts	3	AAEC 4302, Stat. Methods in Ag.	3
**Elective	3	RWFM 4100, Seminar	1
TOTAL	16-17	**Elective	3-4
		TOTAL	16-18

Minimum hours required for graduation—137. (Students must fulfill the university multicultural requirement.)
*Choose from Core Curriculum requirements.
**Suggested electives for students interested in becoming a game warden are SOC 4325, POLS 3350. Suggested electives to enhance fisheries track are C E 3371, 3171, ZOOL 3406, GEOL 3322.

Environmental Conservation of Natural Resources

FIRST YEAR

Fall		*Spring*	
ENGL 1301, Ess. Coll. Rhet.	3	ENGL 1302, Adv. Coll. Rhet.	3
MATH 1330, Intro. Math. Anal. I or MATH 1350, Anal. Geo.	3	MATH 1331, Intro. Math. Anal. II or MATH 1351, Calculus I	3
CHEM 1307, Prin. Chem. I	3	CHEM 1308, Prin. Chem. II	3
CHEM 1107, Prin. Chem. I (Lab)	1	CHEM 1108, Prin. Chem. II (Lab.)	1
RWFM 2301, Intro. Wildlife.	3	RWFM 2302, Ecol. & Cons. Nat. Res.	3
RWFM 4100, Seminar	1	AGSC 2300, Computers in Ag.	3
HIST 2300, Hist. of U.S. to 1877	3	TOTAL	16
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
BIOL 1403, Biol. I	4	BIOL 1404, Biol. II	4
AAEC 2305, Fund. Ag. & Appl. Eco.	3	ENVE 1301, Intro. to Envir. Sys.	3
RWFM 3501, Rng., For., Wet. Plants	5	ATMO 1300, Intro. to Atmo. Sci.	3
RWFM 2305, Freshwater Eco. & Mgt.	3	ATMO 1100, Atmo. Sci. (Lab)	1
CHEM 2303, Intro. Org. Chem. or CHEM 2305, Org. Chem. I	3	PSS 2432, Prin. & Pract. Soils	4
		*Physical Science Elective	4
CHEM 2103, Intr. Org. Chem. (Lab) or CHEM 2105, Org. Chem. (Lab)	1	TOTAL	19
TOTAL	19		

THIRD YEAR

Fall		*Spring*	
RWFM 3302, Range Plant Ecol.	3	AAEC 3401, Ag. Stat.	4
BIOL 3309, Pop., Comm., & Ecosys.	3	HIST 3327, Sur. Amer. Env. Hist.	3
**Animal Biology Elective	3-4	RWFM 3304, Prin. Range Mgt.	3
††Specialized Elective	3	P R 3310, Prin. Public Relations or AGSC 3301, Ag. Lead. Prin.	3
POLS 1301, Amer. Govt. Org.	3	POLS 2302, Amer. Pub. Pol.	3
TOTAL	15-16	††Specialized Elective	3
		TOTAL	19

FOURTH YEAR

Fall		*Spring*	
RWFM 4407, Wild. Inv. Tech.	4	COMS 2300, Public Speaking	3
††Specialized Electives	6	RWFM 4314, Watershed Plan.	3
ENVE 3203, Envir. Measurement or RWFM 3201, Veg. Inven. & Anal.	2	ENGL 2311, Technical Writing	3
		††Specialized Electives	6
†Hum., Multicult., or Vis. & Perf. Arts	6	RWFM 4100, Seminar	1
TOTAL	18	TOTAL	16

Minimum hours required for graduation—139. (Students must fulfill the university multicultural requirement.)
*Students will select one of the following courses to satisfy the physical science elective: GEOL 1303 and 1101, GEOG 1301 and 1101, 1302 and 1102.
**Students will select one of the following courses to satisfy the animal biology elective: ZOOL 3406, 4306, 4308, 4407, PSS 2401.
†Choose from Core Curriculum requirements.
††Students will select one of the following specializations according to their area of interest. Of the 18 hours required at least 12 hours must come from one of the specializations listed below:

Technical Environmental—additional required electives GEOG 3404, RWFM 4315, 4403, 4408, ENVE 2401, 3404, 4301, CHEM 2401, 3402, BIOL 4310.
Water Management—additional required electives RWFM 4335, 4401, 4330, LARC 4302.
Land Management—additional required electives RWFM 4302, 4303, 4304, LARC 4302, GEOL 1303, 1101, GEOG 1301, 1101, 1302, 1102, PSS 4331, 4332, 4335, 4337, MBIO 4401.
Animal Population Management and Conservation—additional required electives RWFM 4305, 4306, 4310, 4335, 4408, ZOOL 3406, 4306, 4308, 4407, PSS 2401.

Range, Wildlife, and Fisheries Management (RWFM)

2101. Introductory Wildlife Laboratory (1:0:2). Corequisite: RWFM 2301. Field and laboratory exercises introducing wildlife ecology and management. F, S.

2102. Ecology and Conservation Laboratory (1:0:2). Corequisite: RWFM 2302. Field and laboratory exercises introducing ecology and conservation of renewable natural resources. F, S.

2105. Freshwater Ecology and Management Laboratory (1:0:2). Corequisite: RWFM 2305. Field and laboratory exercises introducing freshwater habitats. F, S.

2301. Introductory Wildlife (3:3:0). Introduction to the ecology and management of wildlife populations. Stresses principles, life histories, and management techniques. F, S.

2302. The Ecology and Conservation of Natural Resources (3:3:0). An introduction to the ecology and conservation of renewable natural resources of native lands, including their multiple use for timber, water, range, recreation, and wildlife. F, S.

2305. Freshwater Ecology and Fisheries (3:3:0). Survey and management of freshwater habitats: types of organisms, adaptations, and ecological interactions; and effects of solar radiation, temperature, currents, dissolved gases, chemicals, and pollution. F, S.

2307. Diversity of Life (3:3:0). Principles of biogeography, examination of current environmental threats to biodiversity, and conservation of natural systems. Plant and animal (including invertebrate) issues are examined.

3201. Vegetation Inventory and Analysis (2:1:2). Techniques and methods for sampling and analyzing rangeland vegetation. F.

3302. Range Plant Ecology (3:3:0). The basic principles of autecology and synecology and their relationship to management of the range ecosystem. F, S.

3303. Range Management Principles and Practices (3:3:0). Prerequisite: Sophomore standing. A general course in the principles and practices of range management designed for nonrange majors who plan to enter the ranching industry. F, S. Field trips required. Not open to range or wildlife majors.

3304. Principles of Range Management (3:2:3). Prerequisite: RWFM 3501. Application of ecological principles in the management of rangelands for sustained livestock products consistent with conservation of the range resource. Field trips required. S.

3307. Principles of Conservation Science (3:3:0). Prerequisite: RWFM 2307. A survey of the theory and practices of conservation biology. Emphasis is placed on methods used to maintain plant and animal biodiversity.

3501. Range, Forest, Wetland Plants, and Plant Identification (5:3:4). Native and naturalized forage plants of the U.S.; identification, distribution, ecology, plant communities, and economic value are stressed. F, S. Field trips are required.

4000. Internship (V1-12).

4001. Undergraduate Research (V1-12). Selected research problems according to the needs of the student. May be repeated.

4100. Seminar (1:1:0). An organized discussion of current problems and research in range, wildlife, and fisheries management. May be repeated.

4301. Problems (3). Prerequisite: Approval of instructor. Individual investigation of an assigned problem in range, wildlife, and fisheries management. Emphasis placed on the theory, methods, and practice of range, wildlife, or fisheries field work.

4302. Range Improvements (3:2:3). Application of principles and practices necessary to enhance the productive potential of the range resource for all potential uses. Methods for brush management, revegetation, conservation, etc. are considered. Improvement for increased domestic livestock production and for enhancing wildlife habitat is emphasized. Field trips required. F.

4303. Rangeland Analysis and Management Planning (3:2:3). Prerequisite: RWFM 3304 or 4302. Analysis of rangeland resource inventories for the purpose of planning appropriate use of such resources. A familiarization with the basic components of a range resource plan and their application in decision making. S. (Writing Intensive)

4304. Fire Ecology and Management (3:3:0). Prerequisite: RWFM 3302 and 3501. The effect of fire on major vegetation zones in

North America and ecological changes of plants and animals. Physical effects of fires on soils and plants, management applications, and prescribed burning techniques. F. (Writing Intensive)

4305. Big Game Ecology (3:2:3). Prerequisite: BIOL 1404, RWFM 2301. Survey of distributions and life histories of North American big game species. Productivity, food habits, economic significance, and management will be examined. Field trips required. S, even years.

4306. Upland Game Ecology (3:2:3). Prerequisite: RWFM 2301 and ZOOL 4308, or consent of instructor. Ecological approach to the management of upland game populations. Stresses population mechanisms and habitat management of selected species. Field trips required. S, odd years.

4309. Range-Wildlife Habitat Management (3:3:0). Prerequisite: RWFM 2301, 3501, 3304, or consent of instructor. A study of wildlife habitats based on major vegetation types and the management problems involved. Emphasis on how other resource demands can be integrated with wildlife. Field trips offered. F, S. (Writing Intensive)

4310. Principles of Waterfowl Management (3:2:3). Prerequisite: RWFM 2301. Ecology and management of continental waterfowl resources. Life histories, population management, and habitat manipulation are stressed. Field trips required. F, even years.

4314. Watershed Planning (3:3:0). The watershed as a unit of resource-oriented planning and development. Principles and objectives of watershed management. Physical description of watershed. Relationship between land-use conditions and the water delivery character of watersheds. Watershed analysis, including techniques, collection of field data, and sources of information. F, S.

4315. Spatial Analysis in Natural Resource Management (3:2:3). Introduction to geographic information systems and global positioning systems. Applications for inventory, planning, and management of natural resources are emphasized. S.

4320. Natural Resource Policy (3:3:0). Prerequisite: RWFM 2301. Emphasis on the human dimension of natural resource management. Historical, agency, and private organization roles in policy and conflict resolution. S.

4322. Nongame Ecology and Management (3:2:2). Prerequisite: RWFM 2301 or consent of instructor. Ecological approach to nongame wildlife population management. Public policies, socioeconomic factors, population dynamics, and species-at-risk issues are examined.

4330. Aquaculture (3:3:0). Prerequisite: BIOL 1404 and CHEM 1308 or consent of instructor. A global overview of aquaculture including fish, aquatic invertebrates, plants, and design and operation of production facilities. F, odd years.

4335. Fisheries Science (3:3:0). Prerequisite: RWFM 2301, 2302, 2305, and ZOOL 4310. Scientific study of aquatic organisms. Includes resource sampling, ecology, analysis of populations, resource conflict, and management. S, even years.

4401. Fisheries Management (4:3:3). Prerequisite: AAEC 3401. Theory and practice of fisheries management with emphasis on basic strategies used in effective management of aquatic renewable natural resources. Applied field problems, equipment use. F, even years. (Writing Intensive)

4403. Aerial Photo Interpretation in Natural Resource Management (4:2:4). Fundamentals of aerial photograph reading, interpretation, and evaluation. Introduction to remote sensing techniques and geographic information systems. F.

4407. Wildlife Investigational Techniques (4:3:3). Prerequisite: Junior standing and AAEC 3401. The basic methodology of practical wildlife management. This involves the routine techniques in data collection related to population maintenance, as well as ways to monitor field research. F, S. (Writing Intensive)

4408. Wildlife Population Dynamics and Analysis (4:3:3). Prerequisite: AAEC 3401, RWFM 2301, MATH 1331, or consent of instructor. The mechanisms of wildlife population changes and their management. Detailed examination of techniques for measuring population characteristics. S. (Writing Intensive)

College of Architecture

Professor Andrew Vernooy, *Dean*

Web Site: www.arch.ttu.edu

Professors Mross, Peters, Watkins, J. E. White, and J. P. White; ***Associate Professors*** Aranha, Davis, Driskill, Giaccardo, Hill, Louden, Perl, and Smith; ***Assistant Professors*** Beltran, Buelinckx, Flueckiger, Haq, Gallegos, Mead, and Shacklette; ***Lecturers*** Akins, Ballay, Faulk, Fryar, Jaddo, Lindsey, MacBurnie, Martin, Powell, and Stephens.

The college supervises the following degree programs: ARCHITECTURE, *Bachelor of Science in Architecture, Master of Architecture* (the professional degree), and *Master of Science in Architecture*; LAND-USE PLANNING, MANAGEMENT, AND DESIGN, *Doctor of Philosophy.*

Dual degrees offered with the Master of Architecture include a Bachelor of Science in Civil Engineering (ARMC), Bachelor of Business Administration in General Business (ARMB), and Master of Business Administration (ARBM).

Mission Statement. The College of Architecture educates students for the future practice of architecture and the advancement of knowledge of the discipline for the benefit of society.

Mandatory Accreditation Statement. The National Architectural Accrediting Board provides the following statement: “In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure that are accredited by The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes two types of degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted a five-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards. Master’s degree programs may consist of a preprofessional undergraduate degree and a professional graduate degree, which when earned sequentially, comprise an accredited professional education. However, the preprofessional degree is not by itself recognized as an accredited degree.”

The Bachelor of Science in Architecture (ARBS) consists of 146 credit hours at the undergraduate level. This degree gives students the knowledge of and career opportunities in architecture, the building industry, and related fields. It is not an accredited degree by the NAAB and opportunities for professional licensing are limited on a state-by-state basis. Students may use this degree as a path to the professional degree or other graduate education.

The Master of Architecture (ARMA) is the professional degree and is accredited by NAAB. It consists of 131 credit hours of undergraduate courses and 42 hours of graduate courses. Requirements for admission to the graduate portion include; Completion of all academic course work in the first 3 years and a threshold score on the Admissions Criteria Rating System. The threshold score is based on a sliding scale of GRE, GPA, and portfolio scores. A copy of the form is available from the Academic Programs Office.

The dual degrees with the Master of Architecture are very specific programs and it is necessary for students to make a decision regarding entry into one of these programs as early as possible. Students in the dual Master of Architecture and Master of Business Administration (ARBM) program are granted admission into the Master of Business Administration program by virtue of admission into the graduate portion of the Master of Architecture program.

The Master of Science in Architecture and the Land-Use, Planning, Management, and Design programs are graduate degrees

focused on research and specialization and are described in the *Graduate Catalog.*

Undergraduate Entrance Requirements. The admissions index of SAT1, ACT, and class standing for the college differs from the university, dependent upon current enrollment numbers. In addition to general university requirements, the following high school subjects and credits must be completed for unconditional admission in the architecture program:

Mathematics: Algebra I, II, Geometry (1 unit each), Trigonometry-Precalculus, or Calculus (1/2 unit)
English: English I, II, III, IV (1 unit each)
Science: Physics or Chemistry I (1 unit) (C E dual degree requires both)
Foreign Language: 2 years

In addition to the above, studies in world history, geography, music, and art are strongly recommended. See admission requirements for Texas Tech University.

Transfer Students. All students admitted to Texas Tech must meet appropriate requirements for the Texas Academic Skills Program (TASP). Refer to admission requirements in this catalog for information relating to the TASP program. Students transferring from other institutions must submit a portfolio of previous work in architecture and a transcript of completed courses for evaluation and placement. Transfer students will not be admitted to the programs in architecture unless they have at least a 3.0 GPA, not less than a 3.0 average in architecture or architecture related courses, and not less than a 3.0 average for the last semester attended prior to transfer. The same requirements apply for students changing majors into architecture from within the university.

Transfer Courses. All transfer course work to be taken at any other institution must receive evaluation and approval from the Academic Programs Office. The student must provide sufficient evidence of equivalency.

Core Curriculum Requirements. The university has established Core Curriculum requirements for all students. A listing of these requirements appears in the Academic Information section of this catalog.

Writing Intensive Courses. The architecture degree programs require the following writing-intensive courses: ARCH 4381, 5362, 5365, 5382, and 5395. An additional writing-intensive elective is required and may be selected from ENGL 2311, 3365, 3366, or another approved course.

Electives. Students may select electives to broaden their educational experiences. Students in the fourth undergraduate year of study may not take a freshman-level elective course without approval from the associate dean. Courses for required elective hours must have an identified knowledge content, intellectual rigor and documented testing and evaluation of knowledge gained.

Extended Studies Courses. All correspondence and extended studies courses require approval from the Academic Programs Office to apply to the degree program.

Grades of C. A grade of C or better is required for all courses included in the architecture degree plan. In the college, a C is equivalent to a grade of 70-79.

Pass-Fail Grading. Only general elective courses may be taken for pass-fail grading. Architecture majors may take no more than 9 hours pass-fail to satisfy degree requirements.

Class Attendance. Students in the college are expected to attend all scheduled class meeting times and activities. Absences in excess of those stipulated in each individual course syllabus will result in an F. Refer to the university's policy, procedures, and dates on dropping a course. See your academic advisor for additional information.

Student Projects. The College of Architecture reserves the right to retain, exhibit, and reproduce work submitted by students. Work submitted for a grade is the property of the college and remains so until it is returned to the student.

Academic Status. The academic information section of this catalog gives specific information regarding academic status. Students on scholastic probation or scholastic suspension should familiarize themselves with those regulations. At the

graduate level only one (1) semester of probation status is allowed before academic suspension.

Counseling and Advising. Faculty members assist students in career counseling and guidance. Advisement for course registration is provided by the Academic Programs Office staff.

Course Load. The normal course load for a semester is 16 to 18 hours in undergraduate work. Approval from the Academic Programs Office is required for a course load of more than 18 semester hours (8 hours for a summer term). Correspondence courses are included in the student's course load, as are courses taken concurrently at other institutions.

Students who are employed for more than 20 hours each week should limit their semester hour enrollment.

Ineligible Registration. The College of Architecture reserves the right to prevent any student who is not eligible for registration from entering or dropping a course for reasons such as unapproved overloads, unapproved repeated courses, lower division-upper division rule infractions, and lack of prerequisites. Courses taken when the student was ineligible may not be used in the student's degree program.

Catalog Selection. Students will use the catalog issued for the year in which they were first officially admitted to the College of Architecture or may elect to use a more recent catalog. However, if they later transfer to another institution or another college at Texas Tech and wish to return to the College of Architecture at Texas Tech, they will follow the current catalog curricula in effect when they are readmitted. A catalog expires after seven years.

Application for Degree. The Bachelor of Science degree candidate must file an "Application for Degree" with the Academic Programs Office at least one year before the anticipated date of graduation. Subsequently, the student will receive a list of courses and be apprised of the number of grade points that are lacking.

In making this application, students must indicate the year's catalog under which they plan to graduate since they must meet all of the requirements of a specific year's catalog. This must be a year during which the student is registered in the College of Architecture. See also "Uniform Undergraduate Degree Requirements" in this catalog or "Degree Programs" in the *Graduate Catalog* depending on the degree being awarded.

Travel Programs. International and domestic travel programs are offered annually to enrich the student's experience. These programs are open to related majors, with prior approval. Students are encouraged to participate in one of the travel programs prior to graduation.

Internship Program. Each student is encouraged to participate in the professional internship program. The program provides opportunities for professional experience in some of the nation's leading architectural firms.

Architecture Research Center. The Architecture Research Center provides faculty and students with additional opportunities for study and research.

Master of Architecture

Undergraduate Level Program. Academic reviews required for admission to the undergraduate level program include high school GPA, rank in class, SAT-I or ACT scores, specific college preparation course work and two years of a foreign language. All courses require a minimum grade of C.

FIRST YEAR

Fall		*Spring*	
ARCH 1311, Design Env. & Soc.	3	ARCH 1412, Architectonics Studio	4
Elective	3	ARCH 2312, Hist. Ancient - Baroque Arch.	3
ARCH 1441, Arch. Delineation I	4	ARCH 1442, Arch. Delineation II	4
ENGL 1301, Ess. College Rhetoric	3	ENGL 1302, Adv. College Rhetoric	3
MATH 1321, Trigonometry	3	MATH 1350, Analytical Geometry	3
TOTAL	16	TOTAL	17

SECOND YEAR

Fall		*Spring*	
ARCH 2401, Arch. Design Studio I	4	ARCH 2402, Arch. Design Studio II	4
ARCH 3311, Hist. 18th, 19th, & 20th	3	ARCH 3373, Environ. Analysis - Site	3
ARCH 2351, Building Systems	3	ARCH 2353, Computers in Arch.	3
PHYS 1306, Gen. Physics	3	†Natural Lab. Science	4
PHYS 1103, Physics Lab	1	Elective	3
ARCH 4394, Arch. Programming	3	TOTAL	17
TOTAL	17		

SUMMER

POLS 1301, Amer. Govt. Organization	3	††POLS 2302, Amer. Public Policy	3
HIST 2300, Hist. of U.S. to 1877	3	HIST 2301, Hist. of U.S. Since 1877	3
TOTAL	6	TOTAL	6

THIRD YEAR

Fall		*Spring*	
ARCH 3501, Arch. Design Studio III	5	ARCH 3502, Arch. Design Studio IV	5
ARCH 3353, Arch. Environ. Systems I	3	ARCH 3354, Arch. Environ. Systems II	3
C E 3385, Structural Mech.	3	C E 4385, Structures	3
††ARCH 4353, Adv. Arch. Computer	3	ARCH 3350, Building Technology	3
Elective	3	*COMS Elective	3
TOTAL	17	TOTAL	17

FOURTH YEAR

Fall		*Spring (**Professional Level)*	
ARCH 4601, Arch. Design Studio V	6	ARCH 5604, Urban Design Studio	6
ARCH 4381, Urban Theory	3	ARCH 5365, Arch. Research Methods	3
ARCH 4355, Construction Doc.	3	ARCH 5362, Theory in Architecture	3
ARCH 4362, Area Studies in Arch. Hist.	3	ARCH Elective	3
+Writing Intensive Elective	3	TOTAL	15
TOTAL	18		

FIFTH YEAR

*Fall (**Professional Level)*		*Spring (**Professional Level)*	
ARCH 5605, Adv. Arch. Design Studio	6	ARCH 5692, Arch. Design Thesis	6
ARCH 5395, Thesis Res., Prg. & Sch.	3	ARCH 5392, Professional Practice	3
Elective	6	ARCH Elective	3
TOTAL	15	TOTAL	12

Minimum hours required for graduation—173.
*Approved oral communication course.
†Choose from Core Curriculum requirements.
††Or approved substitution
+Select from ENGL 2311, 3365, 3366, or approved course.
****Professional Level Program.*** Requirements for admission to the professional level program include: Completion of all academic course work in the first 3 years and a threshold score on the Admission Criteria Rating System. The threshold score is based on a sliding scale of GRE, GPA, and portfolio scores. A copy of the form is available from the Academic Programs Office. In all graduate courses, no grade below a C will be accepted, a student must have a 3.0 GPA each semester, and a 3.0 GPA is required to graduate.

Dual-Degree Curriculum, Master of Architecture and Bachelor of Science in Civil Engineering

Undergraduate Level Program. Academic reviews required for admission to the undergraduate level program include high school GPA, rank in class, SAT-I or ACT scores, specific college preparation course work, and two years of a foreign language. All courses require a minimum grade of C.

FIRST YEAR

Fall		*Spring*	
ARCH 1311, Design, Environ. & Soc.	3	ARCH 1412, Architectonics Studio	4
ARCH 1441, Arch. Delineation I	4	ARCH 1442, Arch. Delineation II	4
HIST 2300, Hist. of U.S. to 1877	3	ARCH 2312, Hist. Ancient - Baroque Arch.	3
MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
C E 1130, Civil Engr. Seminar I	1	C E 1305, Engr. Analysis I	3
ENGL 1301, Ess. College Rhetoric	3	ENGL 1302, Adv. College Rhetoric	3
TOTAL	17	TOTAL	20

SUMMER

MATH 2350, Calculus III	3	MATH 3350, Math for Engr.	3
PHYS 1308, Prin. Physics I	3	PHYS 2301, Prin. Physics II	3
PHYS 1105, Prin. Physics I Lab	1	PHYS 1106, Prin. Physics II Lab	1
TOTAL	7	TOTAL	7

SECOND YEAR

Fall		*Spring*	
ARCH 2401, Arch. Design Studio I	4	ARCH 2402, Arch. Design Studio II	4
ARCH 3311, Hist. 18th, 19th, & 20th	3	ARCH 2353, Computers in Arch.	3
ARCH 2351, Building Systems	3	I E 3341 or MATH 3342, Statistics	3
C E 2301, Statics	3	C E 3303, Mechanics of Solids	3
C E 2101, Const. Materials Lab	1	C E 3103, Mechanics of Solids Lab.	1
ARCH 4394, Arch. Programming	3	*COMS Elective	3
TOTAL	17	TOTAL	17

SUMMER

CHEM 1307, Prin. of Chem. I	3	CHEM 1308, Prin. of Chem. II	3
CHEM 1107, Prin. of Chem. I Lab	1	CHEM 1108, Prin. of Chem. II Lab	1
POLS 1301, Amer. Govt. Organization	3	††POLS 2302, Amer. Public Policy	3
TOTAL	7	TOTAL	7

THIRD YEAR

Fall		*Spring*	
ARCH 3501, Arch. Design Studio III	5	ARCH 3502, Arch. Design Studio IV	5
ARCH 3353, Arch. Environ Systems I	3	ARCH 3350, Constr. Documents	3
C E 3321, Intro. Geotech. Engr.	3	C E 3302, Dynamics	3
C E 3121, Geotech. Engr. Lab	1	C E 3305, Mech. of Fluids	3
CTEC 2301, Surveying	3	+Writing Intensive Elective	3
HIST 2301, Hist. of U.S. Since 1877	3	TOTAL	17
TOTAL	18		

FOURTH YEAR

Fall		*Spring*	
C E 3440, Struct. Analysis I	4	C E 3341, Prin. Struct. Design	3
E E 2304, Fundamentals of Elec. Engr.	3	†C E 4340, Structural Analysis II	3
C E 3309, Envir. Engr. Systems I	3	C E 3354, Engr. Hydrology	3
C E 3171, Envir. Eng. Lab. I	1	C E 3372, Water Systems Design	3
M E 2322, Engr. Thermo I	3	C E 4343, Design Concrete Structures	3
I E 3301, Eng. Economic Analysis	3	TOTAL	15
TOTAL	17		

FIFTH YEAR

Fall		*Spring (**Professional Level)*	
ARCH 4601, Arch. Design Studio V	6	ARCH 5604, Urban Design	6
ARCH 4381, Urban Theory	3	ARCH 5365, Arch. Research Methods	3
ARCH 4362, Area Studies in Arch. Hist.	3	C E 4330, Design Engr. Systems	3
C E 4342, Design Steel Struct.	3	ARCH Elective	3
C E 4361, Transport. Engr.	3	TOTAL	15
TOTAL	18		

SIXTH YEAR

*Fall (**Professional Level)*		*Spring (**Professional Level)*	
ARCH 5605, Adv. Arch. Design Studio	6	ARCH 5692, Arch. Design Thesis	6
ARCH 5395, Thesis Res., Prog., & Sch.	3	ARCH 5392, Professional Practice	3
ARCH 5362, Theory in Arch.	3	ARCH Elective	3
Elective	3	Elective	3
TOTAL	15	TOTAL	15

Total Hours —226
*Approved Communication Studies course
†C E 4340 is offered every third semester only.
††Or approved substitution.
+Select from ENGL 2311, 3365, 3366, or approved course.
****Professional Level Program.*** Requirements for admission to the professional level program include: Completion of all academic course work in the first 3 years and a threshold score on the Admission Criteria Rating System. The threshold score is based on a sliding scale of GRE, GPA, and portfolio scores. A copy of the form is available from the Academic Programs Office. In all graduate courses, no grade below a C will be accepted, a student must have a 3.0 GPA each semester, and a 3.0 GPA is required to graduate.

Dual-Degree Curriculum, Master of Architecture and Master of Business Administration

Undergraduate Level Program. Academic reviews required for admission to the undergraduate level program include high school GPA, rank in class, SAT-I or ACT scores, specific college preparation course work, and two years of a foreign language. Compliance with all prerequisites is mandatory. All courses require a minimum grade of C. All courses with a double asterisk require a minimum grade of B.

FIRST YEAR

Fall		*Spring*	
ARCH 1311, Design, Environ. & Soc.	3	ARCH 1412, Architectonics Studio	4
ARCH 1441, Arch. Delineation I	4	ARCH 1442, Arch. Delineation II	4
Elective	3	ARCH 2312, Hist. Ancient - Baroque Arch.	3
ENGL 1301, Ess. College Rhetoric	3	ENGL 1302, Adv. College Rhetoric	3
MATH 1321, Trigonometry	3	MATH 1350, Analytical Geometry	3
TOTAL	16	TOTAL	17

SUMMER

POLS 1301, Amer. Govt. Organization	3	+POLS 2302, Amer. Public Policy	3
HIST 2300, Hist. of U.S. to 1877	3	HIST 2301, Hist. of U.S. Since 1877	3
TOTAL	6	TOTAL	6

SECOND YEAR

Fall		*Spring*	
ARCH 2401, Arch. Design Studio I	4	ARCH 2402, Arch. Design Studio II	4
ARCH 3311, Hist. 18th, 19th, & 20th	3	ARCH 2353, Computers in Arch.	3
ARCH 2351, Building Systems	3	ARCH 3373, Environ. Analysis - Site	3
PHYS 1306, Gen. Physics	3	†Natural Science Lab.	4
PHYS 1103, Physics Lab	1	Elective	3
ARCH 4394, Arch. Programming	3	TOTAL	17
TOTAL	17		

SUMMER

††COMS Elective	3
*MATH 2345, Intro. Stats. Bus. Apps.	3
TOTAL	6

To advance to the upper division of the Business Administration program, satisfactory completion of the above courses and a cumulative 2.5 GPA is required.

THIRD YEAR

Fall		*Spring*	
ARCH 3501, Arch. Design Studio III	5	ARCH 3502, Arch. Design Studio IV	5
ARCH 3353, Arch. Environ. Systems I	3	ARCH 3354, Arch. Environ. Systems II	3
+ARCH 4353, Adv. Computer Appl.	3	ARCH 3350, Building Technology	3
C E 3385, Structural Mechanics	3	C E 4385, Structures	3
*ISQS 3343, Mgt. Sci. Oper. Res. I	3	++Writing Intensive Elective	3
TOTAL	17	TOTAL	17

SUMMER

*ISQS 3344, Prod. Oper. Mgt.	3
*BLAW 3391, Business Law I	3
TOTAL	6

FOURTH YEAR

Fall		*Spring (**Professional Level)*	
ARCH 4601, Arch. Design Studio V	6	ARCH 5604, Urban Design Studio	6
ARCH 4381, Urban Theory	3	ARCH 5365, Arch. Research Methods	3
ARCH 4355, Construction Documents	3	ARCH 5362, Theory in Architecture	3
ARCH 4362, Area Stud. in Arch. Hist.	3	TOTAL	12
TOTAL	15		

FIFTH YEAR

*Fall (**Professional Level)*		*Spring (**Professional Level)*	
ARCH 5605, Adv. Arch. Design Studio	6	ARCH 5692, Arch. Design Thesis	6
ARCH 5395, Thesis Res., Prog. & Sch.	3	ARCH 5392, Professional Practice	3
MGT 5376, Executive Skills	3	ACCT 5401, Financial & Managerial	4
ARCH Elective	3	TOTAL	13
TOTAL	15		

SIXTH YEAR

*Fall (**Professional Level)*		*Spring (**Professional Level)*	
MKT 5360, Con. & Strat.	3	ISQS 5137, Info Tech for Managers	1
MGT 5371, Man. Org. Beh. & Des.	3	MGT 5491, Strat. & Global Mgt.	4
FIN 5421, Financial Mgt. Con.	4	ARCH Elective	3
ECO 5310, Price and Income Theory	3	Elective	3
TOTAL	13	TOTAL	11

Total Hours—204.
In all Business Administration graduate courses, one A above a 3.0 GPA is required to receive the M.B.A. degree. See the College of Business Administration section of the catalog for information on lower division requirements.
*Courses must be completed with a minimum grade of B.
†Choose from Core Curriculum requirements.
††Or approved oral communication course.
+Or approved substitution.
++Select from ENGL 2311, 3365, 3366, or approved course.
****Professional Level Program.*** Requirements for admission to the professional level program include: completion of all academic course work in the first 3 years and a threshold score on the Admission Criteria Rating System. The threshold score is based on a sliding scale of GRE, GPA, and portfolio scores. A copy of the form is available from the Academic Programs Office. In all graduate courses, no grade below a C will be accepted, a student must have a 3.0 GPA each semester, and a 3.0 GPA is required to graduate.

Dual-Degree Curriculum, Master of Architecture and Bachelor of Business Administration (General Business)

Undergraduate Level Program. Academic reviews required for admission to the undergraduate level program include high school GPA, rank in class, SAT-I or ACT scores, specific college preparation course work, and two years of a foreign language. Compliance with all prerequisites is mandatory. All courses require a minimum grade of C.

FIRST YEAR

Fall		*Spring*	
ARCH 1311, Design, Environ. & Soc.	3	ARCH 1412, Architectonics Studio	4
ARCH 1441, Arch. Delineation I	4	ARCH 1442, Arch. Delineation II	4
Elective	3	ARCH 2312, Hist. Ancient - Baroque Arch.	3
ENGL 1301, Ess. College Rhetoric	3	ENGL 1302, Adv. College Rhetoric	3
MATH 1321, Trigonometry	3	MATH 1350, Analytical Geometry	3
TOTAL	16	TOTAL	17

SUMMER

HIST 2300, Hist. of U.S. to 1877	3	HIST 2301, Hist. of U.S. Since 1877	3
MATH 2345, Intro. Stat Bus. Apps.	3	POLS 1301, Amer. Govt. Org.	3
TOTAL	6	TOTAL	6

SECOND YEAR

Fall		*Spring*	
ARCH 2401, Arch. Design Studio I	4	ARCH 2402, Arch. Design II Studio	4
ARCH 3311, Hist. 18th, 19th, & 20th	3	ARCH 2353, Computers in Arch.	3
ARCH 2351, Building Systems	3	ARCH 3373, Environ. Analysis - Site	3
PHYS 1306, Gen. Physics	3	†Natural Lab. Science	4
PHYS 1103, Physics Lab	1	COMS Elective	3
ARCH 4394, Arch. Programming	3	TOTAL	17
TOTAL	17		

SUMMER

ECO 2301, Prin. of Economics I	3	ECO 2302, Prin. of Economics II	3
ACCT 2300, Elem. Acct. I	3	ACCT 2301, Elem. Acct. II	3
TOTAL	6	TOTAL	6

To advance to the upper division of the Business Administration program, satisfactory completion of the above courses and a cumulative 2.5 GPA at Texas Tech is required.

THIRD YEAR

Fall		*Spring*	
ARCH 3501, Arch. Design Studio III	5	ARCH 3502, Arch. Design Studio IV	5
ARCH 3353, Arch. Environ. Systems I	3	ARCH 3354, Arch. Environ. Systems II	3
*ARCH 4353, Adv. Computer Appl.	3	ARCH 3350, Building Technology	3
C E 3385, Structural Mechanics	3	C E 4385, Structures	3
POLS 2302, Amer. Public Policy	3	ECO 3311, Int. Macroeconomics	3
TOTAL	17	TOTAL	17

FOURTH YEAR

Fall		*Spring*	
MKT 3350, Intro. to Marketing	3	††B.A. Major Course	3
FIN 3320, Corp. Finance I	3	††B.A. Major Course	3
MGT 3370, Organization & Mgt.	3	††B.A. Major Course	3
ISQS 3344, Intro. Prod/Opr. Mgt	3	MGT 3373, Managerial Comm.	3
††B.A. Major Course	3	BLAW 3391, Business Law I	3
ARCH 4355, Construction Docs.	3	+Writing Intensive Elective	3
TOTAL	18	TOTAL	18

FIFTH YEAR

Fall		*Spring (**Professional Level)*	
ARCH 4601, Arch. Design Studio V	6	ARCH 5604, Urban Design Studio	6
ARCH 4381, Urban Theory	3	ARCH 5362, Theory in Architecture	3
MGT 4380, Strat. Mgt.	3	ARCH 5365, Arch. Research Methods	3
††B.A. Major Course	3	ARCH Elective	3
ARCH 4362, Area Stud. in Arch. Hist.	3	TOTAL	15
TOTAL	18		

SIXTH YEAR

*Fall (**Professional Level)*		*Spring (**Professional Level)*	
ARCH 5605, Adv. Arch. Design Studio	6	ARCH 5692, Arch. Design Thesis	6
ARCH 5395, Thesis Res., Prog., & Sch.	3	ARCH 5392, Professional Practice	3
ARCH Elective	3	ARCH Elective	3
Elective	3	TOTAL	12
TOTAL	15		

Total Hours—221.
See the College of Business Administration section of the catalog for information on lower division requirements.
*Or approved substitution.
†Choose from Core Curriculum requirements.
††B A major courses = choose 15 hours of junior or senior level courses from at least four areas in B A (Accounting, Finance, ISQS, Management, Marketing).
+Select from ENGL 2311, 3365, 3366, or approved course.
****Professional Level Program*****.** Requirements for admission to the professional level program include: Completion of all academic course work in the first 3 years and a threshold score on the Admission Criteria Rating System. The threshold score is based on a sliding scale of GRE, GPA, and portfolio scores. A copy of the form is available from the Academic Programs Office. In all graduate courses, no grade below a C will be accepted, a student must have a 3.0 GPA each semester, and a 3.0 GPA is required to graduate.

Bachelor of Science in Architecture

Academic reviews for admission to the Bachelor of Science in Architecture program include high school GPA, rank in class, SAT-I or ACT scores, specific college preparation course work, and two years of a foreign language. All courses require a minimum grade of C.

FIRST YEAR

Fall		*Spring*	
ARCH 1311, Design Environ. & Soc.	3	ARCH 1412, Architectonics Studio	4
ARCH 1441, Arch. Delineation I	4	ARCH 1442, Arch. Delineation II	4
Elective	3	ARCH 2312, Hist. Ancient - Baroque Arch.	3
ENGL 1301, Ess. College Rhetoric	3	ENGL 1302, Adv. College Rhetoric	3
MATH 1321, Trigonometry	3	MATH 1350, Analytical Geometry	3
TOTAL	16	TOTAL	17

SECOND YEAR

Fall		*Spring*	
ARCH 2401, Arch. Design Studio I	4	ARCH 2402, Arch. Design Studio II	4
ARCH 3311, Hist. 18th, 19th, & 20th	3	ARCH 2353, Computers in Arch.	3
ARCH 2351, Building Systems	3	ARCH 3373, Environ Analysis - Site	3
PHYS 1306, Gen. Physics	3	†Natural Lab. Science	4
PHYS 1103, Physics Lab	1	Elective	3
Elective	3	TOTAL	17
TOTAL	17		

SUMMER

POLS 1301, Amer. Govt. Organization	3	**POLS 2302, Amer. Public Policy	3
ACCT 2300, Elementary Accounting I	3	ACCT 2301, Elementary Accounting II	3
TOTAL	6	TOTAL	6

THIRD YEAR

Fall		*Spring*	
ARCH 3501, Arch. Design Studio III	5	ARCH 3502, Arch. Design Studio IV	5
ARCH 3353, Arch. Environ. Systems I	3	ARCH 3354, Arch. Environ. Systems II	3
C E 3385, Structural Mechanics	3	C E 4385, Structures	3
**ARCH 4353, Adv. Arch. Computers	3	ARCH 3350, Building Technology	3
COMS Elective	3	+**FIN 3332, Real Estate Fundamentals	3
TOTAL	17	TOTAL	17

FOURTH YEAR

Fall		*Spring*	
++CTEC 4342, Cost Estimating I	3	ARCH 4391, Arch. Profess. & Processes	3
+MGT 3370, Organization & Mgt.	3	ARCH 4381, Urban Theory	3
++FIN 4336, Urban Land Development	3	+++CTEC 4341, Const. Management	3
HIST 2300, Hist. U.S. to 1877	3	+++CTEC 4343, Const. Safety & Health	3
Elective	3	HIST 2301, Hist. of U.S. Since 1877	3
TOTAL	15	Elective	3
		TOTAL	18

Minimum hours required for graduation—146.
*Or approved oral communication course.
**Or approved substitution.
†Choose from Core Curriculum requirements.
+Fall and spring course offerings.
++Fall only course offerings.
+++Spring only course offerings.

Architecture (ARCH)

Courses designated with an asterisk (*) are open only to architecture majors or to students having permission of the Dean.

1311. Design, Environment, and Society (3:3:0). Introduction to architecture as an integral component of a complex world. Examination of societal and environmental contexts and appropriate design responses. F.

1412. Architectonics Studio (4:2:4). Introduction to the principles and methods used at various stages of design analysis and synthesis processes. Skill developments in the abstraction, transformation, composition, and representation of two- and three-dimensional design. Outside assignments required. S.

1441. Architectural Delineation I (4:0:8). Basic skills and techniques in representational drawing. Subjects include the human figure, architectural interiors and exteriors, landscapes and cityscapes. Black and white media. Outside assignments required. F.

***1442. Architectural Delineation II (4:0:8).** Prerequisite: ARCH 1441. Development of graphic communication skills. Color theory and its application to architectural graphic expression. Presentation techniques. Outside assignments required. S.

2311. History of Ancient Through Baroque Architecture (3:3:0). Survey of the development of world architecture from the ancient era to the advent of enlightenment in Europe.

2312. History of Renaissance and Baroque Architecture (3:3:0). Studies of significant architectural developments that occurred between 1400 and 1800 A.D. focusing on European examples. S.

2351. Building Systems (3:3:0). Corequisite or credit in: ARCH 2401. A study of basic building materials and their development into components for use in construction.

***2353. Computers in Architecture (3:2:2).** An introduction to computers in architecture and applications in the operating environment, basic programming, computational applications, and computer-aided design. Outside assignments required.

***2401. Architectural Design Studio I (4:0:8).** Prerequisite: ARCH 1311, 1412, 1442. Corequisite or credit in: ARCH 2315. An introduction to architectural design addressing issues of perception, conceptual design, structural order, materials, and application of three-dimensional processes of architectural design. Outside assignments required. F.

***2402. Architectural Design Studio II (4:0:8).** Prerequisite: ARCH 2401. Theory and principles of architecture as they are applied to the design of structural assemblies and buildings components. Outside assignments required. S.

3311. History of 18th, 19th and 20th Century Architecture (3:3:0). Survey of the development of architecture in Europe and the Americas from the enlightenment in Europe to the present.

3312. Theory in Architecture (3:3:0). Prerequisite: Junior standing. Examination of theoretical issues in architecture through critical reading of texts selected

from Vitruvius to the most contemporary thinkers in relation to emerging design challenges. S.

3313. Contemporary Residential Architecture Theory (3:3:0). A study and analysis of trends in 20th century, single-family residential architecture in North and South America and Europe. Illustrated lectures.

3324. Architectural Conservation (3:3:0). Prerequisite: Junior standing or consent of instructor. An in-depth examination of history, theory, and practice of historic preservation, restoration, and federal legislation supporting preservation.

3350. Building Technology (3:1:2). Prerequisite: ARCH 2351. A study of assemblies of building construction components for the aesthetic and technological development of integrated building systems performance.

3353. Environmental Systems I (3:3:0). Prerequisite: ARCH 2351 and 2402. Introduction and analysis of the various systems of human comfort within the built environment including artificial lighting, daylighting, and thermal design with consideration for building orientations and selection of building components. F.

3354. Environmental Systems II (3:3:0). Introduction and analysis of various systems for heating, ventilating, and air conditioning, designing electrical and plumbing piping systems, acoustical material and design, and solutions for vertical transportation. S.

3361. Design Workshop (3:3:3). Special projects and project development in architectural design. May be repeated for credit.

3362. Product Design Workshop (3:0:6). Introduction to the design and executed construction of a prototypical piece of furniture or other design product using an architectural design process. May be repeated for credit. S.

***3373. Environmental Analysis - Site Planning (3:3:0).** A basic course to develop a working knowledge of the techniques and principles involved in site planning to provide optimum living and working environments.

***3501. Architectural Design Studio III (5:1:8).** Prerequisite: Completion of first two years of the architectural degree plan courses in their entirety; cumulative architecture GPA and overall GPA 2.25. Organization of space into a complex building entity with investigation of site conditions, structure, spatial qualities of scale and proportion, daylighting, and materials. Outside assignments required. F.

***3502. Architectural Design Studio VI (5:1:8).** Prerequisite: ARCH 3501. Integration of architectural design with program development, context, building technology, environmental systems, and building codes. Outside assignments required. S.

4000. Research in Architecture and Urban Studies (V1-6). Prerequisite: Advanced standing and approval of the Dean. Individual studies of special interest in advanced architecture, history of architecture, and city planning. May be repeated for credit.

***4091. Architectural Internship (V1-6).** Prerequisite: Completion of all academic course work through the third year and 2.5 GPA in architectural course work. Individual study provides opportunities for professional experience as an intern in an architectural firm.

4311. Architecture in Nonwestern Societies (3:3:0). A study of multicultural architectural contributions, interrelationships of culture and architecture, diversity of traditions, meanings, modernity, and change in the nonwestern world.

***4350. Computer-Assisted Rendering and Imaging (3:2:2).** Prerequisite: ARCH 2353. The generation and management of spatial and visual design information through computer-assisted rendering and imaging. Emphasis on the management of design information.

***4351. Computer-Assisted Production Systems (3:2:2).** Prerequisite: ARCH 2353. The effective generation and management of computer-assisted contract documents in design organizations. Emphasis on information management during the production process.

***4352. Computer-Assisted Design Development (3:2:2).** Prerequisite: ARCH 2353. The generation, management, and communication of three-dimensional design information during the design process. Emphasis on maintaining the integrity of design information throughout the design process.

***4353. Advanced Computer Applications (3:2:2).** Prerequisite: ARCH 2353. Continuation of the principles of ARCH 2353. Advanced computer graphics applications, programming, and contract document systems.

4355. Construction Documents (3:2:4). Prerequisite: ARCH 2353, 3350, 3354, and 3502. Techniques of building construction, the communication of technical information, and the process of preparing contract documents for building construction.

***4361. Architectural Studies Seminar (3:3:0).** The study, presentation, and discussion of issues regarding architecture as an aspect of culture. May be repeated for credit.

4362. Special Area Studies in the History of Architecture (3:3:0). Prerequisite: Junior standing in the architecture curriculum. Studies in significant areas of architectural history focusing on issues of preservation, race, gender, and the contributions of women in western and nonwestern civilizations. Areas of study to be determined each semester. (Writing Intensive)

4381. Urban Theory (3:3:0). Prerequisite: Junior standing in architecture curriculum. An extensive writing course offering a comprehensive exploration of the relationship between culture, the city, planning, and urban design.

4391. Architectural Professionalism and Processes (3:3:1). Prerequisite: Senior standing in architecture curriculum. The principles and practices of architectural business including the discussion of professionalism, administration, management, legalities, and liabilities. Exploration of current, advanced, and complex processes for the delivery of architecture.

***4394. Architectural Programming (3:3:0).** Introduction to architectural programming methodologies, including problem seeking, issue-goal identification, contextual and case studies, site analysis, space and spatial relationships, determination of budget, and project feasibility.

4406. Collaboration Studio (4:1:9). An interdisciplinary studio for the design professions which addresses the process and skills necessary for collaboration as well as team-developed products.

***4601. Architectural Design Studio V (6:2:8).** Prerequisite: ARCH 3502. Comprehensive architectural design involving the integration of programmatic and contextual issues, construction technology, and cultural factors Outside assignments required. F.

College of Arts and Sciences

Professor Jane L. Winer, *Dean*

Web Site: www.as.ttu.edu

The College of Arts and Sciences offers a broad spectrum of programs and courses in the arts; humanities; mathematics; and social, behavioral, and natural sciences. The primary function of the college is to impart to students the knowledge, the skills of thinking and communicating, and the values and attitudes that constitute a liberal education. The faculty of the college seek to instill in their students a humanistic spirit, an appreciation of creativity, a commitment to excellence and truth, an ability to think critically and to communicate effectively, and a desire for lifelong learning.

The courses and programs in Arts and Sciences also provide a base of knowledge and skills from which students may enter such professional fields of study as law and medicine. Information regarding graduate programs offered by Arts and Sciences departments is available in the *Graduate Catalog*.

Core Curriculum Requirements. The Core Curriculum requirements ensure breadth in each academic program. These requirements have been incorporated into the college's various degree programs. Students have no need to refer to the Core Curriculum requirements unless so directed by their specific degree program.

Course Load. A normal full-time course load is 12-19 hours per semester. In calculating the course load, the dean will consider all active correspondence courses as a part of the course load. Course loads in excess of 19 semester hours require approval by the Associate Dean in the Student Division of the College of Arts and Sciences. The maximum course load for a student on probation is 16 hours.

The normal course load for a single summer term is 6-8 hours. To meet graduation requirements, a graduating senior may petition to take 9 hours one term or a total of 15 hours in both terms.

Correspondence Courses. Approval for courses to be taken by correspondence must be obtained at 102 Holden Hall. All prerequisites must be met to be granted enrollment. A maximum of 18 credit hours can be applied to degree program requirements, with no more than 6 credit hours completed during the final 30 credit hours. Approval will be granted for one course at a time. Junior status is required to enroll in upper division courses.

Catalog Selection. Students will use the catalog issued for the year in which they were first officially admitted to the College of Arts and Sciences, or a more recent catalog if approved. However, if they later transfer to another institution or another college at Texas Tech and then desire readmission to the College of Arts and Sciences, they will use the catalog in effect when they are readmitted. Students who do not enroll for one calendar year will be placed into the current catalog upon readmission to the university. For graduation purposes, a catalog expires after seven years at which time the current catalog becomes the catalog in effect.

Credit by Examination. A matriculated student may attempt credit by examination (described elsewhere in this catalog) by obtaining written approval from the Dean's Office. Approval is required to take an examination a second time before six months have elapsed or if more advanced material in the same subject has already been completed.

Grades of D. Credits for a course in which a grade of D is earned may not be applied toward fulfillment of the major (sometimes including adjunct requirements), minor, or teaching field requirements for any degree program.

Grading Practices. The College of Arts and Sciences conforms to university grading practices as set forth in the major section entitled "Academic Regulations" in this catalog. In addition, the following regulations apply within the college.

Except for those courses designated "may be repeated for credit" in this catalog, no course may be used more than once on a degree plan unless it has been approved by the Associate Dean in the Student Division of the College of Arts and Sciences.

Second Bachelor's Degree. Permission to enroll in courses to pursue a second bachelor's degree must be obtained at the Student Division office (102 Holden Hall). No second bachelor's degree is conferred until the candidate has completed at least 24 semester hours in residence in addition to the courses counted toward the first bachelor's degree. Credit by examination and correspondence courses will not satisfy the 24-hour residence requirement.

Freshman Year. Entering freshmen develop their programs in conference with an academic advisor. The students report to their advisors for such individual conferences or group meetings as are needed for the purpose of orienting themselves to academic regulations and procedures, curricula, and degree requirements in their various areas of interest.

Students are urged to take required freshman courses during the freshman year. During the sophomore year the student should complete the second year of English and all other freshman requirements. Normally, Core Curriculum requirements should be completed by the end of the sophomore year. Freshmen should not enroll in junior-senior level courses.

Admission of Transfer Students. Students transferring from another academic institution must meet the university-wide admission requirements stated in an earlier section. Students requesting permission to transfer from another college at Texas Tech must have an adjusted cumulative GPA of at least 2.0. In addition, they must provide the Student Division office (102 Holden Hall) with a transcript of all academic work. Approval will be granted at the Student Division office. The College of Arts and Sciences will determine the applicability of any transferred credit to academic programs in the college. The last 30 hours prior to graduation must be completed while enrolled in the College of Arts and Sciences.

Arts and Sciences Undeclared. Freshmen or sophomores may be admitted with a general major known as "Arts and Sciences Undeclared" (ASUD) until they select the major degree program in which they intend to graduate. The College of Arts and Sciences offers a broad area of education that includes the social sciences, arts, and humanities, as well as the natural sciences and mathematics. Arts and Sciences Undeclared is only a temporary administrative designation in which students cannot earn a degree. Students in the College of Arts and Sciences are urged to focus on fulfilling general degree requirements during their first two years. This alleviates the pressure to make an immediate decision on a major and career. Students can use their first two years to build a strong academic foundation. At the same time, students can investigate career alternatives and take elective courses in those professional fields or subject areas that are possible majors. Students listed as ASUD are advised by academic counselors in the University Transition Advisement Center in 79 Holden Hall to help with selecting general degree requirements, electives, and a major. After taking courses that are required for most majors (e.g., English, American history, political science, mathematics), the student has the flexibility to begin working toward any of the major fields offered within the College of Arts and Sciences. ONLY STUDENTS WITH FEWER THAN 60 HOURS MAY BE LISTED AS ARTS AND SCIENCES UNDECLARED. Students who have completed 60 or more hours will have a hold placed on their records until they declare a major.

Final 30 Credit Hours. The final 30 credit hours of a degree program must be completed with Texas Tech enrollments. A maximum of 6 of these credit hours may be taken by Texas Tech correspondence. Credit for courses taken without prior approval may not be applied to degree program requirements.

Degree Plan and Intention to Graduate. Students are encouraged to file degree plans with the student division office as soon as their academic goals are clearly defined. Students must file degree plans upon completing 60 hours of course work and no later than one calendar year prior to

the proposed date of graduation. In addition, the Intention to Graduate form must be submitted one calendar year before the proposed date of graduation.

Teacher Education. The curricula of most of the Bachelor of Arts degree programs and some of the Bachelor of Science programs are sufficiently flexible to permit a student to major in an academic subject, yet meet the requirements for certification by taking the required courses in the College of Education. Prospective teachers should refer to the section of this catalog describing teacher education and consult the College of Education and the chairperson or undergraduate advisor of the department in which they wish to major.

General Degree Requirements

Requirements for the degree of Bachelor of Arts apply to all baccalaureate degrees offered through the College of Arts and Sciences unless specifically shown to the contrary. Not more than 24 hours in agriculture, architecture, business administration, education, engineering, human sciences, and/or visual and performing arts may be counted (and not more than 6 additional hours if the minor is taken outside Arts and Sciences.)

Bachelor of Arts. The curriculum established for this degree is designed to provide the foundation of a liberal education through a well-rounded study of the humanities; arts; mathematics; and social, behavioral, and natural sciences. It also provides the factual basis and the insights requisite for specialized study and professional work in these fields.

General Requirements

(See Undergraduate Credit by Examination in the Admissions section of this catalog for information on credit provided by test scores to meet these requirements.) Students must take the specified number of hours in the areas listed below. With a few exceptions, courses from the major and minor may be used to satisfy these requirements. Except for the multicultural requirement, a course may not be counted in two different areas of the general requirements nor may a course be counted in requirements for both the major and minor.

Semester Hours

English 12
The 12 hours of English must consist of ENGL 1301 and 1302 and two literature courses (which excludes ENGL 2311, 3365, 3366, 3367, 3368, 3371, 3372, 3373, 4300, 4360, 4365, 4366, 4367, 4373, and 4378 as they are not literature courses). However, ENGL 2311 or CLAS 1310 may be used as equivalents to fulfill 3 hours of this requirement.

Oral Communication. 3
COMS 2300 or 3358, CH E 2306, HDFS 2320, MGT 3373 (MGT 3373 may not be taken by correspondence), PETR 3308.

Foreign Language 6-16
A student must complete 6 hours at the sophomore level or above in a single language. If 4 or more semesters of high school foreign language are accepted for admission, the student should consult the information preceding the course listing for the foreign language department. A student enrolling in the first-year sequence will have a requirement of 11-16 hours. A student who enrolls in the second-year sequence will have a 6-hour requirement. International students whose native language is not English and who graduated from a secondary school in their native country may satisfy this requirement by bringing their certificate of graduation to the Student Division of the Arts and Sciences Dean's Office. Credit by examination through the language laboratory is available for the following languages: French, German, Latin, and Spanish. Students who petition to complete the foreign language requirement via study abroad through a non-Texas Tech affiliated program will agree to have foreign language credit applied to their degrees based on scores on a language placement test administered by the language laboratory upon their return from the study abroad. Approval to do this must be granted in advance by the Associate Dean. For more information, consult the Department of Classical and Modern Languages and Literatures.

Mathematics and Logical Reasoning 6
All mathematics courses 1320 and above (except 3430) may be used. PHIL 2310 or 4310 may be used to satisfy 3 hours of this requirement. The following courses from the Core Curriculum may not be used: AAEC 3401, I E 3341, MUTH 3303, PSY 3400, and SOC 3391.

Natural Science 8-11
If 4 or more high school semesters of natural laboratory science (not including general, physical, or applied science) are accepted for admission, the requirement is 8 hours; if not, the requirement is 11 hours. The first 8 hours of a student's requirement must come from the natural science laboratory courses listed in the Core Curriculum. Additional required credit hours may come from those courses or from ANTH

3310, 3311, 4341, or HONS 3302. F&N 1410 not applicable if taken by correspondence.

Technology and Applied Science 3
Courses must be selected from the list of Core Curriculum options. Mass Communications majors may not use TELE 3300 or 3310 to satisfy this requirement.

Individual or Group Behavior 6
Three hours must come from courses in individual or group behavior approved for Core Curriculum requirements. The other 3 hours may come from the same list or from anthropology, economics, geography, political science, psychology, sociology, and social work but excluding courses cited as options for any other requirement. Mass Communications majors may not use ADV 4313, JOUR 4330, or MCOM 1300 to satisfy any part of this requirement. Courses used in a health major or minor may not be used to satisfy this requirement.

American History 6
Students will normally enroll in HIST 2300 and 2301 although any American history courses will satisfy this requirement.

Political Science 6
Students will enroll in POLS 1301 and normally in 2302. For more information, see the Department of Political Science section of this catalog. One course must be taken from a Texas college or university.

Humanities 6
Classical and modern languages, English (except ENGL 2311, 3365, 3366, 3367, 3368, 4365, 4366, and 4367), history, philosophy (except PHIL 1310, 2310, 3321, 3330, 3331, 4310), ANTH 3323, 3325, 3346, 3351, ARCH 2311, 2312, 3311, CLAS 1330, 3302, 3320, 3330, 3350, C LT 2301, 3302, 3334, 4305, COMS 3311, 3318, 3319, HONS 3301, HUM 2301, 2302, JOUR 3350, LAIS 2300, 4300, LARC 3302, POLS 3330, 3331, 3332, 3333, 3334, TH A 2310. Mass Communications majors may not use JOUR 3350 to satisfy any part of this requirement.

Visual and Performing Arts 6
Art (except ART 3311, 3362, 4315), ARCH 1312, 1441, 1442, DAN 3313, HONS 3304, LARC 3406, 3407, MUAP 1001, 1002, 1123, 1124, 2001, 2002, 2123, 2124, 2133, 2134, 3001, 3002, 3205, 4001, 4002, MUCP 1201, 1202, any MUEN course except 1103, MUHL 1301, 1302, 1308, 2301, 2302, 2308, 2309, 3304, 3308, MUSI 2301, MUTH 1300, 1301 and 1101,1303 and 1103, 1304 and 1104, TH A 2301, 2303, 2304, 2305, 3308, 3309, 3310, 4303.

Multicultural Requirement 3
3 hours of course work chosen from the Core Curriculum requirements approved list. This course may also be used to satisfy another general degree requirement listed above.

Personal Fitness and Wellness 2
To satisfy the College of Arts and Sciences requirement of 2 hours of personal fitness and wellness, students are to complete successfully any two PF&W courses. For a specific physical activity, the completion of the course sequence is allowed if the sequence is taken in the appropriate order (i.e., beginning then advanced). Only exercise and sport science majors may satisfy this requirement with ESS activities courses. Also accepted for fulfilling the requirement are AERS 1105, 1106, DAN 1107, 1304, 2100, 2102 (all with permission of instructor), MILS 1101, 1102, MUEN 1103. Students over age 25 are exempt. Any student who has served honorably in the U.S. Armed Forces for a minimum of 90 days may receive credit for 2 semester hours in personal fitness and wellness. Application for this credit must be made in the first semester of attendance at the university. Students participating in varsity athletics may enroll in the PF&W course that corresponds to their varsity sport. A maximum of one credit hour per academic year per sport may be earned in this manner.

Major, Minor, and Electives

In addition to the above requirements, the student must take major, minor, and elective courses sufficient to total 125-153 semester hours.

The minor may be any departmental minor, an established interdisciplinary minor, or a student-initiated interdisciplinary minor (with approval of the Associate Dean in the Student Division of the College of Arts and Sciences).

Many departments and programs have residency requirements for the major and minor. See departmental or program listings for specific information.

Students should have selected their major and minor fields by the time they reach their junior year. For the major subject they will be required to complete a minimum of 30-36 semester hours, including 6 hours of intensive writing courses. As indicated in the degree programs on the following pages, some majors require more than the 30-hour minimum. At least 18-24 hours of the major subject must be in courses at the junior-senior level. For the minor, a minimum of 18 semester hours must be completed (except in certain foreign languages as explained in the curriculum for languages), at least 6 of which must be of junior or senior level. All courses in the major and minor must be approved by the appropriate academic unit. Students are expected to develop a degree plan no later than the first semester of the

junior year. Forms and information are available in department offices.

A minimum of 40 semester hours of junior and senior work must be presented; not more than 8 hours may be counted in applied music and/or music ensemble, except for students offering music as a major or minor; not more than 8 hours of personal fitness and wellnessas well as exercise and sport sciences activity courses may be counted except for students offering exercise and sport sciences as a major, minor, or specialization.

Bachelor of General Studies. The B.G.S. is a challenging program for exceptional students. As an interdisciplinary degree, it is not based on a major and minor. Instead, the curriculum consists of courses from three areas of concentration (different departments, disciplines, or divisions), which are related to a single topic of study—the interdisciplinary focus. For example, a student might focus on human nature with areas of anthropology, behavioral sciences and humanities; or a focus on pre-law studies might involve the areas of political science, English, and business administration. Thus, emphasizing breadth as well as depth, general studies is flexible and adaptable: A well-designed B.G.S. degree can prepare the student to pursue an intellectual interest, a professional ambition, or graduate study.

Admission Requirements

To declare general studies as a major, students must have an adjusted 2.5 GPA, sophomore or junior standing, and the director's and/or the General Studies Council's permission to enroll in G ST 2300. Entering students are advised that to complete an approved study plan, they may need to take more than the minimum 125 credit hours required for graduation.

General studies majors must successfully complete G ST 2300, Introduction to General Studies (research to develop a study plan, under the director's supervision, based on the three interdisciplinary areas). After the student prepares and submits an application proposal, interviews with the General Studies Council, and is approved for acceptance into the program, a degree plan may be filed with the College of Arts and Sciences. Students will use the catalog issued for the year in which they were first officially admitted to the General Studies program.

Graduation Requirements

Requirements for the B.A. degree apply unless specifically shown to the contrary.

Semester Hours

English 1301-1302 6
Oral Communication 3
Political Science and History 12
Mathematics and Logical Reasoning 6
Natural (Laboratory) Science 8
Technology and Applied Science 3
Individual or Group Behavior 3
Humanities 3
Visual and Performing Arts 3
Personal Fitness and Wellness 2
Foreign Language 10
Four semesters of a single language in high school or two semesters of a single foreign language in college.
Multicultural Requirement 3
3 hours of course work chosen from the Core Curriculum requirements approved list. This course may be used to satisfy another general degree requirement.
G ST 2300, Intro. to General Studies 3
Prerequisite: Sophomore standing and director's consent. An individual studies course in which the student, supervised by the director, develops an interdisciplinary study plan.
Completion of all courses in the approved study plan (a minimum of 54 credit hours) with a grade of C or better.
G ST 4300, Senior Thesis Project 3-6
An individual studies course in which the student, supervised by a thesis committee, develops a research project related to the study plan. The student must enroll in G ST 4300 no later than the first long semester of the senior year.
All the course work in the graduation requirements, in the study plan, in G ST 2300 and 4300, and in elective courses must total a minimum of 125 semester hours, including at least 45 hours at the 3000-4000 level and at least 90 hours from courses in the College of Arts and Sciences.

The General Studies program is supervised by a director and an advisory council of faculty members appointed by the Dean of the College of Arts and Sciences. **Contact information:** (806) 742-2353 or write to General Studies, Box 42191, Texas Tech University, Lubbock, TX 79409-2191.

Bachelor of Science. The B.S. degree permits a greater degree of specialization than the B.A. and is currently offered by the

following departments: Biological Sciences; Chemistry and Biochemistry; Economics and Geography; Geosciences; Health, Exercise, and Sport Sciences; Mathematics and Statistics; and Physics. Requirements for the B.A. degree apply unless specifically shown to the contrary. The following courses are required for the B.S. degree:

	Semester Hours
English	**12**
Oral Communication	**3**
Foreign Language	**6-16**
Mathematics and Logical Reasoning	**6**
Political Science and History	**12**
Natural Science	**8**
Technology and Applied Science	**3**
Individual or Group Behavior	**3**
Humanities	**3**
3 hours of literature taken in the English requirement will also satisfy this requirement.	
Visual and Performing Arts	**3**
Personal Fitness and Wellness	**2**
Multicultural Requirement	**3**
3 hours of course work chosen from the Core Curriculum requirements approved list. This course may be used to satisfy another general degree requirement.	
Major (Including a minimum of 24 junior-senior hours)	**(min.) 36**
Minor Including a minimum of 6 junior-senior hours. The minor may be any departmental minor, or established interdisciplinary minor approved by the major department, or a student-initiated minor approved by the Associate Dean.	**(min.) 18**
Adjunct Requirements Requirements determined by the major department as essential to supplement the major.	**As required**
Total for degree	**(min.) 118**

Specific curricula are provided for all programs leading to the Bachelor of Science degree. It is expected that students will follow the suggestions and recommendations contained in the department sections of this catalog.

Bachelor of Science in International Economics. The B.S.I.E. provides understanding of international economic and commercial relationships through concentrations of course work in international economics, international politics, and international business. This understanding is important for a variety of careers with either direct or indirect international aspects. Requirements for the B.S. degree apply unless specifically shown to the contrary. The following courses are required for the B.S.I.E. degree:

	Semester Hours
English (Inc. ENGL 2311 & any ENGL literature course)	**12**
Foreign Language (6 hours at sophomore level or higher)	**6-16**
Mathematics (MATH 1330 and 1331 or more advanced courses)	**6**
Political Science and History	**12**
Personal Fitness and Wellness	**2**
Oral Communication	**3**
Natural (Laboratory) Science	**8**
Technology and Applied Science	**3**
Humanities	**3**
3 hours of literature taken in the English requirement will also satisfy this requirement.	
Visual and Performing Arts	**3**
Individual or Group Behavior (May be satisfied with courses taken in major)	**3**
Multicultural Requirement	**3**
3 hours of course work chosen from the Core Curriculum requirements approved list. This course may be used to satisfy another general degree requirement.	
Economics and Int'l. Economics: ECO 2301, 2302, 3311, 3312, 3330, 3333, 4331, 4332, and 4334	**30**
Int'l Business, Managerial Economics and Quantitative Tools: Basic Statistics AAEC 3401 or MATH 2345 or 2300, five of the following: ACCT 2300 and 2301 (counted as one), MKT 4358, MGT 4375, ECO 3320, ECO 4305 or AAEC 4312, AAEC 4302, 4306, 4317, FIN 3320, 4328, ISQS 3343, 3344, FREN 4304, SPAN 3301, 3329, 4304, 4329.	**18-19**
International Political Science Three of the following: POLS 3360, 3361, 3363, 3371, 3373, 3374, 3375, 3376, 3378.	**9**
Elective Courses	**5-14**
Total for degree	**(min.) 126**

For more information and academic advisement, contact the Department of Economics and Geography.

Interdepartmental, Interdisciplinary, and Special Programs

Asian Studies

An interdisciplinary minor in Asian Studies for a baccalaureate degree is designed for students who are interested in Asian cultures. Courses selected from various departments across campus will provide students with a deep and broad understanding of this increasingly important region. The program will prepare students

with basic qualifications for a wide variety of future careers and academic pursuits that require knowledge or languages of Asia.

The required 18 hours of course work may be taken from designated courses in anthropology; architecture; Chinese, Japanese, and Vietnamese languages; economics; geography; history; philosophy; political science; and sociology. This 18-hour requirement may not include courses taken to fulfill requirements in the student's major field. **Contact information:** Dr. Patricia Pelley, Department of History, (808) 742-3744, or ppelley@ttacs.ttu.edu.

Community and Urban Studies

The College of Arts and Sciences offers an interdisciplinary minor in community and urban studies. The program consists of an integrated course of study that provides the student with a conceptual and theoretical foundation for recognizing and approaching urban problems. An opportunity is also provided for observation and analysis of community and urban affairs. The program includes core courses in architecture, economics, geography, history, political science, and sociology as well as elective courses in architecture, business administration, economics, geography, history, landscape architecture, political science, sociology, and social work. **Contact information:** Dr. Yung-mei Tsai, 162 Holden Hall, (806) 742-2401, ext. 233; FAX (806) 742-1088; or e-mail yung.mei.tsai@ttu.edu.

Comparative Literature (C LT)

Comparative literature is designed for students who are interested in studying literature from interdisciplinary and multicultural perspectives. The Department of Classical and Modern Languages and Literatures participates in a comparative literature minor for the Bachelor of Arts degree. The minor consists of 18 hours of courses, 3 hours of which must be at the 4000 level. Students may apply 6 hours of sophomore-level course work from either the Department of Classical and Modern Languages and Literatures or the Department of English if such course work is not in the student's major field. Students not majoring in a foreign language must complete at least 3 hours at the junior or senior level in a foreign language. Comparative literature minors must take at least 6 hours from the following courses: CLAS 3350, C LT 2301, 3302, 3334, 4300, 4305, 4317, ENGL 3334, 4334, 4335, GERM 4312, HUM 2301, 2302, SLAV 2301, and W S 4310. Individual minor programs are arranged by the student and the Director of the Program on Comparative Literature. This minor may not include course work in the student's major field unless such course work is over and above the minimum catalog requirements for the major. **Contact information:** Dr. Sharon Diane Nell, (806) 742-3145, or sharon.nell@ttu.edu.

Courses in C LT

2301. The Epic in the Western Tradition (3:3:0). Introduction to the epic genre by examining a range of Western literature, including both primary and secondary epics.

3302. Literary Traditions (3:3:0). Students will examine the history of a given literary tradition in several national literatures, e.g., lyric, the novel, and tragedy.

3334. Literatures and Cultures of Africa, Asia, or Latin America (3:3:0). This course will examine the literatures and cultures of Africa, Asia, and/or Latin America.

4300. Individual Studies in Comparative Literature (3). Independent study in comparative literature under the guidance of a faculty member. May be repeated for credit with the consent of instructor.

4305. Contemporary Theories of Cultural Meaning (3:3:0). Introduction to the most important contemporary theories on the nature and origin of meaning in culture.

4317. Readings in Comparative Literature and Culture (3:3:0). Readings from a particular period or study of a literary theme or genre. May be repeated for credit with consent of instructor.

Dramatic Writing

The faculties of English, Mass Communications, and Theatre and Dance offer an interdisciplinary minor in dramatic writing. The program is designed to prepare students to write scripts for cinema, television, and stage productions. The minor consists of 21 hours—12 in writing and 9 in analysis. The 12 hours in writing are to be chosen from the following courses, and the selection must include at

least one course from each department: ENGL 3351, 4351, TELE 4370, 4375, and TH A 4303 (may be repeated for credit). The 9 hours in analysis will include TELE 3345, TH A 3335, and one of the following courses: ENGL 3388, 4312, or 4315. Courses in which the student earns less than a C may not be counted toward the minor. This 21-hour requirement may not include courses taken to fulfill requirements in the student's major field. **Contact information:** Dr. Norman Bert, University Theatre, (806) 742-3601, or norman.bert@ttu.edu.

Environmental Studies

The college offers an interdisciplinary minor in environmental studies. This minor is nontechnical in nature and is specifically designed for students seeking the Bachelor of Arts degree. Its focus is on the interaction of humans and the natural environment and the consequences of that interaction. The environmental studies minor does not seek to train professional environmentalists, but in combination with existing major programs, it will give the student a broad foundation for more advanced environmental studies programs, professional work in law, regional planning or resource management, various environmental positions in government, business, or teaching. The plan will also provide students with a better understanding of basic ecology and the nature of environmental problems so that they can make more knowledgeable value judgments on environmental issues, a vital concern in the contemporary world. The minor consists of 18 hours of elective courses. No more than 6 hours from any department or program may count toward the minor. At least 6 hours must be from upper division. Electives in the program include: AAEC 4313, ANTH 3308, 3314, 3317, ATMO 1300, 2301, BIOL 1305, 1401, 1402, 3309, ECO 3336, GEOG 1401, 1402, 3300, 3301, 3310, 3335, 3353, 3360, 4301, 4321, GEOL 1303, 3322, 3323, HLTH 2302, HIST 3327, LARC 4302, 4303, PHIL 3325, RWFM 2301, 2302, 2305. **Contact information:** Dr. Mark Stoll, Department of History, (806) 742-3744, or mark.stoll@ttu.edu.

Ethnic Studies

The college offers an interdisciplinary minor in ethnic studies. The goals of the program are to increase students' understanding of the nature and development of race relations and to stimulate a greater sense of dignity for minority students. Students may, if they wish, specialize in African-American, Mexican-American, or Native-American studies. All students minoring in ethnic studies must complete at least 18 hours in ethnic content courses. No more than three courses may be taken in one department. Electives in the program include: ANTH 1301, 2301, 2302, 3325, 3331, 3345, 3347, 3371, 4372, ART 3311, 4315, COMS 3332, ENGL 3322, HIST 3311, 3312, 3318, 3324, 3325, 3326, 3395, 4326, 4383, MUHL 3304, PSY 3305, SOC 3324, 4362, SPAN 4320, 4360. **Contact information:** Dr. Jorge Iber, Department of History, (806) 742-3744, or jiber@ttacs.ttu.edu.

European Studies

The interdisciplinary minor in European studies is designed to allow students to pursue interests in European society, culture, history, and politics. It offers them the opportunity to deepen their knowledge of the European continent from the British Isles to Russia and interactions between Europe and the wider world from ancient times to the postcolonial present. The program builds upon strengths of the Texas Tech faculty, invites students to take advantage of academic activities outside the classroom, and encourages study in Europe. The minor targets students with interests in the humanities and social sciences, fine and performing arts, and law and business. A European studies minor touching on contemporary European affairs, including European integration, would suit students planning graduate study in arts and sciences and anticipating careers in education, law, business, government, and nongovernmental agencies.

The minor consists of 18 hours of course work divided into two tracks: Historical and Social Sciences (HSS) and Arts and Humanities (AH). Students will take at least 6 hours in each track, but the total hours will number 18. Students will choose from a

curriculum that currently includes courses in architecture, art, classical and modern languages and literatures, English, history, music, philosophy, political science and theatre and dance. Students are encouraged to take appropriate courses in a European country. They should also take at least one course in a European language other than English (or a course on an appropriate literature translation) beyond the basic foreign language requirement in the College of Arts and Sciences. Those basic courses and sophomore-level English courses will not count towards the minor. **Contact information:** Dr. David Troyansky, Department of History, (806) 742-3744, or d.troyanski@ttu.edu.

Family Life Studies

The Colleges of Arts and Sciences and Human Sciences jointly offer an interdisciplinary minor in family life studies. The program involves an integrated course of study and provides the student with a variety of perspectives on the family. The minor consists of 18 hours chosen from several disciplines. No more than 6 hours may be taken from any one department. Courses counted toward the major will not count toward the minor. At least 6 hours must be at the junior-senior level.

Courses may be selected from the following: HLTH 1300, 1305, 2302, 3313, 3314, HIST 3322, 3323, 3341, 4325, PSY 3341, 4300, 4301, 4310, SOC 2331, 3325, 3331, 4373, S W 3311, 3312, H D 2303, 3301, F S 2322, 3320, 3321, 3322, 3324, 3326, 3328, 3332, HDFS 3331, 3350, FFP 1370, 3325, 3375. **Contact information:** Dr. Charlotte Dunham, Department of Sociology, Anthropology, and Social Work, (806) 742-2400, or charlotte.dunham@ttu.edu.

General Studies (G ST)

For a description of the General Studies degree program, see "Bachelor of General Studies" in the College of Arts and Sciences General Degree requirements section.

Courses in G ST

2001. General Studies Abroad (V1-12). Individual studies in interdisciplinary, international, and multicultural experiences.

2300. Introduction to General Studies (3). Prerequisite: Sophomore standing and director's consent. An individual studies course to assist the student in developing an interdisciplinary plan of study for the Bachelor of General Studies degree.

4000. Internship in General Studies (V1-6). Supervised internship with government, profit, and nonprofit offices and agencies including congressional offices in Washington, D.C. Open to all undergraduate students at Texas Tech.

4300. Senior Thesis or Project (3). Preparation of a senior thesis or project for the Bachelor of General Studies degree. Students should take the course the first long semester of the senior year. May be repeated for credit with the approval of Director of General Studies.

Geographic Information Science

The College of Arts and Sciences offers an interdisciplinary minor in geographic information science (GIS). The minor is designed to give students a technical background in GIS and related technologies. These skills supplement a wide variety of majors in which spatial information is analyzed. The minor consists of 18 hours, with one course in computers (C S 1300 or equivalent), one course in introduction to GIS (either GEOG 3300 or GEOL 3428), one course in advanced GIS (either RWFM 4403, GEOG 3301 or GEOL 4331), one course in statistical methods (MATH 2300), and one course in technical writing (ENGL 2311 or ENGL 3365). A GIS-related internship (GEOG 4310) may be used in place of one course from the computers and technical writing categories. Additional course substitutions are allowed, if approved by the director. No more than two courses from the student's major department may be used toward the GIS minor. **Contact information:** Dr. Jeffrey A. Lee, Department of Economics and Geography, (806) 742-2201, or jeff.lee@ttu.edu.

Humanities (HUM)

The "humanities" include all academic disciplines that study the creative works of human beings—literary, musical, philosophical, religious, theatrical, and artistic—expressing visions of life and values for living that offer both delight and wisdom. For students who wish to combine and explore several humanities disciplines, the interdisciplinary humanities program offers a flexible and attractive minor.

In the humanities 18-hour minor, the student first takes two 3-hour introductory courses: HUM 2301 and 2302. Under a humanities advisor's counsel, the student then takes four advanced courses related to a period of his or her choice: Classical, Medieval, Renaissance, Enlightenment, 19th Century, or 20th Century. For interdisciplinary richness, the student selects four courses from the varied offerings of any three of these participating areas: anthropology, architecture, art, classical and modern languages and literatures, comparative literature, English, history, music, philosophy, and theatre arts.

For students majoring in the sciences or professions, the interdisciplinary humanities minor offers an enriching educational experience. For students already majoring in a single discipline among the humanities, this minor provides a broader awareness of the background of ideas and arts that shape our world. The introductory humanities courses also fulfill general requirements and provide elective credit. **Contact information:** Dr. Kenneth Davis, 103 Holden Hall, (806) 742-0036, or kdavis@hons.ttu.edu.

Courses in HUM

2301. Introduction to Humanities (3:3:0). An exploration of human values, primarily significant to western civilization, in great works of literature, philosophy, and the arts from the classical Greek and Roman eras to the Renaissance. [HUMA 1301]

2302. Introduction to Humanities (3:3:0). The exploration of contemporary human values through great works of literature, philosophy, and the arts from the Renaissance to the present. [HUMA 1302]

International Studies

An interdisciplinary minor in international studies is offered for students who wish to gain an understanding of how the nations of the world are economically, politically, socially, and culturally interdependent. The minor is made up of a 9-hour core of required courses and 9 hours of electives. The core courses are ECO 3333, International Economics; GEOG 2351, Regional Geography of the World; and POLS 3361, International Politics. The advisor may allow substitutions in the core when it can be shown that they fit in with the student's major program and academic objectives. Elective courses are selected from among courses that deal with international topics in departments in the College of Arts and Sciences. Courses from other colleges may be accepted if they have been previously approved by the program advisors. **Contact information:** Dr. John Barkdull, Department of Political Science, (806) 742-3121, or jbarkdull@ttacs.ttu.edu.

Latin American and Iberian Studies (LAIS)

A major in Latin American and Iberian Studies for a Bachelor of Arts degree consists of course work in several departments. It requires 30 semester hours, which must be completed in the three areas indicated below. Nine hours must be taken in each area. In addition, students must take the interdisciplinary Latin American and Iberian Studies courses: LAIS 2300 and 4300. A minimum of 9 hours of courses in the major and 6 hours in the minor must be taken in residence at Texas Tech University. **Contact information:** Dr. Alberto Julian Perez, Box 42071, 256 Foreign Languages, (806) 742-1562, or julian.perez@ttacs.ttu.edu.

Area I (9 hours): Upper division Latin American and Iberian content courses in Spanish and Portuguese.

Area II (9 hours): Latin American anthropology, art, history, geography, economics, and U.S. Latino literature courses.

Area III (6 hours): Latin American history and political science courses.

Interdisciplinary Courses (6 hours): LAIS 2300 and 4300

With prior approval, students may plan programs at variance with the above requirements to meet their special interests.

A minor in Latin American and Iberian Studies consists of 18 hours of content courses taken from those approved for the major in this program. These 18 hours may not include work in the student's major field and must be taken in at least two of the three areas represented in the program. Both LAIS 2300 and 4300 are required.

In addition, the standard requirements for a B.A. degree must be met.

Courses in LAIS

2300. Latin America and Iberia: An Interdisciplinary Introduction (3:3:0). A basic survey of Latin American and Iberian culture and civilization.

4300. Seminar in Latin American and Iberian Studies (3:3:0). Interdisciplinary studies in selected Latin American and Iberian topics. Readings and lectures in English. May be repeated once for credit with permission of the director.

Linguistics

The Interdepartmental Committee on Linguistics offers a minor in linguistics for the B.A. degree. The minor consists of 18 hours of required and elective courses drawn from the departments of Classical and Modern Languages and Literatures; Communication Studies; English; Mass Communications; Philosophy; Psychology; Sociology, Anthropology, and Social Work; and the Division of Curriculum and Instruction, College of Education. **Contact information:** Dr. Sharon Meyers, Department of Classical and Modern Languages and Literatures, (806) 742-1565, or sharon.meyers@ttu.edu.

Linguistics is concerned with (1) the scientific description and analysis of languages; (2) the study of language in its social and cultural context; (3) the evolution and historical development of language; (4) the formal study of communication systems involving the acquisition and use of language; (5) the relation of language to literature, philosophy, and other fields in the humanities; and (6) human biology and neurology as they affect the use of language. Linguistics shares interests with speech, science, psychology, anthropology, sociology, literature, philosophy, and other fields of study. It is, therefore, an interesting and useful minor area for students majoring in these fields and one that can, in many cases, help students in developing an area of academic or professional specialization.

The linguistics minor for the B.A. is made up of 18 hours of courses. Of these, it is required that 3 hours be drawn from Group A (general and introductory linguistics courses), 3 hours from Group B (courses dealing intensively with a single language or a restricted group of languages), at least 3 hours from Group C (courses dealing with applied uses of linguistics and historical linguistics), and 3 hours from group D (courses relating linguistics to other fields). The remaining 6 hours may be taken from any group.

Group A—ANTH 3305, ENGL 3371.

Group B—ENGL 3373, FREN 4302, 4306, GERM 4301, LAT 4302, SPAN 4302, 4303.

Group C—EDBL 3337, ENGL 4373, LING 4311, 4335.

Group D—ANTH 3351, COMS 3332, EDBL 3334, EDLL 3352, MCOM 3300, PHIL 4310, 4331, PSY 4324.

Prelaw Studies

Students who are interested in law should be aware that the legal profession calls upon many fields of learning in the humanities, arts, social sciences, and natural sciences. As an advocate, negotiator, advisor, mediator, and public citizen, a lawyer needs analytical skills, breadth of vision, and a commitment to justice. The law is a humanistic pursuit based on the purposes and principles of the civilization it serves.

Prelaw is a non-degree granting designation at Texas Tech that serves to introduce students to professional advisors who guide students in the discovery of self, academic pursuits, and professional goals. Students will declare a degree-granting major at the end of their first year.

Not all individuals who earn a law degree practice law in the traditional sense of a law office. Many individuals choose a career in which their education in law is useful, but not necessarily the primary function of their day-to-day duties. Students need to keep in mind that law schools are most interested in applicants who are well-grounded in the fundamentals of a broad liberal arts education and are intellectually mature. Law schools are searching for students who have diverse educational backgrounds in at least three general skill areas: writing and speaking with comprehension and clarity, understanding social institutions and human nature, and thinking creatively and analytically.

Career opportunities include, but are not limited to, such fields as agriculture, communication, computer technologies, education, family relations, international

relations, banking and financial services, broadcasting, corrections, health services, labor relations, publishing, and urban planning, as well as the more obvious fields of political science, history, business administration, and philosophy.

Regardless of their major academic field, prelaw students should consult with the advisors for counseling and guidance in planning their programs. **Contact information:** Freshmen should see Albert Buitron or Joe Hamilton in the Advising Center, 79 Holden Hall; students in the College of Arts and Sciences should contact Dr. M. Catherine Miller (806) 742-3744 or k4mcm@ttacs.ttu.edu.

Preprofessional Health Careers

Professional health school programs include dentistry, medicine, nursing, optometry, pharmacy, and allied health sciences.

Most professional school programs in the field of health care require the completion of specific college level science and general education courses prior to admission. The Preprofessional Health Careers Office maintains a collection of professional school catalogs and related information on various health careers. **Contact information:** Preprofessional Health Careers Office, 340 Chemistry Building, (806) 742-3078.

Individual advising regarding preparing students for admission to professional health schools is done by advisors in the Preprofessional Health Careers Office up to the time students file a degree plan. Most professional health career schools do not specify particular majors as part of their admission requirements. Texas Tech does not offer degrees in premedicine, predentistry, or other prehealth areas. Each preprofessional health career student who intends to earn a baccalaureate degree must choose a major by the junior year and complete the courses required for admission into the professional health school. Preprofessional health career students are advised to choose a major offered within any of the colleges at the university. The major should suit the student's individual interests and abilities and offer alternative career options in the event initial career plans change.

Courses listed as prerequisites for professional school programs must be college-level courses taken for letter grades. However, credit by examination, using the standardized tests described in this catalog, is also acceptable for certain courses. Science courses required by professional health schools are those required of science majors. Students are responsible for knowing any special requirements of the professional schools they plan to attend.

The Preprofessional Health Careers Committee will assist Texas Tech University students in coordinating their evaluation packets for application to schools of dentistry, medicine, optometry, or podiatry. Evaluation forms are available in the Preprofessional Health Careers Office.

Predentistry

The minimum admission requirements for most dental schools in the United States are 16 semester hours of biology, 8 semester hours of general chemistry, 8 semester hours of organic chemistry, 8 semester hours of physics, and 6 semester hours of English. Applicants to dental schools are required to take the Dental Admission Test and submit their applications approximately one year prior to the planned matriculation. For admission requirements of a specific dental school, students should consult the latest edition of *Admission Requirements of United States and Canadian Dental Schools* or the dental school catalogs. A formal minimum of 90 semester hours is stated for some schools. However, students should plan to complete a baccalaureate degree in the field of their choice before entering dental school.

Premedicine

The minimum admission requirements for most medical schools in the United States are at least 90 semester hours in an accredited college or university, including 6 semester hours of English, 3 semester hours of calculus, 14 semester hours of biology, 8 semester hours of general chemistry, 8 semester hours of organic chemistry, and 8 semester hours of physics.

All applicants to medical schools are required to take the Medical College Admission

Test and submit their applications to the schools approximately one year prior to the date of the planned matriculation. For admission requirements of medical schools, students should consult the latest edition of *Medical School Admission Requirements.*

Students should plan to complete a baccalaureate degree in the field of their choice before entering medical school, although not all schools require a degree. Premedical and predental students may obtain a baccalaureate degree in one of two ways:

Option A. The degree may be obtained by completing the requirements as stated in the catalog for the degree desired. The major selected depends on the interest of the student. This major will usually be in one of the sciences; however, other majors are acceptable and may be chosen in colleges other than the College of Arts and Sciences.

Option B. The Arts and Sciences B.A. or B.S. degree may be obtained by completing course work totaling a minimum of 100 semester hours in the College of Arts and Sciences and then graduating from an accredited U.S. or Canadian school of medicine, osteopathy, or dentistry. The following regulations apply:

- Of the 100 semester hours of preprofessional work, at least the last 30 must be completed in residence at Texas Tech. This minimum will apply to transfer students from other colleges, provided they have satisfactorily completed the work outlined in the freshman and sophomore years or its equivalent.
- The three years of work must satisfy all graduation requirements for the B.A. or B.S. degree at Texas Tech, with the exception of requirements in the major.
- The applicant for a degree under this plan must submit properly approved credentials from an accredited U.S. or Canadian school of medicine, osteopathy, or dentistry to the effect that the applicant has completed satisfactorily the work leading to a degree of Doctor of Medicine or Doctor of Dental Surgery. Evidence of the degree will substitute for the baccalaureate degree requirements in a major field.

Any student selecting Option B should plan carefully in consultation with the Associate Dean at least one year prior to leaving the university to begin professional school.

Preoptometry

Admission requirements differ among the various professional schools. These courses fulfill requirements in general: 8 semester hours of biology, 8 semester hours of general chemistry, 8 semester hours of organic chemistry, 8 semester hours of physics, 4 semester hours of microbiology, 4 semester hours of physiology, 6 semester hours of mathematics including 3 semester hours of calculus, 3 semester hours of biochemistry, 3 semester hours of statistics, 3 semester hours of general psychology, 12 semester hours of English, 6 semester hours of U.S. history, and 6 semester hours of political science. Other recommended courses are cultural anthropology, logic, and ethics. Students should complete 90 or more semester hours and take the Optometry Admission Test before applying to the professional schools. Students should plan to complete a baccalaureate degree in the field of their choice before entering optometry school. Although a formal minimum of 90 semester hours is stated for some schools, preference is given to applicants with baccalaureate degrees. The University of Houston College of Optometry requires a baccalaureate degree of all entering students.

Prepharmacy

The specific admission requirements for schools of pharmacy differ, but most include 8 semester hours of biology; 8 semester hours of general chemistry; 8 semester hours of organic chemistry; 4 semester hours of physics; 4 semester hours of microbiology; 3 semester hours of calculus; 3 semester hours of statistical methods; 6 semester hours of English; 3 semester hours of literature; 3 semester hours of economics, 3 semester hours of public speaking; and 15 semester hours spread across humanities, social sciences, and visual and performing arts. Students should complete 70 or more hours of course work and take the Pharmacy College Admission Test before applying to the professional schools.

Allied Health

Preclinical laboratory science, precommunication disorders, preoccupational therapy, prephysical therapy, and prephysician assistant programs consist of the 60 to 90 semester hours of preprofessional course work required of a student before being admitted to the professional level in a school of allied health. Most programs

require a minimum of 6 to 9 semester hours of English, 6 semester hours each of U.S. history and political science, and 8 semester hours each of biology, chemistry, and physics. Requirements for additional courses in advanced biology and chemistry, zoology, computer science, mathematics, anthropology, psychology, sociology, speech, and statistics vary with each program and with each school of allied health.

Prenursing

Students desiring admission to the Texas Tech University Health Sciences Center School of Nursing should apply directly to that program as well as to Texas Tech University. Application to the Texas Tech University Health Sciences Center School of Nursing is a separate application from the Texas Tech University application.

Students seeking admission to either diploma or collegiate programs in nursing other than at Texas Tech University Health Sciences Center may enroll in a prenursing curriculum at Texas Tech University. The specific non-nursing course requirements may vary among schools of nursing, but most include 8 semester hours of human anatomy and physiology, 4 hours of chemistry, 4 hours of microbiology, 3 hours of food and nutrition, 3 hours of statistics, 3 hours of human growth and development, 3 hours of general psychology, 3 hours of introduction to sociology or cultural anthropology, 6 hours of English, 6 hours of history, 6 hours of political science, and 3 hours of humanities or visual and performing arts.

To avoid complications in transferring, prenursing students should not take courses pass-fail.

Other Preprofessional Health Careers

Students who plan other preprofessional programs such as predental hygiene, preradiologic technology, and prerespiratory therapy should consult an advisor in the Preprofessional Health Careers Office for further information.

Religion Studies

A minor in religion is offered to students who wish to enhance their understanding of religion by studying it from a variety of academic perspectives. The program is intended to enable students to place their conception of religion in the broader frameworks of several academic disciplines.

A minor in religion studies for a baccalaureate degree is composed of courses drawn from several departments in the college. Eighteen hours of course work are necessary to complete the minor, including courses from at least three disciplines. Four of the courses in the minor must be from the core courses and such courses must be taken from at least two disciplines. Courses taken must reflect the study of at least two religious traditions. The 18 hours may not include courses taken to fulfill requirements in the student's major. **Contact information:** Dr. D. Paul Johnson, Department of Sociology, Anthropology, and Social Work, 158 Holden Hall, (806) 742-2400, or d.paul.johnson@ttu.edu.

Core Courses: ANTH 3323, CLAS 1320, 3350, ENGL 3332, 3333, HIST 3328, 3344, 3391, 4347, 4349, PHIL 2350, 3302, 3324, POLS 3339, PSY 3310, SOC 4331.

Other Courses: ANTH 3325, 3346, ART 3317, 3318, ENGL 4306, HIST 3340, 3348, 3394, 3395, 3398, 4374, PHIL 2320, POLS 3330, 3332.

Students may use one independent topics course for the minor when the topic is religion. Prior to registration, the student should consult the director of the program concerning availability of courses and the student's progress in the minor.

Russian Language and Area Studies

A major or minor in Russian Language and Area Studies for a Bachelor of Arts degree consists of integrated course work in several departments. **Contact information:** Dr. Anthony Qualin and Dr. Erin Collopy, Department of Classical and Modern Languages and Literatures, (806) 742-3145, orpvton@ttu.edu.

The degree is offered to students who wish to study the Russian language and aspects of culture; literature; history; politics; economic relations; and society in Tsarist

Russia, the Soviet Union, and post-Soviet Russia. The program is intended to give students qualifications for various types of professional work that require knowledge of Russia and the Commonwealth of Independent States and to prepare motivated students for further study.

The major requires 33 semester hours of course work. RUSN 1501 and 1502 are prerequisites of, but do not count towards, the major or minor. RUSN 2301, 2302 (or their equivalents), and 2303 are required for all students seeking a major. In addition, majors need to take 24 hours of approved courses offered by the Departments of Classical and Modern Languages and Literatures, Economics and Geography, History, and Political Science. Prior to enrolling in the program and to registering for courses, students should consult one of the program directors.

For the minor, 18 hours of course work is necessary from courses approved for the major. RUSN 2301, 2302 (or their equivalents), and 2303 are required for all students seeking a minor. Courses taken for the Russian Language and Area Studies major or minor may not be used to satisfy the requirements for the student's other major or minor. In addition, the standard requirements for a Bachelor of Arts degree must be met.

Substance Abuse Studies

The Colleges of Human Sciences and Arts and Sciences jointly offer an interdisciplinary minor in Substance Abuse Studies. This minor is designed for students with professional, academic, or personal interest in addictive disorders. It will provide students with an understanding of the physiological, psychological, societal, and familial factors contributing to addiction and recovery from addiction.

For specific details, see the statement on Substance Abuse Studies in the College of Human Sciences section of this catalog. **Contact information:** Dr. Kitty Harris, Department of Human Development and Family Studies, (806) 742-2891, or csa@hs.ttu.edu.

Department of Biological Sciences

Chair: Professor Carleton J. Phillips

Horn Professors Baker, Jackson, and Jones; ***Professors*** Allen, Burns, Blanton, Chesser, Haigler, Heintz, Kendall, Parker, Rylander, Schmidly, Willig, and Zak; ***Associate Professors*** Bilimoria, Bradley, Carr, Cobb, Collie, Densmore, Dickerson, Dini, Dixon, Held, Holaday, Hooper, Houck, Jeter, McGinley, Owen, Patiño, San Francisco, Strauss, Tissue, and Zhang; ***Assistant Professors*** Anderson, Deslippe, Diamond, Gollahon, McIntyre, McMurry, Reilly, and Smith.

This department supervises the following degree programs: BIOLOGY, *Bachelor of Science, Master of Science, Doctor of Philosophy;* CELL AND MOLECULAR BIOLOGY, *Bachelor of Science;* MICROBIOLOGY, *Bachelor of Science, Master of Science;* ZOOLOGY, *Bachelor of Science, Master of Science, Doctor of Philosophy.*

Students majoring in biology for the B.S. degree must complete a minimum of 36 semester hours, including the following:

- BIOL 1403, 1404, 3320, 3120, and 3416.
- Group I—At least one course from BIOL 3302, BOT 3401, 3409, MBIO 3401, ZOOL 4409.
- Group II—At least one course from BIOL 3307, 3309.
- Group III—At least one course from BOT 3403, 3404, ZOOL 3406, 4321, 4407.
- Group IV—At least one junior or senior level botany and one junior or senior level zoology course (courses taken to meet Group I and Group III requirements can also be used to meet the Group IV requirement).
- Additional hours at the junior or senior level to bring the total course hours from biological sciences to a minimum of 36.

Students majoring in biology for the B.S. degree may gain a specialization in ecology and environmental biology by completing a minimum of 36 semester hours from this department, including the following:

- BIOL 1403, 1404, 3102, 3301, 3309, and 4305.
- Group I—At least one course from BOT 3401, MBIO 3401, ZOOL 4409, or BIOL 3320 and 3120.
- Group II—At least one course from BOT 3404, ZOOL 3406, 4407.

- Three courses from Group III (BIOL 3307, 4301, 4310, MBIO 4401, ZOOL 4321) and Group IV (BOT 3404, ZOOL 3303, 3406, 4306, 4308, 4310, 4312, 4407), including at least one course from each of the offerings in Group III and Group IV.
- One additional course from any of Groups I-IV.

Students majoring in cell and molecular biology for the B.S. degree must complete a minimum of 39 hours from this department, including the following:

- BIOL 1403, 1404, 2120, 3302, 3320, 3120 (or 3310), 3416, 4320, MBIO 3401
- Three of the following courses, at least one of which must include a laboratory: BIOL 3102, 4300 (counts as a laboratory course), BOT 3401, 3409, MBIO 4303, 4310, 4402, 4404, 4406, ZOOL 3401, 4304, 4409.
- Additional junior or senior level courses in the department to bring the total course hours from biological sciences to a minimum of 39 (may include the courses above; no more than 6 hours of undergraduate research credit may be counted toward the major).
- Strongly encourages enrollment in BIOL 3310 or 4300.
- Requires a chemistry minor, including CHEM 3311, 3312.

Students majoring in microbiology for the B.S. degree must complete a minimum of 36 hours of core courses as well as additional biological sciences courses. Requirements include the following:

- BIOL 1403, 1404, 4110 (4110 may be repeated once for credit), and MBIO 3401.
- At least five of the following courses: BIOL 3320, MBIO 4303, 4310, 4401, 4402, 4404, and 4406.
- Additional 3000-4000 level courses in biology and microbiology to bring the total course hours from biological sciences to a minimum of 36.
- CHEM 1307, 1308, 1107, 1108, 3305, 3306, 3105, 3106, 3311, and 3312.
- Recommended electives: BIOL 3416, 4300, 4301, ZOOL 3303, MBIO 4400, and FD T 3301.

Students majoring in zoology for the B.S. degree must complete a minimum of 36 hours of the following biological science courses:

- BIOL 1403, 1404, 3416, 3320, 3120.
- One course from each of the following pairs of courses: ZOOL 3405 or 4407, ZOOL 3406 or 3303, BIOL 3302 or ZOOL 4409, BIOL 3309 or 4305.
- Additional biological science courses at the junior or senior level to bring the total course hours to a minimum of 36.

The department encourages undergraduate students to work with professors in research laboratories and projects to obtain first-hand information about research in the life sciences. Opportunities are available in many fields, including systematics and evolutionary biology, ecology and environmental biology, cell and molecular biology, and several areas of biotechnology. These research programs have been well received in the past and have proved beneficial to both students and faculty. Students who have been involved in the research projects have received competitive grants; presented papers at scientific meetings; authored papers published in scientific journals; and progressed to become successful medical doctors, college professors, etc. Students should contact faculty members with whom they will conduct research prior to advisement. Brochures describing research interests of the faculty are available from advisors or the department chair.

Students majoring in biology or zoology may minor in any other field (major and minor may not be in the same field). Other recommended minors, subject to approval by the department, are in such areas as chemistry, geosciences, physics, mathematics, entomology, animal science, plant and soil science, and range and wildlife management. A chemistry minor is required of cell and molecular biology and microbiology majors.

Two semesters of organic chemistry are required of all majors within this department except for teacher education biology majors who must have at least one semester of organic chemistry. It is urged that organic chemistry be taken during the second year of study. Students whose area of interest requires a strong background in chemistry should complete a chemistry minor.

Biology, zoology, and ecology and environmental biology majors must take either MATH 1351 (calculus) or MATH 2300 (statistics). Cell and molecular biology majors must take one semester of calculus (MATH 1351). Microbiology majors must take either MATH 1351, 2300, or AAEC 3401.

Students majoring in biology, cell and molecular biology, microbiology, or zoology must complete PHYS 1306, 1103, 1307,

1104, or PHYS 1308, 1105, 2301, 1106. Students majoring in biology with a specialization in ecology and environmental biology may substitute another environmental science for the second physics class with advisor's permission.

All majors in the department must include 3 hours of multicultural course work to fulfill their Core Curriculum requirement, and 6 hours of course work taken in this department for use toward the major must be writing intensive (BIOL 1403, 1404, 3102, 3307, 4101, 4303, 4305, 4320; BOT 3401, 3404, 3409; MBIO 4303, 4307, 4309, 4402, 4404; ZOOL 4304, 4310, 4409, ZOOL 4321).

Courses with a grade of D cannot be counted toward fulfillment of requirements for a major or minor (including adjunct requirements and minors from other departments) in any program in this department.

Sample Curriculum for Biological Sciences

FIRST YEAR

Biology	
*BIOL 1403, 1404	8
CHEM 1107, 1108	2
**CHEM 1307, 1308	6
ENGL 1301, 1302	6
Mathematics	6
+Personal Fitness & Wellness	2

Cell & Molecular Biology	
*BIOL 1403, 1404	8
CHEM 1107, 1108	2
**CHEM 1307, 1308	6
ENGL 1301, 1302	6
Mathematics	6
+Personal Fitness & Wellness	2

Microbiology	
*BIOL 1403, 1404	8
CHEM 1107, 1108	2
**CHEM 1307, 1308	6
ENGL 1301, 1302	6
MATH 1351 or AAEC 3401	3
Additional Mathematics	2-3
+Personal Fitness & Wellness	2
†Oral Communication	3

Zoology	
*BIOL 1403, 1404	8
CHEM 1107, 1108	2
**CHEM 1307, 1308	6
ENGL 1301, 1302	6
Mathematics	6
+Personal Fitness & Wellness	2

SECOND YEAR

Biology	
BIOL 3416	4
Organic Chemistry	4-8
†English	6
††For. Lang.	6-10
†Oral Communication	3
†Major, Minor, or Electives	9-15

Cell & Molecular Biology	
BIOL 2120	1
BIOL 3416	4
CHEM 3105, 3106	2
CHEM 3305, 3306	6
†English	6
††Foreign Language	6-10
†Oral Communication	3
†Major, Minor, or Electives	8-10

Microbiology	
MBIO 3401	4
CHEM 3105, 3106	2
CHEM 3305, 3306	6
†English	6
††Foreign Language	6-10
MBIO Requirements, Technology, Applied Science, or Electives	4-6

Zoology	
BIOL 3416	4
CHEM 3105, 3106	2
CHEM 3305, 3306	6
†English	6
††Foreign Language	6-10
†Oral Communication	3
†Major, Minor, or Electives	9-15

THIRD AND FOURTH YEARS

Biology	
**BIOL 3320, 3120	4
Foreign Language	6
†HIST 2300, 2301	6
PHYS 1306, 1307	6
PHYS 1103, 1104	2
POLS 1301, 2302	6
Major, Minor, or Electives	22-34

Cell & Molecular Biology	
BIOL 3302	3
BIOL 3320, 3310	6
BIOL 4320	3
CHEM 3311, 3312	6
MBIO 3401	4
Foreign Language	6
†HIST 2300, 2301	6
PHYS 1306, 1307	6
PHYS 1103, 1104	2
POLS 1301, 2302	6
Major, Minor, or Electives	18-20

THIRD AND FOURTH YEARS

Microbiology		*Zoology*	
MBIO Requirements	26-28	BIOL 3320, 3120	4
Foreign Language	6	Foreign Language	6
†HIST 2300, 2301	6	†HIST 2300, 2301	6
PHYS 1306, 1307	6	PHYS 1306, 1307	6
PHYS 1103, 1104	2	PHYS 1103, 1104	2
CHEM 3311, 3312	6	POLS 1301, 2302	6
POLS 1301, 1302	6	Major, Minor, or Electives	25-37
Electives	1-3		

Total minimum hours for each major—126.
*Advisement required; depending on circumstances, these courses should be deferred until sophomore year.
**See chemistry prerequisites.
+Select from Arts and Sciences General Degree Requirements.
†Choose from Core Curriculum requirements.
††See foreign language requirements.

Departmental Residency Requirement. At least 10 hours of upper division biological sciences courses for all majors in this department and at least 6 hours of upper division biological sciences courses for biology minors must be taken at Texas Tech.

Minors. Students from other departments may minor in biology, cell and molecular biology, microbiology, or zoology. Students wishing to minor in one of these fields must complete 18 hours in biological sciences (includes courses with BIOL, BOT, MBIO, and ZOOL prefixes). BIOL 1403 and 1404 must account for 8 of these hours; another 6 hours must come from junior and senior level courses. Course work for the zoology minor must include one upper division ZOOL class; for cell and molecular biology minor, BIOL 3320; for microbiology minor, MBIO 3401. Only 1 hour of research credit (BIOL 4100) may be used to fulfill the minor requirement. The minor advisor in biological sciences should be consulted no later than the beginning of the junior year.

Teacher Education. Students who complete a major in biology and satisfy other requirements for the B.S. degree, including 18 hours of professional educational courses, will be qualified to teach high school biology in the public schools of Texas. The following courses to meet both the major and the certification requirements in life science:

- BIOL 1403 and 1404, 3320, 3120, 3416; MBIO 3401; BOT 3403, 3404 or 3401; ZOOL 2403 or 3405; ZOOL 3406 or 4407.
- At least one of BIOL 3309, 3307, 4305, or ZOOL 4312.
- PHYS 1306, 1103, 1307, and 1104 (or 1307, 1105, 2301 and 1106); CHEM 1307, 1107, 1308, 1108, and one semester of organic chemistry, which may be satisfied with CHEM 3305 and 3105.

Students may also satisfy the requirements for the teaching of high school biology under the Multidisciplinary Science Major, with an emphasis in biology. This major is administered by the College of Education. All students must take the following:

- CHEM 1107, 1108, 1307, and 1308; PHYS 1103, 1104, 1306, and 1307 (or 1308, 1105, 2301 and 1106); GEOL 1101, 1102, 1303, and 1304; BIOL 1403 and 1404; ATMO 1300 and 1100; ASTR 1300 and 1100. ZOOL 2403; BIOL 3416; MBIO 3400.
- One of BOT 3403, 3404, or 3401.
- 6 to 8 hours from BOT 3403, 3404, or 3401; ZOOL 3406 or 4407; BIOL 3303, 3320, or 4305.

Either BIOL 1401 and 1402 or BIOL 1403 and 1404 will satisfy the laboratory science requirements for the College of Arts and Sciences. BIOL 1403 and 1404 (or courses with Texas Common Course Numbers BIOL 1406 and 1407) are required for all majors and minors in the department. Students can test out of BIOL 1403 and 1404 by having taken the AP biology test in high school and achieving a score of five (5). Alternatively, students can test out of BIOL 1403 and/or 1404 by passing departmentally administered tests (see course coordinator). Students can test out of BIOL 1401 and 1402 by having taken the AP biology test in high school and achieving a score of at least three (3). Alternatively, students can test out of BIOL 1401 and 1402 by taking the CLEP-S test administered by the university's Testing and Evaluation Center, but advanced placement scores for BIOL 1401 and 1402 will not be accepted as credit toward major requirements in the department.

Biology (BIOL)

1113. Environmental Problems Laboratory (1:0:3). Prerequisite: BIOL 1313 (or concurrent enrollment) or permission of instructor. Laboratory and field studies of environmental problems. Not for major credit.

1305. Ecology and Environmental Problems (3:3:0). An introduction to ecological principles and the analysis of environmental problems. Not for major credit. BIOL 1401, 1402, 1305, and 1306 may be taken in any sequence or simultaneously. Fulfills the lecture component of the natural sciences requirement.

1306. Biology of Sex (3:3:0). An introduction to the diversity of reproductive modes in organisms and issues such as human reproduction, the evolution of sex, and mating systems. BIOL 1401, 1402, 1305, and 1306 may be taken in any sequence or simultaneously.

1401. Biology of Plants (4:3:3). An introductory coverage of plant-environment interactions and plant structure and function as they relate to our understanding of the plant world. Expressly designed for students not majoring in a biological science. Will fulfill laboratory science requirements. BIOL 1401 and 1402 may be taken in any sequence or simultaneously. [BIOL 1411]

1402. Biology of Animals (4:3:3). An introductory coverage of animal-environment interactions and animal structure, function, and behavior as they relate to our understanding of the animal world. Expressly designed for students not majoring in a biological science. BIOL 1401 and 1402 may be taken in any sequence or simultaneously. [BIOL 1413]

1403. Biology I (4:3:3). Prerequisite: One year of high school biology. Enrollment as a freshman requires a minimum composite SAT1 score of 1100, or a minimum composite ACT score of 27, or a minimum AP Biology score of 3. Fundamentals of molecular biology, cell biology, genetics, and evolutionary theory. First semester of an integrated course recommended for students majoring in biological sciences or related disciplines. [BIOL 1406]

1404. Biology II (4:3:3). Prerequisite: BIOL 1403. Fundamentals of organismal biology, population biology, and biological diversity. Second semester of an integrated course recommended for majors in biological and related sciences. [BIOL 1407]

2120. Introductory Cell and Molecular Biology (1:1:0). An introduction to current areas of research and to recent technological advances in the field of cellular and molecular biology.

3120. Cell Biology Laboratory (1:0:3). Prerequisite or corequisite: BIOL 3320. A survey of the experimental techniques used to study cells and cellular processes.

3302. Developmental Biology (3:3:0). Prerequisite: Introductory biology and genetics; cell biology recommended. A synthesis of animal and plant development, stressing the basic principles of molecular, cellular, and organismic development.

3304. Human Genetics (3:3:0). Prerequisite: One semester of general genetics (BIOL 3416) or equivalent. A study of the frequency and transmission of human genetics and chromosomal mutations and the application of this information to individual cases.

3307. Population Biology (3:3:0). Prerequisite: BIOL 3416 required; BIOL 3309 recommended. Introduction to population biology theory with emphasis on interaction between genetics and ecology.

3309. Principles of Ecology (3:3:0). Prerequisite: An introductory course in biology. An examination of ecological systems emphasizing populations, communities, and ecosystems.

3310. Experimental Cell Biology (3:1:6). Prerequisite: Declared major in cell and molecular biology, or consent of the instructor, and prior or concurrent enrollment in BIOL 3320. An introduction to the modern research techniques used to study cellular and molecular processes in eukaryotic cells.

3320. Cell Biology (3:3:0). Prerequisite: BIOL 1403 and 1404 and one semester of organic chemistry. An integrated study of the basic principles of cell structure and function.

3416. Genetics (4:3:3). Prerequisite: One year of introductory biology. Genetic principles with emphasis on mechanisms and problem solving.

4100. Undergraduate Research in Biology (1). Prerequisite: 15 hours of biology, junior or senior standing, and consent of instructor. Selected research problems according to the needs of the students. May be repeated or taken parallel for credit in another field or with new materials in the same field.

4101. Biology Seminar (1:1:0). Prerequisite: Senior standing in biology, botany, or zoology. Critical reviews of classical and recent literature and reports of original investigations. May be repeated for credit.

4110. Topics in Biology (1). Prerequisite: Consent of instructor. Special areas of

current interest not commonly included in other courses. Content normally different each time offered. May be repeated for credit up to 3 hours.

4300. Undergraduate Research in Biology (3). Prerequisite: 15 hours of biology, junior or senior standing in biology, and consent of instructor. Selected research problems according to the needs of the students. May be repeated or taken parallel for credit in another field or with new materials in the same field.

4301. Topics in Biology (3). Prerequisite: Consent of instructor. Special areas of current interest not commonly included in other courses. Content normally different each time offered. May be repeated for additional credit.

4303. Population Genetics (3:3:0). Prerequisite: BIOL 3416 or equivalent course in genetics; MATH 1320 or equivalent course in algebra recommended. The origin, maintenance, and significance of genetic variation in natural and artificial populations.

4305. Organic Evolution (3:3:0). Prerequisite: BIOL 3416 or equivalent course in genetics. The principles and processes of evolution and how they relate to the ecology, physiology, behavior, morphology, and systematic classification of organisms.

4307. Cancer Biology (3:3:0). Prerequisite: BIOL 3320, ZOOL 4304 is recommended. This course presents a comprehensive overview covering the history of cancer biology to the most recent developments in the field. Molecular and cellular biology as well as clinical topics will be covered.

4310. Community Ecology (3:3:0). Prerequisite: A course in ecology or consent of instructor. An investigation of theoretical and experimental approaches to understanding the composition, diversity, and structure of plant, animal, and microbial communities.

4320. Molecular Biology (3:3:0). Prerequisite: BIOL 3302, 3320. Includes the study of molecular processes involved in cellular functioning of eukaryotic and prokaryotic cells and viruses together with recent technological advances in molecular biology research.

4330. Landscape Ecology (3:3:0). Prerequisite: BIOL 1404 or 3309 or consent of instructor. An examination of how we quantify patterns and effects of spatial heterogeneity on organisms and ecological processes. F, odd years.

4350. Physiological Plant Ecology (3:3:0). Prerequisite: Consent of instructor. Investigation of the physiological processes of plants that contribute to understanding the ecological distribution and evolutionary success of plants in their physical environment.

Botany (BOT)

3401. Plant Physiology (4:3:3). Prerequisite: Introductory botany or BIOL 1403 and 1404 and one semester of organic chemistry. The physiology of plants with an emphasis on relationships of structure to function in vascular plants.

3403. Comparative Morphology of Plants (4:3:3). Prerequisite: One year of introductory biology. An evolutionary survey of the diversity of plants (broadly defined) emphasizing adaptations in form and sexual life cycles.

3404. Taxonomy of the Flowering Plants (4:3:3). Prerequisite: One year of introductory biology. This course addresses the diversity of flowering plants, emphasizing modern approaches to classification and identification of plant species in the regional flora. Field trips may be required.

3409. Developmental Plant Anatomy (4:3:3). Prerequisite: One year of biology. Introduction to plant cells, tissues, and organs with emphasis on structural and functional relationships, control of development, evolutionary history, and environmental adaptation.

4302. Field Botany (3:0:6). Prerequisite: BOT 3404 or consent of instructor. Thorough knowledge of and familiarity with the flora of West Texas and adjacent areas is developed through field trips, collection, and herbarium work.

4304. Plant Molecular Biology (3:3:0). Prerequisite: Introductory biology, cell biology, and genetics. Molecular analysis of plant metabolism and development. S, even years.

Microbiology (MBIO)

3400. Microbiology (4:3:4). Prerequisite: 3 hours of introductory biology. Morphology, physiology, and activities of bacteria, fungi, and viruses. Primarily for students of agriculture, food and nutrition, animal science, secondary education, nursing, and others seeking an advanced science elective.

3401. Principles of Microbiology (4:3:4). Prerequisite: One year of introductory biology; prerequisite or parallel: CHEM 3305. Morphology, physiology, and classification of microorganisms.

4101. Microbiology Seminar (1:1:0). Prerequisite: Senior standing in microbiology. Critical reviews of classical and recent literature and reports of original

investigations. May be repeated for credit.

4303. Physiology of Bacteria (3:3:0). Prerequisite: MBIO 3401. Anatomy and physiology of the bacterial cell—a molecular approach.

4307. Industrial Microbiology (3:3:0). Prerequisite: MBIO 3401. An introduction to fermentation techniques, food microbiology, production of various microbial products, microbial transformations, sewage disposal, and microbiological control.

4310. Introduction to Virology (3:3:0). Prerequisite: MBIO 3401 or BIOL 3320 or consent of instructor. An introduction to basic concepts in the structure, replication, and ecology of viruses from animals, plants, and procaryotes.

4400. Practicum in Applied Microbiology (4:0:12). Prerequisite: Consent of instructor at least one month prior to registration. Practical experience in affiliated governmental, industrial, and medical microbiology laboratories. May not be repeated for credit.

4401. Microbial Ecology (4:3:3). Prerequisite: A course in microbiology, mycology, ecology, or related area, or consent of instructor. An examination of the population and community ecology of bacteria and fungi, and the roles of these organisms in ecosystem processes.

4402. Immunology and Serology (4:3:4). Prerequisite: MBIO 3401 or BIOL 3320 or consent of instructor; or 10 hours of chemistry. Theories of infection and resistance, the production and demonstration of antibodies, the action of antigens, and diagnostic tests.

4404. Pathogenic Microbiology (4:3:4). Prerequisite: MBIO 3401 and 4402 or consent of instructor. A detailed study of pathogenic microorganisms. Laboratory discussion of medical case studies.

4406. The Genetics of Microorganisms (4:3:3). Prerequisite: MBIO 3401 or consent of instructor. The principles of genetic systems existing among microorganisms, with emphasis upon bacteria and bacteriophages.

Zoology (ZOOL)

2403. Human Anatomy and Physiology I (4:3:3). Prerequisite or parallel: 6 hours of chemistry recommended. Structure and function of cells and body systems. This is a nonmajors course that is open to students in human sciences, medical technology, physical education, prenursing, preoccupational therapy, preoptometry, and the biology teaching field. [BIOL 2401]

2404. Human Anatomy and Physiology II (4:3:3). Prerequisite: ZOOL 2403. CHEM 1301 or equivalent recommended. In-depth coverage of topics introduced in ZOOL 2403, with emphasis on physiology and its relationship to disease. [BIOL 2402]

2406. Comparative Anatomy of Game Animals (4:3:3). Prerequisite: BIOL 1402 or 1404 or equivalent. A comparative study of game and other wild animals, with emphasis on embryology, functional anatomy, and evolution. Not for major or minor credit in the biological sciences.

3303. Parasitology (3:2:3). Prerequisite: Introductory zoology. Morphology, life cycles, and physiology of protozoan and helminth parasites, with emphasis on broad aspects of parasitism and examples with medical and economic interest.

3401. Animal Histology (4:2:6). Prerequisite: ZOOL 3405. The study of normal tissues of the human and other mammals. An introductory course recommended for students of pathology, medical sciences, and biomedical sciences.

3405. Vertebrate Structure and Development (4:3:3). Prerequisite: Introductory zoology or biology. The comparative study of vertebrate structure and embryological development.

3406. Comparative Invertebrate Zoology (4:3:3). Prerequisite: One year of introductory biology or consent of instructor. Structure, life history, and evolution of the invertebrates.

4304. General Endocrinology (3:3:0). Prerequisite: BIOL 3320 or ZOOL 4409, organic chemistry. Hormones as chemical coordinators of bodily functions.

4306. Introduction to Mammalogy (3:2:3). Prerequisite: Introductory zoology or junior standing in wildlife management; ZOOL 4407 recommended. Study of the classification, natural history, and ecology of mammals.

4308. General Ornithology (3:2:3). Prerequisite: Junior standing. Emphasis on laboratory and field work in systematics, ecology, and anatomy of birds. Local field trips.

4310. Introduction to Ichthyology (3:2:3). Prerequisite: Introductory zoology or equivalent. Diversity, evolutionary relationships, ecology, and anatomy of fishes.

4312. Animal Behavior (3:3:0). Comparative study of animal behavior; its genetic basis, expression through neurophysiological mechanisms, function in the environment, and adaptive role during evolutionary history.

4321. Insect Diversity (3:3:0). Prerequisite: BIOL 1403 and 1404 required, BIOL 3309 recommended. An advanced exploration of the behavior, ecology, and evolution of insects.

4407. Natural History of the Vertebrates (4:3:3). Prerequisite: One year of introductory biology. Evolutionary relationships, identification, and ecology of vertebrates. Local fauna emphasized.

4409. Comparative Animal Physiology (4:3:3). Prerequisite: ZOOL 3405 or 3406, CHEM 1307, 1308; BIOL 3320, 3120 recommended. A comparison of physiological functions of animals in the major phyla.

Department of Chemistry and Biochemistry

Chair: Horn Professor Richard A. Bartsch

Horn Professors Dasgupta, Knaff, and Shine; ***Piper Professor*** Casadonte; ***Professors*** Gellene, Holwerda, Nes, Quitevis, Redington and Roundhill; ***Associate Professors*** Birney, Bornhop, Flowers, Harman, Headley, Korzeniewski, Marx, Shelly, and Whittlesey; ***Assistant Professors*** Blake, Li, Morales, Paré, Poirier, and Shaw; ***Visiting Faculty*** Erickson and Talanova; ***Instructors*** Salam and Tomlinson; ***Lecturer*** Miller; ***Joint Faculty*** Karlsson, Menzel, and Reid.

This department supervises the following degree programs: CHEMISTRY, *Bachelor of Arts or Bachelor of Science, Master of Science, and Doctor of Philosophy;* BIOCHEMISTRY, *Bachelor of Arts or Bachelor of Science;* and BIOTECHNOLOGY, *Master of Science.* Those students seeking graduate degrees may specialize in analytical, inorganic, organic, physical, or theoretical chemistry; chemical education; chemical physics; or biochemistry.

The Department of Chemistry and Biochemistry offers four undergraduate degree programs in chemistry and biochemistry. The Bachelor of Science degree programs are most appropriate for students who plan to pursue a professional, research-based career in chemistry or biochemistry. The Bachelor of Arts options provide a strong undergraduate background in the central sciences of chemistry and biochemistry as preparation for other objectives, such as health-related professional schools, teaching, or sales. The undergraduate advisor provides career counseling and assists students in selecting courses and fulfilling degree requirements. The department offers honors-level courses to qualified students (admitted to the Honors College) in both general and organic chemistry. Highly motivated undergraduate chemistry or biochemistry majors are strongly encouraged to complete an individual research project under the supervision of a faculty member. Undergraduate research students gain a working knowledge of research methods in a specialized area and familiarity with a wide range of instrumentation and techniques. The department has a very active chapter of the Student Affiliates of the American Chemical Society.

Chemistry Curriculum. The undergraduate student may take courses leading to a Bachelor of Arts or a Bachelor of Science degree in chemistry. Either program offers a wide choice of minor subjects in Arts and Sciences or other colleges. Consult the undergraduate advisor prior to registration for a particular minor program.

Chemistry, B.S. Degree. The Bachelor of Science degree prepares a student for graduate school or a career as a professional chemist. This degree program is technically oriented, requiring greater depth of mathematics, physics, and chemistry than does the Bachelor of Arts degree. With a heavier chemistry requirement in the B.S. degree program, the student has fewer elective courses for other interests. Completion of the B.S. curriculum leads to automatic American Chemical Society certification of a student as the recipient of a professional degree.

Chemistry Curriculum, B.S. Degree

FIRST YEAR

Fall		*Spring*	
CHEM 1307, Prin. of Chem. I	3	CHEM 1308, Prin. of Chem. II	3
CHEM 1107, Prin. of Chem. I (Lab.)	1	CHEM 1108, Prin. of Chem. II (Lab.)	1
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
American History	3	American History	3
*MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
†Personal Fitness and Wellness	1	†Personal Fitness and Wellness	1
†Visual or Performing Arts Elective	3	†Oral Communication	3
TOTAL	17	TOTAL	17

SECOND YEAR

Fall		*Spring*	
CHEM 3305, Org. Chem. I	3	CHEM 3306, Org. Chem. II	3
CHEM 3105, Org. Chem. Lab. I	1	CHEM 3106, Org. Chem. Lab. II	1
CHEM 3301, Desc. Inorg. Chem.	3	CHEM 3351, Analytical Chemistry	3
MATH 2350, Calculus III	3	CHEM 3251, Analytical Chem. Lab.	2
PHYS 1308, Prin. of Physics I	3	PHYS 2301, Prin. of Physics II	3
PHYS 1105, Prin. of Phys. I (Lab.)	1	PHYS 1106, Prin. of Phys. II (Lab.)	1
†English	3	Minor	3-4
TOTAL	17	TOTAL	16-17

THIRD YEAR

Fall		*Spring*	
CHEM 3201, Adv. Org. Chem. Lab.	2	CHEM 3308, Phys. Chem. II	3
CHEM 3307, Phys. Chem. I	3	CHEM 3108, Phys. Chem. Lab. II	1
CHEM 3107, Phys. Chem. Lab. I	1	CHEM 4314, Instrumental Analysis	3
Foreign Language	5	CHEM 4114, Instrumental Laboratory	1
POLS 1301, Amer. Govt., Org.	3	Foreign Language	5
Minor	3-4	POLS 2302, Amer. Pub. Pol.	3
TOTAL	17-18	TOTAL	16

FOURTH YEAR

Fall		*Spring*	
CHEM 4303, Mol. Biochem.	3	CHEM 4309, Inorg. Chem. II	3
Minor	3	CHEM 4105, Inorg. Chem. Lab	1
†English	3	†Humanities Elective	3
+Senior Elective	3-6	†Social or Behavioral Science Elective	3
Foreign Language	3	+Senior Elective	3
TOTAL	15-18	Foreign Language	3
		Minor	3
		TOTAL	13-19

*Adequate training in algebra, trigonometry, and analytic geometry is a prerequisite for calculus. The student in doubt about which mathematics courses to take in the first year should take the Mathematics Placement Examination.
+Six elective hours from CHEM 4010 (3 hours), 4300, 4302, 4310 or with consent of the undergraduate advisor.
†Select from Arts and Sciences General Degree Requirements.

Chemistry, B.A. Degree. The Bachelor of Arts in chemistry has a curriculum primarily designed for the student who is interested in using an undergraduate major in chemistry as the background for a career in which extensive training in chemistry is either valuable or essential (e.g., medicine, dentistry, environmental protection, clinical and pharmacological chemistry, technical sales, and chemical patent law). It may also provide a sufficient background in chemistry for employment as a chemist in an industrial laboratory or to enter a graduate program leading to the M.S. or Ph.D. degree in chemistry.

CHEM ..... 34 hours
1307, 1308 (or 1301, 1307, 1308), 1107, 1108, 3301, 3305, 3306, 3105, 3106, 3307, 3107, 3341, 3141, 4314, 4114 and 3 hours to be chosen from 3308, 3108, 4302, 4303, 4105, 4309, and 4310
MATH ..... 6 hours
1350 (if needed), 1351, 1352
PHYS ..... 8 hours
1306 & 1103 and 1307 & 1104 (or 1308 & 1105 and 2301 & 1106)
English ..... 12 hours
American History ..... 6 hours
POLS 1301, 2302 ..... 6 hours
Social and Behavioral Sciences ..... 6 hours
Humanities ..... 6 hours
Oral Communication ..... 3 hours
Visual and Performing Arts ..... 6 hours
Foreign Language ..... 6-16 hours
Personal Fitness and Wellness ..... 2 hours

All students in the College of Arts and Sciences must complete 125-132 total credit hours for graduation, including minor and free elective courses not listed above.

Biochemistry Curriculum. Both the Bachelor of Science and Bachelor of Arts degree programs in biochemistry have a common objective of providing general education and training in the chemical aspects of biological systems through a combination of course work in biochemistry, chemistry, and biology.

Biochemistry, B.S. Degree. The Bachelor of Science in biochemistry program will prepare an undergraduate student for graduate study in biochemistry and related disciplines, for entry into medical or dental school, or for employment in industrial or governmental laboratories in which graduate training is not required. A biology minor may be earned by completing one biology course in addition to those required for the B.S. biochemistry degree (see the biological sciences undergraduate advisor for specific requirements).

Biochemistry Curriculum, B.S. Degree

FIRST YEAR

Fall		*Spring*	
CHEM 1307, Prin. of Chem. I	3	CHEM 1308, Prin. of Chem. II	3
CHEM 1107, Prin. of Chem. I (Lab.)	1	CHEM 1108, Prin. of Chem. II (Lab.)	1
BIOL 1403, Biology I	4	BIOL 1404, Biology II	4
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
American History	3	American History	3
*MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
†Physical Fitness and Wellness	1	†Physical Fitness and Wellness	1
TOTAL	18	TOTAL	18

SECOND YEAR

Fall		*Spring*	
CHEM 3305, Org. Chem. I	3	CHEM 3306, Org. Chem. II	3
CHEM 3105, Org. Chem. Lab. I	1	CHEM 3106, Org. Chem. Lab. II	1
CHEM 2100, Intro. Biochem. Res.	1	CHEM 3351, Analytical Chemistry	3
BIOL 3416, Genetics	4	CHEM 3251, Analytical Chem. Lab.	2
PHYS 1308, Prin. of Physics I	3	PHYS 2301, Prin. of Phys. II	3
PHYS 1105, Prin. of Phys. I (Lab.)	1	PHYS 1106, Prin. of Phys. II (Lab.)	1
Foreign Language	5	Foreign Language	5
TOTAL	18	TOTAL	18

THIRD YEAR

Fall		*Spring*	
CHEM 3311, Biol. Chem I	3	CHEM 3312, Biol. Chem. II	3
MBIO 3401, Prin. of Micro.	4	CHEM 3313, Biol. Chem. Lab.	3
†English	3	CHEM 3314, Biol. Chem. III	3
POLS 1301, Amer. Govt., Org.	3	POLS 2302, Amer. Pub. Pol.	3
Foreign Language	3	Foreign Language	3
TOTAL	16	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
CHEM 4311, Phys. Chem. Biol. Sci.	3	CHEM 4314, Instrumental Analysis	3
†Social/Behavioral Science Elective	3	CHEM 4114, Instrumental Laboratory	1
†Visual/Performing Arts Elective	3	CHEM 4312, Physical Biochemistry	3
†Oral Communication	3	†Humanities Elective	3
+Senior Elective	3-4	†English	3
TOTAL	15-16	+Senior Elective	3-4
		TOTAL	16-17

*Adequate training in algebra, trigonometry, and analytic geometry is a prerequisite for calculus. The student in doubt about which mathematics courses to take in the first year should take the Mathematics Placement Examination.
+Course chosen from CHEM 4010 (3 hours), 4300, MBIO 4402, BIOL 3320, 4320, ZOOL 3405 or with consent of the undergraduate advisor.
†Select from Arts and Sciences General Degree Requirements.

Biochemistry, B.A. Degree. The Bachelor of Arts program in biochemistry is primarily designed to prepare an undergraduate student for entry into medical school (admission requirements for Texas medical schools are satisfied) or other medically related professional schools. Graduates with a B.A. in biochemistry are also qualified for industrial employment in areas in which a strong biochemistry background

is an asset, such as technical sales or management. The B.A. degree provides sufficient background in biochemistry and chemistry for admission to a graduate program in biochemistry.

CHEM ..... 40 hours
1307, 1308 (or 1301, 1307, 1308), 1107, 1108, 2100, 3305, 3306, 3105, 3106, 3311, 3312, 3313, 3314,3341, 3141, 4311, 4314, 4114
BIOL 1403, 1404, 3320, 3416 ..... 15 hours
MATH ..... 6 hours
1350 (if needed), 1351, 1352
PHYS ..... 8 hours
1306 & 1103 and 1307 & 1104 (or 1308 & 1105 and 2301 & 1106)
English ..... 12 hours
American History ..... 6 hours
POLS 1301, 2302 ..... 6 hours
Social and Behavioral Sciences ..... 6 hours
Humanities ..... 6 hours
Oral Communication ..... 3 hours
Visual and Performing Arts ..... 6 hours
Foreign Language ..... 6-16 hours
Personal Fitness and Wellness ..... 2 hours

All students in the College of Arts and Sciences must complete 125-132 total credit hours for graduation, including minor and free elective courses not listed above.

Chemistry Minor. Students interested in a chemistry minor should consult with the undergraduate advisor. The chemistry minor requires a minimum of 19 chemistry credit hours, including at least 4 laboratory hours. Core requirements include CHEM 1107, 1108, 1307, 1308, 3105 and 3305. Chemistry minors must also complete a minimum of 6 junior-senior level hours (chemistry or biochemistry) and one additional laboratory hour (sophomore-level or higher), not counting CHEM 3105, 3106, 3305, or 3306. Note that CHEM 2000, 2100, 2103, 2303, 3000, 3402 and 4100 may not be counted towards a chemistry minor.

Residency Requirements. The Department of Chemistry and Biochemistry generally accepts transfer credits from other colleges and universities. However, to receive an undergraduate degree in either chemistry or biochemistry, at least 25 percent of the hours in the major must be taken at Texas Tech University. For a chemistry minor, at least one of the junior-senior level courses must be taken at Texas Tech University.

Advanced Standing. The Department of Chemistry and Biochemistry will permit a student to receive credit for any courses in the curriculum if proficiency is demonstrated in that subject by examination. Examinations for CHEM 1305, 1306, 1307, and 1308 are given at the Testing Center prior to each semester. Previous registration for these examinations is not required for students entering Texas Tech University for the first time. Students who are currently enrolled must apply to the Arts and Sciences Deans' Office for approval to take the examination. For all other courses, it is the student's responsibility to obtain approval from the Deans' Office and to petition the department chair for such examination(s) well before normal enrollment in the course. There is a fee for the CLEP test.

Teacher Education. Students seeking a teaching certificate in physical science are expected to earn a bachelor's degree (B.A. or B.S.) with a major in either chemistry or biochemistry. College of Education requirements for certification in chemistry and science are described in the Teacher Education section of this catalog.

Chemistry Placement Examination. Students wishing to enroll in first-semester, quantitative general chemistry (CHEM 1307) must first complete CHEM 1301 or pass the Chemistry Placement Examination administered at the start of each semester. Please consult the department Web site (www.ttu.edu/~chem) for the schedule of examination dates, times, and locations. A sample placement exam with key may be found at this site. Previous registration for this examination is not required and there is no fee. Students are strongly encouraged to review high school level chemistry concepts and skills prior to attempting the Chemistry Placement Examination.

Chemistry (CHEM)

1105. Experimental General Chemistry I (Laboratory) (1:0:3). Corequisite: CHEM 1305. This course is designed to introduce the student to a variety of laboratory techniques and to complement the lecture course CHEM 1305. [CHEM 1105]

1106. Experimental General Chemistry II (Laboratory) (1:0:3). Prerequisite: CHEM 1105 and CHEM 1305; corequisite: CHEM 1306. [CHEM 1107]

1107. Principles of Chemistry I (Laboratory) (1:0:3). Corequisite: CHEM 1307. Introduction to a wide variety of experimental techniques. [CHEM 1111]

1108. Principles of Chemistry II (Laboratory) (1:0:3). Prerequisite: CHEM 1107 and 1307; corequisite: CHEM 1308. A continuation of CHEM 1107, which serves as a prerequisite for all advanced laboratory courses in chemistry. [CHEM 1112]

1301. Introductory Chemistry (3:3:0). Basic vocabulary, concepts, and problem-solving skills required for CHEM 1307 and 1308. This course has no laboratory and will not satisfy a laboratory science requirement. [CHEM 1207]

1303. Science, Technology, and Chemistry (3:3:0). Traces the threads of science from seeds of beginnings to modern life. Emphasizes more healthful life and time-saving conveniences created by science. No laboratory. Satisfies the technology and applied science requirement.

1305. Chemistry and Society I (3:3:0). Corequisite: CHEM 1105. A non-mathematical survey of basic chemical concepts, properties, and applications within society. Along with CHEM 1105, 1106, and 1306, it satisfies the laboratory science requirement for non-majors and those who do not require CHEM 1307 and 1308. [CHEM 1305]

1306. Chemistry and Society II (3:3:0). Prerequisite: CHEM 1105 and 1305; corequisite: CHEM 1106. This course consists of chemical applications within society and the modern chemical world. [CHEM 1307]

1307. Principles of Chemistry I (3:3:0). Prerequisite: CHEM 1301 or a passing grade on the Chemistry Placement Exam; corequisite: CHEM 1107. A study of fundamental concepts of chemistry including nomenclature, states of matter, the periodic table and periodic trends, chemical reactions, atomic structure, chemical bonding, molecular structure, and the properties of gases, liquids, solutions and solids. This course is recommended for students who plan careers in the physical and biological sciences as well as medicine and engineering. [CHEM 1311]

1308. Principles of Chemistry II (3:3:0). Prerequisite: CHEM 1107 and 1307; corequisite: CHEM 1108. A continuation of CHEM 1307, which covers solution chemistry, chemical kinetics, acid/base and ionic equilibria, thermodynamics, electrochemistry, nuclear chemistry, and coordination chemistry. This course serves as a prerequisite to all advanced chemistry courses. [CHEM 1312]

2000. Introduction to Chemical Research (1:0:3). Prerequisite: One semester of college chemistry or consent of instructor. Selected research problems according to the needs of students, especially group or team projects. Includes an introduction to chemical research and mentorship by the staff. May not be repeated for credit.

2100. Introduction to Biochemistry Research (1:1:0). Prerequisite: CHEM 1307 or consent of instructor. A structured seminar series on contemporary biochemical research topics. May not be repeated for credit.

2103. Introductory Organic Chemistry Laboratory (1:0:3). Prerequisite: CHEM 1105, 1106, or 1107, 1108; corequisite: CHEM 2303. Introductory organic laboratory techniques for students in agriculture and human sciences.

2303. Introductory Organic Chemistry (3:3:0). Prerequisite: CHEM 1305, 1306 or 1307, 1308; corequisite: CHEM 2103 is strongly recommended. A brief study of the chemistry of carbon compounds for students in agriculture and human sciences. Not for majors or minors. [CHEM 1419]

3000. Undergraduate Research (V1-6). Prerequisite: Consent of instructor. Individual research project under the guidance of a staff member. May be repeated for credit.

3105. Organic Chemistry Laboratory I (1:0:3). Prerequisite: CHEM 1107, 1108, 1307, 1308; corequisite: CHEM 3305 is strongly recommended. First semester of fundamental techniques of organic chemistry. Will not count as an upper-level elective for a minor. [CHEM 2123]

3106. Organic Chemistry Laboratory II (1:0:3). Prerequisite: CHEM 3305 and 3105; corequisite: 3306 is strongly recommended. Second semester of fundamental techniques of organic chemistry. Will not count as an upper-level elective for a minor. [CHEM 2125]

3107. Physical Chemistry Laboratory I (1:0:3). Corequisite: CHEM 3307. An introduction to physical chemical experimental methods including calorimetry, phase equilibria, surface phenomena, and viscosity.

3108. Physical Chemistry Laboratory II (1:0:3). Prerequisite: CHEM 3307; corequisite: CHEM 3308. An introduction to physical chemical methods, including spectroscopy, high-vacuum techniques, electric and magnetic phenomena.

3141. Analytical Chemical Methods Laboratory (1:0:3). Corequisite: Concurrent enrollment or credit in CHEM 3341. Discovery and practice of analytical

laboratory techniques important to the biological and medical sciences.

3201. Advanced Organic Chemistry Laboratory (2:0:6). Prerequisite: CHEM 3105, 3106, 3305, 3306. Advanced synthesis, purification, and analysis of organic compounds. Required for B.S. majors in chemistry.

3251. Analytical Chemistry Laboratory (2:0:6). Corequisite: Concurrent enrollment or credit in CHEM 3351. Discovery and practice of the major analytical laboratory techniques.

3301. Descriptive Inorganic Chemistry (3:3:0). Prerequisite: CHEM 1107, 1108, 1307, 1308. A descriptive survey of modern topics in inorganic chemistry, including coordination compounds, acid-base chemistry, periodicity, transition elements, and inorganic rings, cages, and chains. (Writing Intensive)

3305 Organic Chemistry I (3:3:0). Prerequisite: CHEM 1107, 1108, 1307, 1308; corequisite: CHEM 3105 is strongly recommended. First semester of a thorough foundation course in organic chemistry. Will not count as an upper-level elective for a minor. [CHEM 2323]

3306. Organic Chemistry II (3:3:0). Prerequisite: CHEM 3105 and 3305; corequisite: CHEM 3106 is strongly recommended. Second semester of a thorough foundation course in organic chemistry. Will not count as an upper-level elective for a minor. [CHEM 2325]

3307. Physical Chemistry I (3:3:0). Prerequisite: CHEM 1107, 1108, 1307, 1308, PHYS 1103, 1104, 1306, 1307 or 1105, 1106, 1308, 2301, MATH 1351, 1352; corequisite: CHEM 3107. The study of gases, thermodynamics, chemical and phase equilibria, and solutions.

3308. Physical Chemistry II (3:3:0). Prerequisite: CHEM 3307; corequisite: CHEM 3108 is strongly recommended. The study of kinetic theory, chemical kinetics, electrochemistry, transport properties, surface chemistry, quantum chemistry, and statistical mechanics.

3311. Biological Chemistry I (3:3:0). Prerequisite: CHEM 3105, 3106, 3305, 3306; BIOL 1401, 1402 or 1403, 1404. First semester of a three-semester course in general biochemistry.

3312. Biological Chemistry II (3:3:0). Prerequisite: CHEM 3311. Second of a three-part course in general biochemistry.

3313. Biological Chemistry Laboratory (3:1:6). Prerequisite: CHEM 3311 or 4303. Techniques for the isolation, purification, and characterization of biomolecular species. (Writing Intensive)

3314. Biological Chemistry III (3:3:0). Prerequisite: CHEM 3311. Third of a three-part course in general biochemistry. Emphasis on nucleotide metabolism and cellular processes involving nucleic acids.

3341. Analytical Chemical Methods (3:3:0). Prerequisite: CHEM 1107, 1108, 1307, 1308; corequisite: CHEM 3141 is required. A lecture course in analytical chemical methods emphasizing practical applications, including techniques important to the biological and medical sciences.

3351. Analytical Chemistry (3:3:0). Prerequisite: CHEM 1107, 1108, 1307, 1308; corequisite: CHEM 3251 is strongly recommended. Basic lecture course in the theories and techniques of analytical chemical methods. [CHEM 2401]

4010. Individual Studies in Chemistry (V1-6). Prerequisite: Consent of instructor. A structured independent studies course under the guidance of a faculty member. May be repeated for credit.

4100. Case Studies of Chemical Enterprises (1:0:3). Prerequisite: Senior standing and consent of instructor. A student seminar opportunity to study the structure and operation of chemical processes and/or enterprises.

4105. Inorganic Chemistry Laboratory (1:0:3). Corequisite: Concurrent enrollment or credit in CHEM 4309. Techniques used in the synthesis and characterization of inorganic compounds: complex ions, vacuum-line techniques, chromatography, inert atmosphere methods, reactivity profiles, spectroscopy of inorganic compounds.

4114. Instrumental Analytical Methods Laboratory (1:0:3). Corequisite: Concurrent enrollment or credit in CHEM 4314. Experience and practice with several important chemical instruments. (Writing Intensive)

4300. Senior Research (3:0:8). Prerequisite: Senior standing with minimum 2.5 chemistry GPA and consent of instructor. Individual research project under the guidance of a staff member. The project will be at a more advanced level than is involved in CHEM 3000. The student is required to use the chemical literature in planning of the research and to submit a formal written report. May not be repeated for credit. (Writing Intensive)

4302. Structure and Mechanisms in Organic Chemistry (3:3:0). Prerequisite: CHEM 3105, 3106, 3305, 3306 and 3307. Organic chemistry at an advanced level. Emphasis on developments in theoretical organic chemistry.

4303. Molecular Biochemistry (3:3:0). Prerequisite: CHEM 3105, 3106, 3305, 3306. Molecular descriptions of biological materials and systems. A one-semester

course covering molecular approaches to biochemistry and metabolism.

4309. Inorganic Chemistry II (3:3:0). Prerequisite: CHEM 3301 and 3308. A theoretical treatment of inorganic chemistry, including symmetry, group theory, bonding principles, spectroscopy, inorganic reaction mechanisms, transition metals, and organometallic chemistry. (Writing Intensive)

4310. Polymer Chemistry (3:3:0). Prerequisite: CHEM 3306 and 4311 or 3306 and 3307. An introduction to the chemistry of macromolecules, including the synthesis, structures, properties, and applications of polymers.

4311. Physical Chemistry for the Biological Sciences (3:3:0). Prerequisite: CHEM 1107, 1108, 1307, 1308, 3311; PHYS 1105, 1106, 1308, 2301 or 1103, 1104, 1306, 1307; MATH 1351, 1352. A physical chemistry course for majors in biochemistry and the biological sciences. Topics include quantum chemistry, thermodynamics, electrochemistry, and kinetics.

4312. Physical Biochemistry (3:3:0). Prerequisite: CHEM 3251, 3311, 3312, 3313, 3314, 3351 and 4311 or 3307; MATH 1351, 1352; PHYS 1105, 1106, 1308, 2301. Applications of physical chemical techniques to proteins, nucleic acids, and membranes.

4314. Instrumental Analytical Methods (3:3:0). Prerequisite: CHEM 3141, 3341 or 3251, 3351 and 3107, 3307 or 4311; corequisite: CHEM 4114 is required. Lecture course covering theories and application of instrumental chemical analysis methods. (Writing Intensive)

Department of Classical and Modern Languages and Literatures

Chair: Professor P. G. Christiansen

Horn and Qualia Professor Janet Pérez; ***Qualia Professor*** Gafaiti; ***Professors*** Finco, George, Larmour, Genaro Pérez, Smith, and Wood; ***Associate Professors*** Beard, Bravo, Fry, Grair, Holland, McClain, McVay, Myers, Nell, Julián Pérez, Stein, and Stratton; ***Assistant Professors*** Cabrera, Chávez, Collopy, Connelly, Corbett, Gorsuch, Grinstein, Hopkins, Pulido, Qualin, Santos, and Zamora; ***Visiting Faculty*** Harris.

This department supervises the following degree programs: CLASSICS, FRENCH, GERMAN, and SPANISH, *Bachelor of Arts;* APPLIED LINGUISTICS, CLASSICS, GERMAN, and ROMANCE LANGUAGES, *Master of Arts;* and SPANISH, *Doctor of Philosophy*. The department participates in the RUSSIAN LANGUAGE AND AREA STUDIES program at the undergraduate level and the LATIN AMERICAN AND IBERIAN STUDIES program at the undergraduate level as well as in the minor at the master's and doctoral levels. The department also participates in the ethnic studies, honors, linguistics, comparative literature, and teacher education programs. See the section on Special and Interdepartmental Programs of the College of Arts and Sciences.

Majors and Minors for the B.A. Degree. An undergraduate major in French or Spanish consists of 30 hours at the 2000 level and above, including a minimum of five 4000 level courses. The German major consists of 30 hours at the 2000 level and above. The Classics major consists of 30 hours, including 18 hours from Classics at the junior-senior level and the remainder from Latin at the 1502 level and above, Greek, ART 3310, C LT 2301, ENGL 4336, HIST 3340, and PHIL 3301. Students pursuing teacher certification must replace Classics with advanced Latin to complete 24 hours specifically in Latin.

A minor may be obtained in Classics, French, German, Greek, Italian, Japanese, Latin, Linguistics, Portuguese, Russian, or Spanish. The minor consists of a minimum of 18 hours (20 hours if a 1502, 1507, or JAPN 1501 course is included). The following first-year courses may count towards the minor: GRK 1301, ITAL 1301, JAPN 1501, or PORT 1301. First-year courses 1502 or 1507, but not 1501, may count for a minor in French, German, Latin, Russian, or Spanish. A minor includes 9 hours of upper-level courses in the language, 3 hours of which must be at the 4000 level. A Classics minor consists of 18 hours from the courses designated above for a Classics major, including 6 hours at the 3000 level or above. A Linguistics minor

consists of 18 hours of courses listed in the Linguistics section of this catalog. College Level Examination Program (CLEP) credits are accepted by the department.

Students wishing to obtain information on a major or minor in one of these languages should consult the department's academic program assistant for a list of advisors. These advisors can provide information on all aspects of the major and minor programs, including career opportunities. A grade of at least C in all major and minor courses is required.

Resident Courses. Students who are minors are required to take at least one upper level 3-hour class in residence in the target language at Texas Tech University. Students who are majors are required to take at least three upper level classes (9 hours) in residence in the target language at Texas Tech. Students who study abroad with the university programs (which involve faculty from this department) may include those courses among the required courses. Foreign study courses taken through approved exchange programs or other programs that may be affiliated with Texas Tech, such as the University of the Americas in Puebla and other similar programs, are not considered as resident courses.

Study Abroad Courses. Students enrolled in Spanish can earn 6 hours of junior and/or senior level credit by either studying in Spain or participating in the annual summer Mexico Field Course program. Students enrolled in German may earn 6 hours credit (GERM 3305 and 3306) in Germany or Austria with the annual summer German Study Abroad Program. Students in this program may not receive credit towards a major or minor in German for any course below the 3000 level unless completed prior to departure, and they must complete a 33-hour major if they participate in the program twice. Students enrolled in Russian have the option to earn credit by participating in study tours of Russia. These are regularly offered.

Foreign Language Requirements and Options. To fulfill the general Bachelor of Arts requirements, students must complete 6 semester hours in the same language at the sophomore level or above. A student who enrolls in the first-year sequence will have a 11-16 hour requirement. The following courses may not be used to fulfill the foreign language requirement for any bachelor's degree: GERM 4312, RUSN 2303, 3301, 3302, and 4301.

Foreign language courses 1301 and 1302 or 1501 and 1502 or 1507 are prerequisites for courses 2301 or 2607; a minimum grade of B in SPAN 1507 is required to enroll in SPAN 2607. All first- and second-year courses are sequential and should be taken in their proper order beginning with 1301, 1501, or 1507 and progressing up through 2302 or 2607. If credit is earned for 1507, no credit will be awarded for 1501 and/or 1502. Students with two years of high school French, German, Latin, or Spanish are required to enroll in FREN 1507, GERM 1507, LAT 1507, or SPAN 1507. Those students enrolled in 1507 but judged not qualified for 1507 are required to take 1501 pass-fail. Successful completion of lower-numbered courses or equivalent competency is a prerequisite for the higher-numbered courses. These higher-numbered courses allow students to pursue their particular interests in language, civilization, and literature.

Instruction is offered in Russian language and literature with independent study available in Slavic and some East European and Central Asian subjects. For information on a B.A. degree or a minor in Russian Language and Area Studies, see the description of the program under "Arts and Sciences Special Programs." Students who studied Russian before coming to Texas Tech should consult the advisor in Russian to determine the level at which to register for further study.

Bachelor of Arts and Master of Business Administration. This is a program of great practical value, made possible by cooperation between this department and the College of Business Administration. While minoring in business, undergraduates may major in one of four languages—French, German, Russian Language and Area Studies, or Spanish. To complete the M.B.A., students must qualify for graduate admission to the College of Business Administration.

Teacher Education. For purposes of certification, teaching fields are offered in French, German, Latin, and Spanish. The standard program requires 24-27 hours at the 2000-level and above, which must include 9 hours of 4000-level courses in the specific language (12 hours in German). Students seeking secondary certification in French and Spanish must complete LING 4311, preferably before their student teaching, as part of the teaching field. Students seeking bilingual education endorsement, ESL endorsement, or secondary certification in French, German, Latin, or Spanish should consult with advisors in the College of Education and in the Department of Classical and Modern Languages and Literatures.

Placement and Credit by Examination. The department offers placement exams in French, German, Latin, and Spanish. The department recommends that students with three or more years of study in one of these languages or students with advanced fluency take the placement exam. These exams permit students to earn up to 16 hours credit for a variety of first and second year courses. The placement exams also provide a recommended placement or the next logical course the student should take.

Each placement exam is intended to evaluate an individual's general level of knowledge of the language; a grade is not issued, nor is any specific text or study material recommended for the tests. Any credit earned through these exams is posted to the student's transcript as credit by examination. The hours will count towards languages or other humanities requirements, depending on the student's college, but will not affect the grade point average.

Students who earn credit through a language placement test may not later take that course and receive credit. Likewise, an individual cannot receive credit through the placement tests for a course that has already been completed. Each of the language placement tests (i.e., French, German, Latin, Spanish) may be taken only once per student.

The placement tests are administered by the Language Laboratory in Room 19 of the Foreign Languages Building. The tests are offered the last Wednesday and Thursday of each month (except December) during preregistration periods and at the beginning of each long semester. Further information may be obtained by calling the Language Laboratory at (806) 742-3151.

Chinese (CHIN)

1401, 1402. A Beginning Course in Chinese I, II (4:4:1 each). Introduction and development of the four language skills in Chinese. Listening comprehension, speaking, reading, and writing.

2301, 2302. A Second Course in Chinese I, II (3:3:0 each). Prerequisite: CHIN 1402 (for CHIN 2301) and 2301 (for CHIN 2302). Reading, cultural background, grammar review, conversation, and composition.

4300. Individual Problems in Chinese (3). Prerequisite: CHIN 2302 or equivalent as well as consent of instructor and department chairperson. Contents will vary to meet the needs of the student. May be repeated for credit with consent of instructor. Independent work under the guidance of a faculty member.

Classical and Modern Languages and Literatures (CMLL)

1301, 1302. Individual Studies in Modern Languages I, II (3 each). Introduction and development of skills in a modern language, including listening comprehension, speaking, reading, and writing.

2301, 2302. Individual Studies in Modern Languages III, IV (3 each). Prerequisite: CMLL 1301 and 1302, or equivalent. Continuation of study of a modern language. Introduction and development of skills in a modern language, including listening comprehension, speaking, reading, and writing.

4300. Individual Studies in Modern Language (3). Prerequisite: CMLL 2302 or equivalent. Independent study in modern language under the guidance of a faculty member. May be repeated for credit with consent of instructor.

Classics (CLAS)

Prerequisites for Classics courses do not involve Latin or Greek and are as follows unless otherwise specified: No prerequisites for 1310 and 1320; junior standing or consent of instructor for 3000 level courses. Courses in Classics may not be counted toward the foreign language requirement.

1310. Latin and Greek Terminology (3:3:0). Analysis of English words through the study of Latin and Greek roots, prefixes, and suffixes.

3302. Classical Mythology (3:3:0). Classical myths: stories of gods, demigods, and heroes; their significance in the ancient and modern worlds. Selected readings in translation with lectures and discussions in English.

3303. Sports and Public Spectacles in the Ancient World (3:3:0). Survey of Greek and Roman athletics, the Roman Triumph, gladiatorial combat, and other spectacles in the Ancient World.

3320. The World of Greece (3:3:0). Survey of the literature of ancient Greece from Homer to Plato, together with lectures on culture, society, philosophy, religion, art, and architecture.

3330. The World of Rome (3:3:0). Surveys ancient Roman Literature in the later republic and imperial centuries, together with lectures on Roman culture, society, religion, and architecture from 1000 B.C.E. to C.E. 476.

3340. Gender and Sexuality in the Classical World (3:3:0). Examination of the social and cultural dimensions of gender and sexuality in the ancient Greco-Roman world. Readings in English.

3350. Comparative Mythology (3:3:0). Ancient myths in various cultures and their influence on modern literature and film.

English as a Second Language (ESL)

1301. Oral Skills for International Students (3:3:0). Prerequisite: Consent of instructor. Development of oral language skills and interaction strategies, English pronunciation and intonation, and idiomatic English expression.

1302. English Grammar and Composition for International Students (3:3:0). Prerequisite: Consent of instructor. Development of academic writing skills with emphasis on the grammar of written English.

French (FREN)

FREN 3304 and/or 3302, or equivalent, are prerequisites for all literature courses in the 4000 series except where specified in the individual courses. All of these courses are conducted in French.

1501, 1502. A Beginning Course in French I, II (5:5:1 each). [FREN 1411, 1412]

1507. Comprehensive French Review—First Year (5:5:1). Prerequisite: Two years of high school French. A comprehensive one-semester review.

2301, 2302. A Second Course in French I, II (3:3:0 each). Prerequisite: FREN 1501 and 1502 or 1507. Readings, cultural background, conversation, and composition. [FREN 2311, 2312]

3302. Major French Writers (3:3:0). Prerequisite: FREN 2301 and 2302, or equivalent. A survey of major French writers.

3303. French Conversation (3:3:0). Prerequisite: FREN 2301 and 2302, or equivalent. Designed to increase vocabulary and attain oral fluency. May be taken concurrently with FREN 3301 or 3302.

3304. Grammar: A Comprehensive Review (3:3:0). Prerequisite: FREN 2301 and 2302 or equivalent. A comprehensive overview of French grammar.

3390. French Culture (3:3:0). A multimedia approach to topics related to French culture. Taught in English. Credit does not apply to major or minor. May not be repeated.

4100. Advanced Individual Problems in French (1). Prerequisite: FREN 2301 or equivalent. Contents will vary to meet the needs of student. May be repeated for credit with the consent of the instructor.

4300. Individual Problems in French (3). Prerequisite: FREN 2301 and/or 2302, together with consent of instructor and department chairperson. Contents will vary to meet the needs of students. May be repeated for credit with the consent of the instructor. Independent work under the guidance of a staff member.

4302. Advanced Grammar and Composition (3:3:0). Review of important grammatical constructions and idioms, with written practice. May be repeated once for credit for purposes of study abroad.

4303. Advanced French Conversation (3:3:0). Prerequisite: FREN 3303. Designed to increase fluency in the spoken language. May be repeated once for credit for purposes of study abroad.

4304. Commercial French (3:3:0). Oral and written French, with special attention to idiomatic expressions currently in use in business and technical fields.

4306. Phonetics and Diction (3:3:0). Theory and practice of the principles of pronunciation and intonations. Individual laboratory exercises.

4315. The French Short Story (3:3:0). This course will trace the development of the French short story from Voltaire's Candide to Boris Vian's Les Lurettes Furreés. May be repeated once for credit for purposes of study abroad.

4317. Readings in French Literature and Culture (3:3:0). Prerequisite: FREN 3301, 3302, 3303, or equivalent. May be repeated for credit with consent of instructor. Conducted in French.

4322. Civilisation Francaise: French Civilization (3:3:0). A survey of French civilization from the Middle Ages to the present: literature, art, music, philosophy, science, and architecture. Readings,

slides, films, and tapes. Conducted in French. May be repeated once for credit for purposes of study abroad.

German (GERM)

1501, 1502. A Beginning Course in German I, II (5:5:1 each). Oral practice, elementary reading, and grammar. [GERM 1411, 1412]

1507. Comprehensive German Review–First Year (5:5:1). Prerequisite: Two years of high school German. A comprehensive one-semester review.

2301, 2302. A Second Course in German I, II (3:3:0 each). Prerequisite: GERM 1501 and 1502 or 1507. Reading, cultural background, grammar review, and conversation. [GERM 2311, 2312]

3301. German Culture and Society (3:3:0). Prerequisite: GERM 2301 and 2302 or equivalent. Study of video, Internet, and textual resources on culture and current issues. Conducted in German.

3303. Conversation and Composition (3:3:0). Prerequisite: GERM 2302 or equivalent. Emphasis on fluency in spoken and written German. May be taken concurrently with GERM 3301. Conducted in German.

3304. Introduction to Literature (3:3:0). Prerequisite: GERM 2302 or equivalent. An introduction to periodization of German literature, literary genres, and literary theory. Conducted in German.

3305. German Language Studies (3:3:0). Prerequisite: GERM 2302 or consent of director. Development of listening, speaking, reading, and writing skills in Austria or Germany. Offered each summer. May be repeated once for credit.

3306. Contemporary Germany (3:3:0). Prerequisite: GERM 2302 or consent of director. Readings in cultural history and literature, lectures, and tours on location. Taught in German. May not be repeated for credit toward major or minor.

4000. Individual and Group Studies in German (V1-6). Prerequisite: Consent of chairperson. Study in German under the guidance of a faculty member. May be repeated for credit.

4301. Grammar (3:3:0). Prerequisite: GERM 3301 and 3303 or equivalent. Review of grammatical structure. Practice in pronunciation and in written and spoken German.

4303. German Classics (3:3:0). Prerequisite: 6 hours from GERM 3301, 3303, 3304, or equivalent. Readings in German literature through selected works by Hoffman, Büchner, Keller, Kleist, Storm, and Hauptmann. Conducted in German.

4305. Readings in German Language and Literature (3:3:0). Prerequisite: 6 hours from GERM 3301, 3303, 3304, or equivalent. Readings from a particular period or study of a literary theme. May be repeated for credit with consent of instructor. Conducted in German.

4312. Literature of the Holocaust (3:3:0). Examination of the Holocaust as represented in literature, film, and art. Conducted in English.

Greek (GRK)

1301, 1302. A Beginning Course in Greek I, II (3:3:0 each). [GREE 1311, 1312]

2301, 2302. A Second Course in Greek I, II (3:3:0 each). Prerequisite: GRK 1301 and 1302, or equivalent. Review; selected readings from standard authors. [GREE 2311, 2312]

4300. Individual Problems in Greek (3). Prerequisite: GRK 2301 and 2302 or equivalent. Contents will vary to meet the needs of students. May be repeated for credit with consent of instructor. Independent readings under guidance of a staff member.

Italian (ITAL)

1301, 1302. A Beginning Course in Italian I, II (3:3:0 each). [ITAL 1311, 1312]

2301, 2302. A Second Course in Italian I, II (3:3:0 each). Prerequisite: ITAL 1301 and 1302, or equivalent. Reading, cultural background, conversation, and composition. [ITAL 2311, 2312]

4300. Individual Problems in Italian (3). Prerequisite: ITAL 2301 and 2302, or equivalent. Contents will vary to meet the needs of students. May be repeated for credit with consent of instructor. Independent work under guidance of a staff member.

Japanese (JAPN)

1501, 1502. A Beginning Course in Japanese I, II (5:5:1 each). Introduction and development of the four language skills: listening comprehension, speaking, writing, and reading. [JAPN 1411, 1412]

2301, 2302. A Second Course in Japanese I, II (3:3:0 each). Prerequisite: JAPN 1501 and 1502. Reading, cultural background, grammar review, conversation, and composition. [JAPN 2311, 2312]

4300. Individual Studies in Japanese (3). Prerequisite: JAPN 2302 or equivalent. Independent study in the Japanese language under the guidance of a faculty member. May be repeated for credit with consent of instructor.

Latin (LAT)

1501, 1502. A Beginning Course in Latin I, II (5:5:0 each). [LATI 1411, 1412]

1507. Comprehensive Latin Review—First Year (5:5:0). Prerequisite: Equivalent of two years high school Latin, placement exam, or departmental consent. A comprehensive one-semester review of first year Latin for qualified students.

2301, 2302. A Second Course in Latin I, II (3:3:0 each). Prerequisite: LAT 1501 and 1502 or 1507. Review; selected readings from standard authors. [LATI 2311, 2312]

4300. Individual Problems in Latin (3). Contents will vary to meet the needs of the students. May be repeated for credit with consent of instructor. Independent reading under guidance of a staff member.

4302. Advanced Composition and Grammar Review (3). Practice in Latin prose composition.

4305. Individualized Readings in Latin Literature (3). Contents will vary to meet the needs of students. May be repeated for credit with consent of instructor. Major works of selected Latin writers.

Linguistics (LING)

4311. Methods of Teaching Second and Foreign Languages (3:3:0). Overview of historical and current methods of teaching second and foreign languages.

4335. Introduction to Linguistics for Second and Foreign Language Education (3:3:0). Basic concepts in linguistics and linguistic analysis as they relate to bilingual education, ESL, and second or foreign language education.

Portuguese (PORT)

1301, 1302. Elementary Portuguese I and II (3:3:1 each). Introduction and development of the four language skills in Portuguese: Listening comprehension, speaking, reading, and writing.

2301, 2302. Intermediate Portuguese I and II (3:3:0 each). Reading, cultural background, grammar review, conversation, and composition.

Russian (RUSN)

1501, 1502. A Beginning Course in Russian I, II (5:5:1 each). Introduction and development of the four language skills: listening comprehension, speaking, reading, and writing. [RUSS 1411, 1412]

2301, 2302. A Second Course in Russian I, II (3:3:0 each). Prerequisite: RUSN 1501, 1502, or equivalent. Training in oral and written expression and in aural and reading comprehension, including optional work in the language laboratory. [RUSS 2311, 2312]

2303. An Introduction to Russian Culture (3:3:0). The course is an introduction to Russian culture. We will look at important historical, political, and cultural (i.e., literature, music, and art) events and trends that have been instrumental in forming Russian culture. Taught in English.

3301. Russian Civilization Through Literature in the 19th Century (3:3:0). A survey course of 19th century Russian literature. Includes the works of the century's most important writers from Alexander Pushkin to Anton Chekhov. Taught in English.

3302. 20th Century Russian Civilization Through Literature in Translation (3:3:0). This course will deal with the literature and other arts of the turn of the 20th century in Russia and with the survival of this pre-1917 cultural tradition among the emigrés and in the Soviet Union. Taught in English.

3303. Russian Conversation and Composition (3:3:0). Prerequisite: RUSN 2302 or consent of instructor. The course is designed to increase fluency in the spoken language and proficiency in composition. Taught in Russian. May be repeated for credit.

4301. The Great Russian Realists: Tolstoy and Dostoevsky (3:3:0). Examines the significance of masterpieces byTolstoy and Dostoevsky. The works will be read in translation. Conducted in English.

4302. Contemporary Russian Literature in Translation (3:3:0). This course will examine the works of major Russian authors such as Aleksandr Solzhenitsyn and Tatyana Tolstaya from 1953 to the present.

4310. Russian Language Study in Russia (3:3:0). Intensive study of the Russian language and culture. May be repeated for credit with consent of instructor.

Slavic (SLAV)

2301. The Vampire in East European and Western Culture (3:3:0). An investigation of the myth of the vampire from its inception in early East European culture to its popularization in the West.

4300. Individual Studies in Slavistics (3). Independent study in Slavic and East European subjects under guidance of a faculty member, with content varying according to needs. May be repeated for credit with consent of instructor.

Spanish (SPAN)

Generally it is recommended that students complete 6 hours of 3000-level courses prior to enrolling in the 4000-level series.

1501, 1502. A Beginning Course in Spanish I, II (5:5:1 each). [SPAN 1411, 1412]

1507. Comprehensive Spanish Review—First Year (5:5:1). Prerequisite: Two years high school Spanish. A comprehensive one-semester review.

2301, 2302. A Second Course in Spanish I, II (3:3:1 each). Prerequisite: SPAN 1501 and 1502 or 1507. Reading, cultural background, conversation, and composition. (Honors section offered.) [SPAN 2311, 2312]

2607. Intensive Spanish—Second Year (6:6:1). Prerequisite: A minimum grade of B in SPAN 1507. Reading, culture, conversation, and composition. Equivalent to 2301 and 2302.

3301. Hispanic Life and Culture (3:3:0). Prerequisite: SPAN 2301 and 2302 or equivalent. Origins, development, and characteristics of Hispanic life and culture. Conducted in Spanish.

3302. Introduction to Spanish Literatures (3:3:0). Prerequisite: SPAN 2301 and 2302 or equivalent. Introductory study of representative works—short stories, poems, play, etc.—of Spanish and Spanish American literatures.

3303. Spanish Conversation (3:3:0). Prerequisite: SPAN 2301 and 2302 or equivalent. Designed to increase proficiency in the spoken Spanish of students who have had little or no extra-academic experience in that language. (Includes work in grammar and composition.) May not be taken following 4000-level work.

3304. Intermediate Spanish Grammar (3:3:0). Prerequisite: SPAN 2301 and 2302 or equivalent. An overview of important Spanish grammar concepts.

3328. Spanish Language Development (3:3:0). Prerequisite: SPAN 2301 and 2302 or equivalent and consent of instructor. Development of listening, speaking, reading, and writing skills on location in Mexico. Offered in Mexico each summer.

3329. Mexican Life and Culture (3:3:0). Prerequisite: SPAN 2301 and 2302 or equivalent and consent of instructor. A basic survey of Mexico, with emphasis on its history and cultural patterns. Offered in Mexico each summer.

3390. Hispanic Culture and Civilization (3:3:0). An overview of the Hispanic world, from Roman Spain to modern Latin America. Taught in English. Not for Spanish majors or minors but recommended as supplementary. Carries humanities credits.

4100. Advanced Individual Problems in Spanish (1). Prerequisite: SPAN 2302 or equivalent, together with consent of instructor and department chairperson. Contents will vary to meet the needs of students. May be repeated for credit with consent of instructor. Specifically designed for individual projects calling for fewer than 3 semester credit hours.

4300. Individual Problems in Spanish (3). Prerequisite: SPAN 2302 or equivalent, together with consent of instructor and department chairperson. Contents will vary to meet the needs of the students. May be repeated for credit with consent of instructor. Independent work under the guidance of a staff member.

4302. Advanced Grammar (3:3:0). Spanish language, syntax, and grammar.

4303. Advanced Conversation (3:3:0). Development of conversational skills for students who have completed required work in grammar or composition. No student who has graduated from a secondary school (junior high or high school level) in a Spanish-speaking country may receive credit for this course.

4304. Commercial Spanish (3:3:0). Oral and written Spanish with special attention to accurate and idiomatic expressions currently in use in the business and technical fields.

4307. Advanced Composition (3:3:0). Principles of correct writing and stylistics.

4310. Masterpieces of Spanish Literature (3:3:0). An introduction to Spanish literature through selected works and authors. May be repeated for credit.

4312. Spanish Prose (3:3:0). Readings of selected prose works in Spanish literature. Contents will vary to meet the needs of students. May be repeated for credit.

4314. Spanish Drama and Poetry (3:3:0). Study of selected dramas and/or poetry in Spanish literature. Contents will vary to meet the needs of students. May be repeated for credit.

4317. Readings in Spanish Literature (3:3:0). Readings of selected authors and works in Spanish literature. Content will vary to meet the needs of students. May be repeated for credit.

4320. Masterpieces of Spanish American Literature (3:3:0). An introduction to Spanish American literature through selected works and authors. May be repeated for credit.

4321. Spanish American Prose (3:3:0). Readings of selected prose works of Spanish American literature. May be repeated for credit.

4324. Spanish American Drama and Poetry (3:3:0). Study of selected dramas and/or poetry in Spanish American literature. May be repeated for credit.

4325. The Hispanic Short Story (3:3:0). Study of short stories from Spain and/or Spanish America. May be repeated for credit.

4327. Readings in Spanish American Literature and Civilization (3:3:0). The content of this course will vary to meet the needs of the students. May be repeated for credit.

4328. Advanced Language Skills (3:3:0). This course is intended to develop advanced language skills by class work and organized field projects. Special emphasis is given to the development of oral skills. Offered only in Mexico each summer. May be repeated for credit.

4329. Contemporary Mexico (3:3:0). A study of the various facets of contemporary Mexico: history, arts, politics, and economics. Offered only in Mexico each summer. May be repeated for credit.

4330. Spanish Life and Culture (3:3:0). Prerequisite: SPAN 3303 or equivalent. A survey of Spain with emphasis on its literature, history, and culture. Offered in Spain each summer. May be repeated for credit.

4332. Civilización Hispánica: Hispanic Civilization (3:3:0). A thematic study of Spanish and Spanish American patterns of civilization, especially in the contemporary period, and the United States' Spanish heritage. May be repeated for credit.

4360. Hispanic Literature of the Southwest (3:3:0). The origin and development of Hispanic literature in the Southwest including Spanish literature (1539-1820), Mexican literature (1821-1848), and Mexican-American literature (1849-present). May be repeated for credit.

4390. Internship in Spanish (3). Prerequisite: Consent of instructor. Work experience in a community agency that deals with native Spanish speakers. Emphasis on communicative skills.

4391. Spanish for the Southwest (3:3:0). Study of similarities and differences between "standard" and "regional" Spanish.

4392. The Play in Spanish (3:3:0). Prerequisite: Consent of instructor. Intensive analysis of a play and preparation for two public performances. May be repeated for credit with change of content for up to 6 hours.

Vietnamese (VIET)

4300. Individual Problems in Vietnamese (3). Content varies to meet the needs of students. May be repeated for credit.

Department of Communication Studies

Chair: Professor David Roach

Professors Bliese and Stewart; ***Associate Professors*** Olaniran, and Williams; ***Assistant Professors*** Gring, Harlow, Hughes, Punyanunt, and Scholl; ***Lecturers*** Neal and Shafer.

This department supervises the following degree programs: COMMUNICATION STUDIES, *Bachelor of Arts* and *Master of Arts*.

Study in communication at Texas Tech is designed to prepare professionals for careers in business, industry, social service, and education. To accomplish this goal, plans are offered that allow for the study of communication skills and theories and their applications to problems in work and social settings. In addition to classroom instruction, the department sponsors cocurricular and extracurricular activity in forensics (speech and debate) and maintains a local chapter of Delta Sigma Rho–Tau Kappa Alpha (national forensic honorary). For advanced students, an undergraduate internship in communication studies is an option. The internship, normally completed in the student's last spring semester, provides an opportunity for practice in applied settings.

Requirements for the Major. Students must have a cumulative GPA of 2.0 or better to be admitted to the major in communication studies. Entering freshmen and transfer students are admitted on a provisional basis. Continued enrollment requires a 2.0 GPA or better in the first 15 hours taken at Texas Tech.

Students seeking an undergraduate degree in communication studies will complete a course of study that consists of 36 hours of communication studies courses with at least 18 hours of advanced courses. The

department recognizes that each student has unique educational objectives and professional goals. Therefore, a flexible and individualized plan of undergraduate study is developed to be compatible with the student's aims. A total of 12 hours toward the major must be completed in residence at Texas Tech.

All students who major in communication studies must complete COMS 1300, 1301, 2300, 2301, 2302, and 3311. Students have the option to declare a specialization in one of three areas: Communication and Public Affairs (CPA), Interpersonal Communication (IPC), or Corporate-Organizational Communication (COC). A student who declares a specialization will take 12 hours in the specialization and 6 hours of electives in communication studies. A student who chooses not to declare a specialization will take 6 hours from each of the three specializations toward the required total of 36 hours in the major. Courses in the communication and public affairs specialization include COMS 3311, 3313, 3314, 3315, 3318, 4304, and 4310. Courses in the interpersonal communication specialization include COMS 3331, 3332, 3333, 3334, 4304, and 4330. Courses in the corporate-organizational communication specialization include 3150, 3351, 3353, 3355, 3356, 3358, 4304, and 4350.

Requirements for the Minor. A minor consists of 18 hours of communication studies with at least 9 hours in advanced courses. At least 6 hours of the minor must be completed in residence at Texas Tech. Students who minor in communication studies must complete COMS 1300, 2300, and 2301. These three courses should be taken before enrolling in upper division courses. Remaining courses may be selected from other departmental offerings.

Teacher Certification. Students desiring secondary certification in communication studies must complete the following: COMS 1300, 2300, 3314, 3351, 4314; TH A 2305; MCOM 1300; and 9 hours of electives in communication studies, all of which must be at the upper division level.

Communication Studies (COMS)

1300. Introduction to Communication Studies (3:3:0). A broad-based introduction to the field of Communication Studies, covering the major content areas in the discipline. Required for all majors and minors. May be applied toward the individual or group behavior Core Curriculum requirement. [SPCH 1311]

1301. Interpersonal Communication (3:3:0). A study of the human communication process in one-to-one encounters. Required for all majors. May be applied toward the individual or group behavior Core Curriculum requirement. [SPCH 1318]

2300. Public Speaking (3:3:0). A course in the theory, preparation, delivery, and evaluation of public speeches. May be applied toward the oral communication Core Curriculum requirement. Required for all majors and minors. [SPCH 1315]

2301. Communication Theory (3:3:0). An introduction to communication theories and models in both social-scientific and humanistic research traditions. Required for all majors and minors. (Writing Intensive)

2302. Communication Research (3:3:0). An introduction to the theory and practice of research in communication studies, including the critical evaluation of communication research. Required for all majors. (Writing Intensive)

2350. Introduction to Communication Disorders (3:3:0). Explores the range and types of communication disorders and examines the impact of these disorders on an individual's psychological, social, emotional, cultural, and educational status.

3102. Forensic Activities (1:0:3). Opportunity is offered the student who wishes to participate extensively in forensic activities to secure credit for this laboratory work. May be repeated up to 4 semester hours; 2 semester hours may be applied toward Communication Studies major. [SPCH 1144]

3105. Listening (1:1:0). A study of the basic factors in effective aural comprehension in various situations, such as lectures and interpersonal relationships.

3150. Parliamentary Procedures (1:1:0). Principles and procedures governing deliberative groups with practice in their usage.

3310. Theories of Interpersonal Communication (3:3:0). Prerequisite: COMS 1301 or consent of instructor. A broad-based theoretical approach to the study of interpersonal communication. Applications to a variety of interpersonal communication settings are also discussed. May be applied toward the social-behavioral sciences Core Curriculum requirement.

3311. Rhetoric in Western Thought (3:3:0). Explores theories of rhetoric ranging from ancient Greece to modern times. Students

examine different conceptions of how rhetoric negotiates public character, social truths, and power. May be applied toward the Core Curriculum humanities and multicultural requirement. Required for all majors.

3313. Persuasion (3:3:0). A study of the psychological and rhetorical principles of motivation, suggestion, and other aspects of audience psychology as used in business, mass media, and public affairs. May be applied toward the individual or group behavior Core Curriculum requirement.

3314. Argumentation and Debate (3:3:0). Evolution of argumentation with emphasis on modern viewpoints, application of theory to selected controversies. [SPCH 2335]

3315. Political Campaign Communication (3:3:0). A study of the strategies of communication and persuasion in American political campaigns, focusing on the campaign currently in progress.

3318. Persuasion and Social Movements (3:3:0). Study of the role of persuasion in social movements, both historical and contemporary. Analysis of the various persuasive strategies employed as social movements evolve. May be applied toward the Core Curriculum humanities requirement.

3319. Rhetoric and American Issues (3:3:0). A study of principal American speakers and speeches associated with selected political, social, and religious issues. May be applied toward humanities Core Curriculum requirement.

3331. Nonverbal Communication (3:3:0). The study of the origin, function, and control of nonverbal, symbolic elements inherent in Communication Studies. May be applied toward the Core Curriculum individual or group behavior requirement.

3332. Intercultural Communication (3:3:0). Studies the role of cultural differences in human communication; theoretical and experiential approaches toward gaining competence in communicating across cultural barriers. May be applied toward the Core Curriculum individual or group behavior requirement and the multicultural requirement.

3333. Communication in Relationships (3:3:0). Prerequisite: COMS 1301 or consent of instructor. A survey of research concerning the role of communication in the development, maintenance, and decay of interpersonal relationships.

3334. Gender and Communication (3:3:0). Studies the similarities and differences of communication issues for males and females, with practical communication applications. Satisfies the individual or group behavior Core Curriculum requirement. (W S 3312)

3336. Language and Social Interaction (3:3:0). An exploration of how people use language during social interaction in a variety of situations including ordinary conversations, routine service encounters, interviews, healthcare, and therapy.

3351. Communication in Instruction and Training (3:3:0). Instructional communication theory applied to the processes of instruction, training, and performance in varied learning contexts. Attention to delivery skills.

3353. Small Group Communication (3:3:0). An introduction to group process and interaction, the concepts of leadership, and effective participation. May be applied toward the Core Curriculum individual or group behavior requirement. [SPCH 2333]

3355. Communication in Organizations (3:3:0). A survey of research on communication in organizations with emphasis on relevant verbal and nonverbal factors; applications to basic communication skills and rudimentary research. May be applied toward the Core Curriculum individual or group behavior requirement.

3356. Leadership and Communication (3:3:0). A broad-based theoretical approach to the study of leadership and communication. Application to a variety of settings will also be discussed. May be applied toward the Core Curriculum individual or group behavior requirement.

3358. Business and Professional Communication (3:3:0). Basic principles of speech applied to the communication needs of the professional person. Practice in the construction and delivery of the various types of speeches and participation in interviews and group discussions. May be applied toward the Core Curriculum oral communication requirement. [SPCH 1321]

3359. Interviewing: Process and Procedures (3:3:0). Principles drawn from contemporary interpersonal communication theory are specifically applied to informational, employment, and persuasive interview situations. Practical application of theoretical concepts is encouraged through in-class role-playing interviews and through analysis of actual interviewing techniques.

3365. Communication in Health Care (3:3:0). Introductory survey of the influence of communication in health and health care delivery.

4000. Independent Research in Communication Studies (V1-3). Prerequisite: 18 hours of COMS courses. Individual research in COMS area of student's

choice under faculty member guidance. May be repeated once for credit up to 6 hours.

4304. Internship in Communication Studies (3:1:4). Prerequisite: 24 hours of COMS courses or consent of instructor. Student internship, under supervision of faculty coordinator, in a selected area of applied communication.

4310. Special Topics in Rhetoric (3:3:0). Prerequisite: Junior standing. Consideration of selected topics in rhetoric. May be repeated for credit. (Writing Intensive)

4314. Directing Speech and Debate Activities (3:3:0). Methods and principles involved in directing extracurricular speech activities such as debate, oral, interpretation, and public speaking.

4330. Special Topics in Interpersonal Communication (3:3:0). Prerequisite: Junior standing. Consideration of selected topics in interpersonal communication. May be repeated for credit. (Writing Intensive)

4335. Communication Competence (3:3:0). Prerequisite: 18 hours of Communication Studies. Surveys theory and research in communication competence. Evaluates definitions, indicators, and assessment procedures for determining competence in a variety of communication contexts.

4350. Special Topics in Corporate-Organizational Communication (3:3:0). Prerequisite: Junior standing. Consideration of selected topics in corporate-organizational communication. May be repeated for credit.

Department of Economics and Geography

Chair: Professor Joseph E. King

Professors Elbow, Kruse, Steinmeier, and Templer; ***Associate Professors*** Becker, Ewing, Gilbert, Lee, McComb, Rahnama, and von Ende; ***Assistant Professors*** Al-Hmoud, Carter, Carton, Crooker, Mulligan, and Salazar; ***Instructors*** Barbato and Jones.

This department supervises the following degree programs: ECONOMICS, *Bachelor of Arts, Bachelor of Science, Master of Arts, Doctor of Philosophy;* INTERNATIONAL ECONOMICS, *Bachelor of Science in International Economics;* GEOGRAPHY, *Bachelor of Arts.* The economics faculty supervises the professional requirements of the economics major for the Bachelor of Business Administration degree offered through the College of Business Administration. The geography faculty participates in the LATIN AMERICAN AND IBERIAN STUDIES program leading to the Bachelor of Arts degree and in the Asian studies, environmental studies, international studies, and community and urban studies programs.

Economics Programs. The undergraduate program leading to the Bachelor of Arts degree is offered to students who want to pursue a broad liberal education while, at the same time, studying the complex interrelationships between consumers, producers, and governments in an economic system. A minimum of 30 semester hours in economics courses (including ECO 2301, 2302, 3311, 3312, 4314, and AECO 3401 or its equivalent) and 18 semester hours in a minor field are required for the B.A. degree. The minimum number of hours required for majors in economics is a total of 126. Candidates for the B.A. degree in economics are encouraged to consult with their advisors and to select from the wide range of possibilities a complementing set of economics and noneconomics electives in accordance with their developing interests. Other requirements are specified in the General Degree requirements section of the College of Arts and Sciences.

The undergraduate program leading to the Bachelor of Science degree combines a broad liberal education with rigorous and extensive training in theoretical and mathematical economics. The program is highly structured and technically oriented. Students in this major must include ECO 2301, 2302, 3311, 3312, 4305, or AAEC 4312, and 21 hours of advanced economics electives. The mathematics minor consists of 18 hours of mathematics subject to the approval of the Mathematics Department. The basic requirements are listed in the General Degree requirements of the College of Arts and Sciences. The adjunct requirements include a two-semester course sequence in statistics (MATH 4342 and 4343) and in computer science subject to the approval of the economics faculty advisor.

The B.S. in international economics degree program provides correlated emphasis on international economics, international politics, and international business. The minimum number of hours required for majors in international economics is a total of 126. Course requirements for this degree are specified in the General Degree requirements section of the College of Arts and Sciences.

Students majoring in economics must complete a minimum of 12 semester hours of their economics courses in residence at Texas Tech University. Students minoring in economics must complete a minimum of 6 semester hours of their economics courses in residence at Texas Tech.

At least a C in all economics courses in all programs is required of majors and minors. Moreover, a minimum grade of C is required in all core courses in the B.S. degree in international economics. Courses specifically required in the core by course number for the B.S. degree in international economics may not be taken pass-fail. Courses required for the major or minor in the B.A. or B.S. degree in economics may not be taken pass-fail. Courses taken pass-fail by a student before declaring a major or minor will be evaluated by the curriculum committee of the department and a decision rendered as to whether they will satisfy the degree requirements.

Geography Program. The undergraduate geography program at Texas Tech University offers a B.A. in geography and a minor in geography. Geography appeals to students who have broad interests in the relationships of humans and the environment, who are curious about the world, and who like to be challenged. Geographers study how people interact with the environment and how various phenomena are distributed and move over the surface of the earth. The B.A. degree is intended to provide students with a background in the nature of human interactions with the environment and a solid grounding in data collection and analysis techniques such as field data collection, statistical analysis, and geographic information systems. Due to its broad nature, geography is a minor that complements most majors, allowing the student to delve into the geographical aspects of his or her major field of study. Undergraduate majors find interesting careers in the public and private sectors. Geographers work with local, state, and national government agencies and the military. In the private sector, there are increasing demands by business and industry for employees trained in field research methods, geographic information systems, statistical analysis, remote sensing, and other skills acquired by geography students. Geography majors also become teachers at the elementary, secondary, and post-secondary levels. In addition, the undergraduate program provides a foundation for students who wish to pursue graduate study, whether in geography or some related professional field such as urban or regional planning, environmental and resource management, law, and public affairs.

The geography major consists of 31 hours of course work and 6 hours of required supporting courses from outside the department. Required courses are GEOG 1401, 2351, and 3300. An additional 9 hours of courses must be selected from each of the following two blocks: Physical geography and geographic information systems block (GEOG 3301, 3310, 3335, 3353, 4301, 4302, and 4321) and human and regional geography block (GEOG 3337, 3351, 3352, 3354, 3355, 3356, 3358, 3359, 3360, 3363, 3364, 4305, and 4357). GEOG 4310, Internship in Geography, is open to senior geography majors with a 3.0 GPA or better and may be substituted for 3 hours of courses in either of the blocks. Required courses from outside the program are SOC 3391 and 3392, Introduction to Social Research II & II. Requirements for the geography minor are the 3 courses required for the major and 9 hours of upper division geography.

Students majoring in geography must complete a minimum of 12 semester hours of geography courses in residence at Texas Tech University. The geography minor requires at least 6 hours in residence.

Teacher Education. Geography course work is included in the social science composite field certification program in secondary education. Specific course requirements for this program may be obtained from the department.

Economics (ECO)

2301. Principles of Economics I (3:3:0). Emphasis on theories of the firm, value and price determination, and functional distribution, with the application of these theories to the problems of particular firms, industries, and markets. [ECON 2302]

2302. Principles of Economics II (3:3:0). An introduction to modern economic society and theories of production and exchange. Emphasis upon monetary and fiscal policy and macroeconomics. [ECON 2301]

2305. Principles of Economics (3:3:0). An abridged course for students not majoring in economics or business. Covers the most significant portions of ECO 2301 and 2302, with emphasis upon monetary and fiscal policy. Credit will not be given for both ECO 2305 and 2302.

3311. Intermediate Macroeconomics (3:3:0). Prerequisite: ECO 2302. Analysis of the determinants of aggregate demand and supply with special emphasis on macroeconomic problems such as unemployment and inflation and on techniques used to forecast macroeconomic variables.

3312. Intermediate Economic Theory (3:3:0). Prerequisite: ECO 2301. Intermediate price theory and introduction to welfare theory. Includes theory of demand, theory of the firm, and welfare theory.

3320. Managerial Economics (3:3:0). Prerequisite: ECO 2301. The application of economic theory to problems of business enterprise.

3322. Economics of Labor (3:3:0). Prerequisite: ECO 2301. The theory of wages, the problems of unemployment, economic insecurity, industrial disputes, industrial accidents, development and aims of labor unions, and employers' associations.

3323. Principles of Money, Banking, and Credit (3:3:0). Prerequisite: ECO 2301 and 2302. A basic course which deals with the commercial banking system, the Federal Reserve System, and other matters associated with money, prices, and credit control.

3324. Taxation and Public Expenditure (3:3:0). The objective of this course is to explore the justification for and effects of the entrance of government into the U.S. marketplace.

3326. Industrial Organization, Antitrust, and Regulation (3:3:0). Prerequisite: ECO 2301. This course combines the latest theories with empirical evidence about the organization of firms and industries. Particular attention is paid to antitrust and regulation issues.

3330. Economic Systems (3:3:0). Prerequisite: ECO 2301 and 2302 or consent of instructor. Study of different economic systems, with attention given to selected ones or types (e.g., market economies, Yugoslavia's co-participation, corporate statism, Scandinavian socialism, Soviet central planning).

3333. International Economics (3:3:0). Prerequisite: ECO 2301 and 2302 or consent of instructor. Principles of international trade, balance of payments, trade policies, and agreements.

3334. The Latin American Economies (3:3:0). Prerequisite: ECO 2301 and 2302 or consent of instructor. Survey of the development problems confronted by Latin America, the economic policy responses and performance.

3336. Environmental and Natural Resource Economics (3:3:0). Prerequisite: ECO 2301 or consent of instructor. Economic analysis of environmental and natural resource problems. Topics include externalities, market failures, property rights, public goods, environmental regulation, and optimal resource use.

4300. Economic Research (3). Prerequisite: ECO 3311 and 3312. Economics major, or consent of instructor or chairperson. Directed undergraduate student research in selected areas under the supervision of selected departmental faculty.

4305. Introduction to Econometrics (3:3:0). Prerequisite: ECO 2301, 2302, 3311, and AAEC 3401 or consent of instructor. Application of linear regression analysis including simple statistics, probability, distributions, hypothesis testing, and linear regression.

4314. Development of Economic Doctrines (3:3:0). Prerequisite: ECO 2301 and 2302. The basis, nature, and effects of economic doctrines from ancient times through the 19th century.

4323. Monetary Theory (3:3:0). Prerequisite: ECO 3311. Analysis of money supply, money demand, interest rates, income and price level determination, and transmission mechanisms. Emphases include monetary policies in an open economy context.

4331. Economics of Multinational Enterprise (3:3:0). Prerequisite: ECO 2301 or consent of instructor. Examination of the economics of international enterprise and associations with the major dimensions of the international economy and international political economy.

4332. International Finance (3:3:0). Prerequisite: ECO 3323 or 3333 or consent of instructor. Analysis of international monetary system theory, policy, and

institutions. Includes attention to foreign exchange markets and roles of international banking and international managerial finance.

4334. Economics of Growth and Development (3:3:0). Prerequisite: ECO 2302 or consent of instructor. A survey of the theories of economic growth and development, including an evaluation of policies intended to achieve growth as well as to maintain a high rate of growth.

Geography (GEOG)

Courses marked with an asterisk provide laboratory and nonlaboratory science credit.

***1101, *1102. Physical Geography Laboratory (1:0:2 each).** Optional laboratories for GEOG 1301, 1302. GEOG 1101 accompanies GEOG 1301 and GEOG 1102 accompanies GEOG 1302.

1300. Geography for Educators (3:3;0). Introduction to the world and its regions; provides a background in geography and geography education for teachers in training.

***1401 Physical Geography (4:3:2).** Study of the atmospheric and terrestrial systems that shape our natural environment, especially the global patterns of climate, landforms, and vegetation. Fulfills laboratory science requirements.

2310. Geography of World Trade (3:3:0). Survey of world trade with emphasis on geographic factors that contribute to developing international business and trade relations.

2351. Regional Geography of the World (3:3:0). An introduction to the geography of world regions for students who have had no previous geography courses.

3300. Geographic Information Systems (3:2:3). Fundamentals of cartography and the use of geographic information systems for thematic mapping and spatial analysis. Laboratory emphasizes experience with GIS software.

3301. Remote Sensing of the Environment (3:2:3). Prerequisite: GEOG 3300 or equivalent. Introduction to remote sensing techniques, including air photo interpretation and digital satellite image processing. Emphasis on the use of remote sensing imagery in geographic information systems.

3303. Principles of Map Reading and Interpretation (3:3:0). An introduction to the principles of map reading, interpretation, and application.

***3310. Environmental Change (3:2:2).** Prerequisite: GEOG 1401 or equivalent natural science courses. Investigates changes in climate, hydrology, soils, biota and landforms since the start of the Ice Age, and the effects of these environmental changes on humans.

***3335. Field Seminar in Physical Geography (3:3:0).** Seminar conducted in field setting to provide students with first-hand opportunity for observing actual physical and human aspects of study area. Specific region and topic may vary. May be repeated for credit with change of subject matter.

3337. Man's Economic Environment (3:3:0). Consideration of the characteristics and distribution of man's production and consumption of goods and services, and of variation and interaction of economic activities among areas of the earth's surface.

3351. Geography of Urban Places (3:3:0). An analysis of the location, distribution, function, and spread of urban places, including a study of current urban problems—sprawl, city decline, and metropolitan transportation.

3352. Geography of the United States and Canada (3:3:0). Study of the physical and cultural geography of the United States and Canada, including geographical aspects of the development of Texas.

***3353. Man, Resources, and Environment (3:3:0).** Prerequisite: Introductory physical geography or consent of instructor. Study of the interrelated problems of population growth, efficient use of natural resources, and human disruption of the earth's environment.

3354. Historical Geography of the United States (3:3:0). Survey of the settlement geography of the United States in the 18th and 19th centuries with special emphasis on Texas.

3355. Field Methods in Community Studies (3:2:3). An introduction to the techniques and tools used by geographers in gathering and presenting data from the field.

3356. Contemporary Texas and the American Southwest (3:3:0). Study of the physical and contemporary cultural geography of Texas and the American Southwest.

3358. Geography of Asia's Pacific Rim (3:3:0). Study of the physical and human geography of Asia's Pacific Rim, emphasizing environmental problems relating to rural and urban land use, resource exploitation, and economic development.

3359. Geography of the Middle East (3:3:0). Study of the physical and human geography of the Middle East, with emphasis on land use, natural resource, and environmental problems of this largely arid region.

3360. Technology and the Human Landscape (3:3:0). Study of the relationship of technological development and energy use with human use of the earth from pre-humans to the present.

3363. Geography of South America (3:3:0). Study of the physical and human geography of South America, with special emphasis on contemporary issues.

3364. Geography of Middle America (3:3:0). Study of the physical and human geography of Mexico, Central America, and the West Indies, with emphasis on contemporary issues.

***4301. Geomorphology in Environmental Management (3:2:2).** Prerequisite: GEOG 1401, GEOL 1303, or consent of instructor. Evaluation and analysis of earth-forming processes and terrain features in relation to human activities. Course emphasizes analytical techniques.

4302. Advanced Geographic Information Systems (3:2:3). Prerequisite: GEOG 3300 or equivalent. An advanced course in geographic information systems. Major topics include data acquisition, database management, and spatial analysis techniques. Laboratory emphasizes experience with professional GIS software.

4305. Geography of Trade and Regional Integration in the Western Hemisphere (3:3:0). The geographic bases of regional integration in the Western Hemisphere and the relationship of the free trade movement to the internal development of Western Hemisphere countries, with emphasis on Latin America and the Caribbean.

4310. Internship in Geography (3). Prerequisite: Minimum of 12 hours in geography, minimum 3.0 GPA in geography, and consent of instructor. Supervised activity in a nonacademic setting. Students gain experience in the working world while having the opportunity to utilize accumulated geographic concepts and tools.

***4321. Physical Geography: Biogeography (3:3:0).** Prerequisite: Introductory physical geography or consent of instructor. Study of plants and animals in their spatial context, their functional interaction, and applied aspects of biogeography, especially as related to man's impact on the biosphere.

4357. Geography of Arid Lands (3:3:0). Systemic and regional inquiry into the physical nature and the problems of human utilization of the arid and semiarid lands of the earth.

4369. Independent Research in Geography (3). Conference course. May be repeated for credit.

Department of English

Chair: Professor Sam Dragga

Horn Professor McDonald; ***Professors*** Aycock, Barker, Clarke, Hurst, Kuriyama, Miner, C. Rude, D. Rude, Shaw, and Whitlark; ***Associate Professors*** Ceniza, Conrad, Crowell, Daghistany, Desens, Kemp, Patterson, Purinton, Rickly, Samson, Schoenecke, and Wenthe; ***Assistant Professors*** Baake, Baehr, Carter, Chico, Couch, Grass, Jones, Kimball, Koerber, Lang, Manriquez, McFadden, Poch, Rice, Rossini, Shelton, and Shu; ***Lecturers*** Brown, Duke, Hatfield, Heise, Hiemstra, McLaughlin, McLean, Myers, and Rylander.

This department supervises the following degree programs: ENGLISH, *Bachelor of Arts, Master of Arts*, and *Doctor of Philosophy;* TECHNICAL COMMUNICATION, *Master of Arts;* TECHNICAL COMMUNICATION AND RHETORIC, *Doctor of Philosophy.* The department also cooperates in the interdepartmental programs in linguistics and comparative literature at both the undergraduate and the graduate levels.

Undergraduate English majors must specialize in literature and language, in technical communication, in creative writing, or in programs of certification for teaching on the elementary and secondary levels of public schools. In addition to offering these programs, the English department has developed four networked computer classrooms where students benefit from the latest technology-based instructional methods.

The department sponsors the local chapter of Sigma Tau Delta, national English honorary society and a chapter of the Society for Technical Communication. The department publishes three international journals—*Conradiana, The Eighteenth Century: Theory and Interpretation,* and *The Iron Horse Review.*

English majors and minors should report to the undergraduate advisor for academic advice. Graduate students report to the Director of Graduate Studies. Undergraduate and graduate technical communication specialists report to the Director of Technical Communication. Further information on graduate studies is available in the university *Graduate Catalog*. See also the department Web site at www.english.ttu.edu.

An English minor consists of 18 hours: ENGL 1302, two 2000-level English courses, and 9 hours of advanced English courses (3000 or 4000 level). Students wishing to pursue a particular area of study (British or American literature, creative writing, linguistics, technical communication, comparative literature, etc.) may do so by taking their three advanced courses in the appropriate area. For electives, students who have completed their degree requirements in English may select any 3000- or 4000-level course. To receive credit toward graduation, a student who is an English major or minor must receive at least a C in all courses in English. A maximum of 9 advanced hours of transfer credit in English will be accepted for the major, and a maximum of 3 advanced hours of transfer credit will be accepted for the minor.

Written Communication Requirements

ENGL 1301 and 1302 are required of all undergraduate students. Some colleges require additional hours in English; students should consult their advisors concerning additional English courses that they may be required to take.

Students who score 360 or below (verbal) on the SAT-I examination or 15 or below (English) on the ACT examination are required to pass SPCE 0302 or the TASP test before they take ENGL 1301. Although SPCE 0302 is recorded on the transcript, the hours do not count as part of the minimum number of hours required for graduation in any degree program of the university. A grade is awarded for the semester but is not computed in the student's grade point average. This course counts for TASP writing skills development provided the student has met with an advisor in the TASP Skills Development Office in Holden Hall 72. TASP students who have not passed the writing portion of the TASP Test may not enroll in ENGL 1301 or 1302 until they have successfully completed their prescribed program of TASP writing skills development.

ENGL 1301 and 1302 are prerequisites for all 2000-level English courses. Two 2000-level English courses are prerequisites for all 3000 and 4000 level English courses (except ENGL 3365). If a student's major does not require two 2000-level English courses, a student may take ENGL 3351 after completion of the English courses required by the student's major.

Literature and Language Specialization

Students majoring in English with a specialization in literature and language study literary works from a wide variety of periods and genres, and they learn to think critically and analytically about literature and about language itself. This specialization prepares students for many careers—including teaching, government service, and business—and for graduate and professional study in fields requiring extensive reading and writing, such as law, medicine, and business. ENGL 1301, 1302, 2391 and 3 hours from ENGL 2305, 2306, 2307, and 2308 are required for an English major with a specialization in literature and language. Majors must complete 15 hours at the 3000 level and 12 hours at the 4000 level in the following courses:

I. 3000 level
- A. One early literature period course: ENGL 3302, 3304, 3305, or 3335
- B. One British literature period course: ENGL 3302, 3304, 3305, 3307, 3308, or 3309
- C. One American literature period course: ENGL 3323, 3324, or 3325
- D. Two additional 3000-level courses

II. 4000 level
- A. ENGL 4301
- B. One genre course: ENGL 4311, 4312, 4313, 4314, or 4315
- C. ENGL 4374
- D. One additional 4000-level course

Technical Communication Specialization

The major in English with a specialization in technical communication prepares students to become technical and professional writers and editors. This plan also prepares students for graduate professional schools in which written communication plays an important part, such as law and business.

Students selecting the technical communication plan are advised to minor in and choose electives from disciplines within which they expect to write or edit. Minors and electives in fields such as computer science, engineering, chemistry, biology, physics, business, and agriculture provide knowledge that is helpful in technical and professional writing and editing.

Required courses:

I. ENGL 1301, 1302, and a 2000-level literature course (ENGL 2305, 2306, 2307, or 2308)
II. Technical communication core courses: ENGL 2311, 3365, 4366, 4367, and 3367 or 3368
III. One course from these options so long as it is not taken to satisfy other requirements: ENGL 3366, 3367, 3368, 4365, 4378
IV. One course selected from these three: ENGL 3366, 3371, or 3373
V. One additional advanced English elective (3000 level or above)
VI. Oral communication: COMS 3332, 3355, 3358, or 3359

Creative Writing Specialization

The major in English with a specialization in creative writing is designed for students wishing to write fiction and/or poetry with the guidance of teachers who write. This plan allows maximum concentration in literature courses so that, as they write, students may further understand and appreciate the aspects and techniques of fiction and poetry. In addition to the opportunities for writing and literary study, this specialization is especially appropriate for students interested in teaching creative writing and literature, studying creative writing and literature in graduate school, and preparing for professional graduate schools, such as law and business.

Undergraduates must obtain permission to specialize in creative writing after they have completed ENGL 3351, Creative Writing. Permission to take the 4000-level creative writing courses requires submission of a writing sample and permission of the instructor.

The creative writing specialization requires ENGL 1301 and 1302 and 6 hours of 2000-level courses: 3 hours from ENGL 2305, 2306, 2307, or 2308; and 3 hours from ENGL 2351 or 2391.

Advanced courses include 15 hours at the 3000 level and 12 hours at the 4000 level:

I. 3000 level
  A. One early literature period course; ENGL 3302, 3304, 3305, or 3335
  B. One British literature period course: ENGL 3302, 3304, 3305, 3307, 3308, or 3309
  C. One American literature period course: ENGL 3323, 3324, or 3325
  D. 6 hours of ENGL 3351 under two separate genres (fiction, poetry, or creative nonfiction)

II. 4000 level
  A. ENGL 4301
  B. One genre course: ENGL 4311, 4312, 4313, 4314, or 4315
  C. ENGL 4351
  D. One additional 4000-level course (may include a repetition of ENGL 4351).

Certification for Teaching. Students seeking a provisional certificate with English Language Arts as a teaching field may satisfy the requirement in English through the Bachelor of Arts degree. Certification requirements are determined by the State Board for Education Certification and are subject to change. A grade of C or better in all English courses is required. Before beginning to take advanced courses, students should successfully complete ENGL 1301 and 1302 and two courses in 2000-level English (2305, 2306, 2307, 2308, 2311, 2351, or 2391). Students wishing to follow any of the degree programs leading to certification should consult with the department's undergraduate advisor.

English (ENGL)

1301. Essentials of College Rhetoric (3:3:0). Prerequisite: Successful completion of ENGL 0301 or a satisfactory score on SAT1, ACT, or English department writing sample. A student may be required to

transfer to ENGL 0301 on the basis of the English department writing sample. Focuses on the writing process and requires students to write extensively in a variety of modes and styles. [ENGL 1301]

1302. Advanced College Rhetoric (3:3:0). Prerequisite: Successful completion of ENGL 1301. Focuses on writing from sources, research methods, and documentation. [ENGL 1302]

1388. Literature and Film (3:3:0). An introduction to literature, film, and the cultural functions of adaptation.

2305. Introduction to Poetry (3:3:0). Prerequisite: ENGL 1301, 1302. Critical study of and writing about a variety of poems.

2306. Introduction to Drama (3:3:0). Prerequisite: ENGL 1301, 1302. Critical study of and writing about a variety of plays.

2307. Introduction to Fiction (3:3:0). Prerequisite: ENGL 1301, 1302. Critical study of and writing about a variety of short stories and novels.

2308. Introduction to Nonfiction (3:3:0). Prerequisite: 1301, 1302. Critical study of and writing about a variety of historical, biographical, and scientific writings.

2311. Introduction to Technical Writing (3:3:0). Prerequisite: ENGL 1301 and 1302. Introduction to the patterns of writing used in reports and letters for business, industry, and technology. [ENGL 2311]

2351. Introduction to Creative Writing (3:3:0). Prerequisite: ENGL 1301 and 1302. Fundamentals of creative writing with much practice in writing poetry and short fiction.

2391. Introduction to Critical Writing (3:3:0). Prerequisite: ENGL 1301, 1302. Extensive practice in writing critical essays about literature.

3302. Old and Middle English Literature (3:3:0). Prerequisite: 6 hours of 2000-level English. Poetry, prose, and drama from 700 to 1500. This course may be repeated once for credit when topics vary.

3304. Medieval and Renaissance Drama (3:3:0). Prerequisite: 6 hours of 2000-level English courses. English drama to 1642. This course may be repeated for credit once when topics vary.

3305. British Renaissance Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. British poetry, prose, and drama from 1485 to 1660. This course may be repeated for credit once when topics vary.

3307. Restoration and Eighteenth Century British Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. British poetry, prose, and drama from 1660 to 1800. This course may be repeated for credit once when topics vary.

3308. Nineteenth Century British Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. British poetry, prose, and drama from 1780 to 1900. This course may be repeated for credit once when topics vary.

3309. Modern and Contemporary British Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. British poetry, prose, and drama since 1900. This course may be repeated for credit once when topics vary.

3323. Early American Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. American poetry and prose to 1800. This course may be repeated for credit once when topics vary.

3324. Nineteenth Century American Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. American poetry, prose, and drama from 1800 to 1900. This course may be repeated for credit once when topics vary.

3325. Modern and Contemporary American Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. American poetry, prose, and drama since 1900. This course may be repeated for credit once when topics vary.

3335. Ancient and Medieval World Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Representative works in translation, primarily Greek and Roman. This course may be repeated for credit once when topics vary.

3336. Early Modern World Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Representative works in translation from 1400 to 1900. This course may be repeated for credit once when topics vary.

3337. Modern and Contemporary World Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Representative works in translation since 1900. This course may be repeated for credit once when topics vary.

3351. Creative Writing (3:3:0). Prerequisite: 6 hours of 2000-level English or, if a student's major does not require those courses, completion of English courses required by the student's major. Discussion of basic techniques in the genres of fiction, poetry, or creative nonfiction, with emphasis on student's creative writing. May be repeated once, under a separate genre, for credit towards creative writing specialization.

3360. Issues in Composition (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Exploration of principles and practices in rhetoric and writing.

3365. Professional Report Writing (3:3:0). Prerequisite: Junior standing. Preparation of professional and academic reports and publications through the use of communication analysis.

3366. Style in Technical Writing (3:3:0). Prerequisite: Junior standing. Investigation of the varieties, characteristics, and function of prose style in technical and professional writing.

3367. Information Design and Usability Testing (3:3:0). Prerequisite or corequisite: ENGL 3365. Principles and techniques of designing usable documents with emphasis on rhetorical effectiveness and the integration of verbal and visual language.

3368. World Wide Web Publishing of Technical Information (3:3:0). Prerequisite: ENGL 2311 or 3365. Principles and techniques of designing usable Web sites, with emphasis on needs assessment, information architecture, and navigation.

3371. Linguistic Science (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Modern theory and practice in the description and analysis of natural languages.

3372. History of the English Language (3:3:0). Prerequisite: 6 hours of 2000-level English courses. An historical and descriptive survey of the English language in the context of the cultural development of the English-speaking peoples.

3373. Modern English Syntax (3:3:0). Prerequisite: 6 hours of 2000-level English courses. The syntactic and morphological analysis of modern English.

3381. Literature of the Fantastic (3:3:0). Prerequisite: 6 hours of 2000-level English courses. The analysis and criticism of the literary methods and style by which fantasy and science fiction explore cultural, psychological, and scientific issues.

3382. Women Writers (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Significant works by women. (W S 3382)

3383. Bible as Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. The styles and forms of biblical lyrics and narration as well as various theories of biblical interpretation.

3384. Religion and Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. The function of religious images and ideas in British and American literature as well as in works in translation.

3385. Selected Plays of Shakespeare I (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Nine to twelve plays.

3386. Literature and Science (3:3:0). Prerequisite: 6 hours of 2000-level English courses. An exploration of the relations between science and technology and literature and discourse.

3387. Literature of Diverse Americans (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Representative works by Americans of different cultures.

3388. Film Studies (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Concepts of visual and aural communication and a survey of various film genres.

3389. Short Story (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Short stories around the world.

4300. Individual Studies in English (3:3:0). Prerequisite: Junior or senior standing and approval of the instructor and department chairperson. Independent study under the guidance of a member of the faculty. May be repeated once.

4301. Studies in Selected Authors (3:3:0). Prerequisite: 6 hours of 3000-level English courses. Intensive examination of one or more authors. May be repeated once for credit when topics vary.

4311. Studies in Poetry (3:3:0). Prerequisite: 6 hours of 3000-level English courses. Intensive studies in the genre. May be repeated once for credit when topics vary.

4312. Studies in Drama (3:3:0). Prerequisite: 6 hours of 3000-level English courses. Intensive studies in the genre. May be repeated once for credit when topics vary.

4313. Studies in Fiction (3:3:0). Prerequisite: 6 hours of 3000-level English courses. Intensive studies in the genre. May be repeated once for credit when topics vary.

4314. Studies in Nonfiction (3:3:0). Prerequisite: 6 hours of 3000-level English courses. Intensive studies in the genre. May be repeated once for credit when topics vary.

4315. Studies in Film (3:3:0). Prerequisite: 6 hours of 3000-level English courses. Intensive studies in the genre. May be repeated once for credit when topics vary.

4321. Studies in Literary Topics (3:3:0). Prerequisite: 6 hours of 3000-level English courses. Intensive examination of one or more issues, themes, or motifs in British, American, or world literature. May be repeated once for credit when topics vary.

4342. Studies in Literary Theory (3:3:0). Prerequisite: 6 hours of 3000-level English courses. Intensive studies in theories and traditions of literary criticism. May be repeated once for credit when topics vary

4351. Advanced Creative Writing (3:3:0). Prerequisite: 6 hours of creative writing (ENGL 3351) under two different genres

and consent of instructor. Form and techniques of creative nonfiction, fiction, or poetry, with emphasis on writing and discussion of the student's own creative writing. May be repeated for credit towards creative writing specialization.

4360. Advanced Exposition (3:3:0). Prerequisite: 6 hours of 3000-level English courses. Intensive examination of one or more issues in the study of writing. May be repeated once for credit when topics vary.

4365. Special Topics in Technical Communication (3:3:0). Prerequisite: ENGL 3365 or consent of instructor. Development of complex documents, such as manuals, proposals, and newsletters. May be repeated once for credit when topics vary.

4366. Technical and Professional Editing (3:3:0). Prerequisite: ENGL 3365. Methods of editing and publishing in business, science, technology, and the professions. Practical experience with editing reports and publications produced in the university.

4367. Developing Instructional Materials (3:3:0). Prerequisite: ENGL 3365. Preparation of instructions for complex procedures with focus on task and user analysis, organization, format, and usability testing.

4373. Studies in Linguistics (3:3:0). Prerequisite: 6 hours of 3000-level English courses. Intensive examination of one or more issues in the study of language. May be repeated once for credit when topics vary.

4374. Senior Seminar in English (3:3:0). Prerequisite: 15 hours junior or senior English. Required of English majors. Seminar covering contemporary professional concerns and key issues in literature, language, and writing. Topics vary.

4378. Internship in Technical Communication (3). Prerequisite: Junior or senior standing, ENGL 3365, declared specialization in technical communication, and approval of the director of technical communication. Supervised work in technical communication. Requires portfolio and research paper.

Department of Environmental Toxicology

Chair: Professor Ronald Kendall

Professor Dixon; ***Associate Professors*** Anderson, Cobb, Dickerson, Hooper, and Wang; ***Assistant Professors*** McMurry, Smith, and Theodorakis.

This department offers study in the following degree programs: ENVIRONMENTAL TOXICOLOGY, *Master of Science* and *Doctor of Philosophy*.

Environmental toxicology offers a graduate program within the College of Arts and Sciences as well as a variable credit course for undergraduates. The course is designed to provide undergraduate students the opportunity to conduct scientific research in environmental toxicology at the Institute of Environmental and Human Health. Generally, a background in the natural, physical, or health sciences will provide the necessary preparatory work for completion of this course. Interested students should contact faculty within the department.

Environmental Toxicology (ENTX)

4000. Undergraduate Research in Environmental Toxicology (V1-3). Prerequisite: 15 hours of biology or chemistry, junior or senior standing, and consent of instructor. Selected research problems according to the needs of the student. May be repeated for credit.

4301. Special Topics in Environmental Toxicology (3:3:0). Prerequisite: Consent of instructor. Special areas of current interest not commonly included in other undergraduate courses (e.g., wildlife toxicology, pesticides in the environment).

Department of Geosciences

Chair: Professor Richard E. Peterson

Horn Professor Chatterjee; ***Pevehouse Professor*** Asquith; ***Professors*** Barnes, Barrick, Güven, Haragan, Leary, and Lehman; ***Associate Professors*** Chang, Gurrola, and Karlsson; ***Assistant Professors*** Doggett, Nagihara, Ridley, Schroeder, and Yoshinobu; ***Research Assistant Professor*** Gill; ***Joint Professors*** Arnold, Lee, and Rainwater; ***Adjunct Faculty*** Johnson and Stout.

This department supervises the following degree programs: GEOSCIENCE, *Bachelor of Arts, Bachelor of Science, Master of Science, Doctor of Philosophy*; ATMOSPHERIC SCIENCE, *Master of Science*. Areas of specialization at the undergraduate level include geology and geophysics and a minor in atmospheric science.

Geology Specialization, B.S. Degree. The geology specialization for the Bachelor of Science degree is designed to prepare the student for admission to a graduate program in geology and employment as a professional geologist. Each student must complete a senior research project (GEOL 4312) as part of the degree requirements. The minor must be in a field of science, mathematics, engineering, or an approved composite of courses from these fields. A well-prepared student should be able to complete the B.S. in geology with a minimum of about 40 hours in geosciences, 18 hours in the minor, and 22 hours in mathematics and physical sciences. For other students, leveling courses may be required. The residency requirement for the major is 12 hours; for the minor, 6 hours.

Geosciences—Geology Specialization Curriculum, B.S. Degree

FIRST YEAR

Fall		*Spring*	
GEOL 1303, Physical Geology	3	GEOL 1304, Historical Geology	3
GEOL 1101, Physical Geol. Lab.	1	GEOL 1102, Historical Geol. Lab	1
CHEM 1307, Prin. of Chem. I	3	CHEM 1308, Prin. of Chem. II	3
CHEM 1107, Prin. of Chem. I (Lab.)	1	CHEM 1108, Prin. of Chem. II (Lab.)	1
*MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
†Personal Fitness and Wellness	1	†Personal Fitness and Wellness	1
TOTAL	15	TOTAL	15

SECOND YEAR

Fall		*Spring*	
GEOL 2305, Intro. Crystal. & Min.	3	GEOL 3421, Petrology	4
†Oral Communication	3	GEOL 4320, Optical Mineralogy	3
**Physics	3	**Physics	3
**Physics Lab.	1	**Physics Lab.	1
Foreign Language	5	Foreign Language	5
TOTAL	15	TOTAL	16

THIRD YEAR

Fall		*Spring*	
GEOL 3402, Structural Geology	4	Geosciences Elective	3-4
GEOL 3310, Quant. Meth. Geol.	3	+Minor	3-4
or MATH 2300, Stat. Meth.		†American History	3
†American History	3	Foreign Language	3
Foreign Language	3	†English Literature	3
†English Literature	3	TOTAL	15-17
TOTAL	16		

SUMMER

††Geology Field Course.	6

FOURTH YEAR

Fall		*Spring*	
Geosciences Elective	3-4	Geosciences Elective	3-4
+Minor	3-4	GEOL 4312, Undergraduate Research	3
+Minor	3-4	+Minor	3-4
POLS 1301, Amer. Govt. Org.	3	POLS 2302, Amer. Pub. Policy	3
†Social or Behavioral Science Elect.	3	†Visual or Performing Arts Elect.	3
TOTAL	15-18	TOTAL	15-17

*Adequate training in algebra, trigonometry, and analytic geometry is a prerequisite for calculus. The student must take the Mathematics Placement Examination.
**PHYS 1308, 1105, 2301, 1106; OR PHYS 1306, 1103, 1307, 1104
+Minor course work must be in mathematics, sciences, or engineering.
†Select from Arts and Sciences General Degree Requirements. Course work must also satisfy the multicultural, and Technology and Applied Science requirements.
††Summer field course must be approved by the department before enrollment.

Geophysics Specialization, B.S. Degree. The geophysics specialization for the Bachelor of Science degree is flexible, allowing the student to design a plan to prepare for employment as a professional geophysicist or to enter a graduate program in geophysics, atmospheric sciences, or related areas. The specialization requires GEOL 1303, 1101, 1304, 1102, 2305, 3310, 3402, 3421; G PH (two of the following) 4300, 4322, 4323; CHEM 1307, 1107; PHYS 1308, 1105, 2301, 1106, 4304; MATH 1351, 1352, 2350; an additional 12 hours of approved electives (at least 6 hours must be in physics, engineering, or mathematics); and a senior research project, GEOL 4312. The minor must be in a field of science, mathematics, engineering, or an approved composite of courses from these fields.

Geology Specialization, B.A. Degree. The geology program leading to the Bachelor of Arts degree is designed to provide a broad liberal arts background and basic training in the principles of geosciences. The program is designed for the student with strong interests in earth processes and the history of nature's initiation of and response to continuous change. Students interested in professional employment or graduate degrees in geology should complete the B.S. degree program, not the B.A.

The B.A. program with a major in geology requires GEOL 1303, 1101, 1304, 1102, 2305, 3402, 3421, 3428, at least 4 hours of junior-senior level geosciences electives, and a senior research project, GEOL 4312. Adjunct requirements include MATH 1321; CHEM 1307, 1107, 1308, 1108; PHYS 1306, 1103, 1307, 1104. The minor may be in any area approved by the college.

Geosciences Minors. The department offers three minors. The geology minor requires GEOL 1303, 1101, 1304, 1102, and 12 additional hours of geology courses, 6 of which must be at the junior-senior level and one course that must include a laboratory. The geophysics minor requires 9 hours in geophysics and 9 hours of related science or mathematics course work; 6 hours must be at the junior-senior level. The atmospheric science minor requires ATMO 1300, 1100, 2301, 3301, 4300, and 6 hours of related science or mathematics course work.

Teacher Education. The department cooperates with the College of Education in preparing individuals for science certification in the programs in Multidisciplinary Studies (middle-level education) and Multidisciplinary Science (composite science certification). The student should consult the College of Education and the Department of Geosciences for requirements.

Courses with an asterisk may be used in fulfilling natural (laboratory) science requirements. Courses marked with double asterisks may be used in fulfilling technology and applied science requirements.

Atmospheric Science (ATMO)

***1100. Atmospheric Science Laboratory (1:0:2).** Discussion and practical experience in weather analysis, methods of instrumentation, and observational meteorology.

***1300. Introduction to Atmospheric Science (3:3:0).** An investigation of atmospheric properties and physical processes that determine current weather events and long-term climate conditions.

****2301. Weather, Climate, and Human Activities (3:3:0).** Observation and analysis of the impacts of weather and climate on human activity, e.g., storms, climate change, forecasting, weather modification, health, energy, transportation.

****3301. General Meteorology (3:3:0).** A basic study of atmospheric processes and the principles that control them.

4300. Independent Studies in Atmospheric Science (3:3:0). Prerequisite: Consent of instructor. Independent studies in atmospheric science. May be repeated once for credit.

Geology (GEOL)

***1101. Physical Geology Laboratory (1:0:2).** Laboratory study of rocks, minerals, and geologic mapping.

***1102. Historical Geology Laboratory (1:0:2).** Prerequisite: GEOL 1101. Laboratory study of fossils, geologic maps, and geologic structure.

***1105. History of Life Laboratory (1:0:2).** Introduction to and applications of methods employed by paleontologists to interpret the fossil record. Not for credit for majors.

***1303. Physical Geology (3:3:0).** Beginning course. A study of earth materials (rocks and minerals), gradation (erosion and deposition), diastrophism (earth movements and mountain building), vulcanism and earth resources.

***1304. Historical Geology (3:3:0).** Prerequisite: GEOL 1303. A study of the history and evolution of the earth and life from the beginning of time to the present.

***1350. History of Life (3:3:0).** A survey of the evolution of life on earth as interpreted from the fossil record and the processes that produced extinct and modern ecosystems. Not for credit for majors.

2305. Introduction to Crystallography and Mineralogy (3:2:3). Prerequisite: GEOL 1101, 1303, and CHEM 1307. Introduction to symmetry, crystal chemistry, and atomic structures of minerals. Classification of minerals and description of rock-forming minerals.

3301. Geomorphology and Aerial Photointerpretation (3:2:3). Prerequisite: GEOL 1303, 1101, or consent of instructor. Introductory course in processes that produce morphogenic changes at earth's surface. Evolutionary development of hill slopes and drainage channels. Illustrated by aerial photos.

3310. Quantitative Methods in Geology (3:3:0). This class will emphasize error propagation in geologically sampled data, and computer methods to process and model these data.

3322. Oceanography (3:3:0). Prerequisite: GEOL 1303 or GEOG 1401 or ATMO 1300. The physiography and origin of ocean basins and the processes and systems operative in them including physical, chemical, and biological factors as well as sedimentation patterns.

****3323. Environmental Geology (3:3:0).** Prerequisite: GEOL 1303 or GEOG 1401. Study of geological processes that affect human activities, emphasizing natural hazards, water resources, waste disposal, energy, mineral resources, and land use and planning.

3402. Structural Geology (4:3:3). Prerequisite: GEOL 2305 or G PH 2300. Topics include rock mechanics, folds, joints, faults, structural petrology, and crystalline-rock structures. Laboratory work concerns structural aspects of surface and subsurface mapping and interpretation, including the use of stereonets. Required field trip.

3421. Petrology (4:2:6). Prerequisite: GEOL 2305. Origin, identification, and mode of occurrence of rocks. Systematic classification of igneous, metamorphic, and sedimentary rocks, with emphasis on field-based methods. Required field trip.

****3428. GIS in Natural Science and Engineering (4:3:3).** Prerequisite: MATH 1320 or equivalent. Survey of the broad band spectrum of geoinformation science and technology applied to research in natural science and engineering. Involves computer lab exercises.

3450. Paleontology and Paleoecology (4:3:3). Classification, evolution, and paleobiology of invertebrate fossils. Applications of paleontological data in geological dating, correlation, and paleoenvironmental analyses.

4001. Problems in Geosciences (V1-6). Independent study under guidance of faculty member.

4101. Undergraduate Seminar (1:1:0). May be repeated for credit.

4300. Independent Studies in Geology (3:3:0). Prerequisite: Consent of instructor. Independent studies in geology. May be repeated for credit.

4312. Undergraduate Research (3). Prerequisite: Senior standing. Independent research in an area of current interest in the geosciences. Prior approval from specific professor required.

4318. Geology of Texas (3:3:0). A comprehensive study of the structure, stratigraphy, and economic geology of Texas and parts of adjacent states.

4320. Optical Mineralogy (3:2:3). Prerequisite: GEOL 2305. Principles of transmitted light within isotropic and anisotropic

crystals, and the identification of minerals by observation and measurement of their behavior in plane-polarized light. Emphasis on variations due to chemical changes in the common rock-forming silicates.

4321. Igneous and Metamorphic Petrography (3:2:3). Prerequisite: GEOL 4320. The study of rock texture and paragenesis in thin section.

4324. Geology of Hydrocarbons (3:3:0). A study of the world-wide distribution and geologic setting of petroleum in addition to methods of exploration.

4331. Digital Imagery in Geosciences (3:2:3:). Prerequisite: MATH 1320 or equivalent. Introduction to digital image processing, visualization, and raster GIS modeling applied to geosciences. Involves computer lab exercises.

4332. Spatial Data Analysis and Modeling in Geosciences (3:2:3). Prerequisite: MATH 2300 or equivalent. Introduction to vector GIS data manipulation, geostatistics, and spatial modeling applied to geosciences. Involves computer lab exercises.

4362. Tectonics (3:3:0). Prerequisite: Senior standing in geology or consent of instructor. Survey of the plate tectonic paradigm in terms of historical development and modern application.

4420. Sedimentology and Stratigraphy (4:3:3). Prerequisite: Senior standing in geosciences or approval of instructor. Sedimentary textures and structures, classification, petrography, and diagenesis of sedimentary rocks, lithostratigraphy, facies, and basin models.

Courses in Geophysics (G PH)

****2300. Introduction to Geophysics (3:3:0).** Prerequisite: GEOL 1303. A basic introduction to solid earth geophysics with emphasis on the internal structure of the earth.

4300. Independent Studies in Geophysics (3:3:0). Prerequisite: Consent of instructor. Independent studies in geophysics. May be repeated for credit.

4321. Seismic Exploration Methods (3:2:3). Prerequisite: GEOL 3302 or MATH 1351 or consent of instructor. Methods to collect, process, and interpret seismic data are discussed.

4323. Applied Electrical Methods (3:2:3). Prerequisite: G PH 4321. Electromagnetic, resistivity, and ground penetrating radar methods of geophysical investigation are discussed.

Department of Health, Exercise, and Sport Sciences

Chair: Professor T. Gilmour Reeve

Associate Professors Dornier, Hall, James, Massey-Stokes, McComb, and Meaney; ***Assistant Professors*** Arterburn, Dickin, Lochbaum, Miller, Roncesvalles, Scheuermann, Smucker, Tacon, and Williams; ***Instructors*** Griffin, LeClerc, and S. Reeve; ***Visiting Faculty*** Borchardt.

This department supervises the following degree programs: EXERCISE AND SPORT SCIENCES, *Bachelor of Arts* and *Bachelor of Science;* HEALTH, *Bachelor of Science*; EXERCISE AND SPORT SCIENCES and SPORTS HEALTH, *Master of Science*. These academic programs prepare individuals for professional careers, advanced graduate study, and entry into allied health programs. The department also participates in a joint *Doctor of Philosophy* degree program in physiology with the Department of Physiology in the Texas Tech University Health Sciences Center. The joint doctoral program is designed to include both basic and applied physiology course work for students pursuing teaching and research careers in exercise physiology. In addition, the department offers courses for all university students in the personal fitness and wellness program.

Bachelor of Science, Exercise and Sport Sciences

Students majoring in exercise and sport sciences may choose from one of three tracks: Physical education teacher education, fitness and wellness promotion, or movement studies. The general academic requirements for the bachelor degree are the same for all tracks as listed in general degree requirements for the College of Arts and Sciences. The minimum number of hours required for the major is 37. Transfer

students must complete a minimum of 9 semester hours from their major in residence.

All students majoring in exercise and sport sciences must complete one of the following 4-hour laboratory sciences or its equivalent: BIOL 1402 or 1403, CHEM 1305 with 1105 (or a higher number), or PHYS 1303 with 1101 (or a higher number). Also, all students must complete ZOOL 2403. Students in pre-allied health fields should consult with the departmental advisor for information on acceptable substitutions.

Teacher Preparation. Students majoring in exercise and sport sciences pursue teacher certification through the physical education teacher education track. Certification may be earned at either the secondary level (7-12) or all-level (K-12). Beginning August 2004, the State Board for Education Certification will issue only EC-12 (all level) physical education teacher certificates. The secondary level (7-12) certificate will be eliminated. Students graduating after August 2004 must pursue the EC-12 (all level) teacher certificate. For certification at the secondary level (7-12), students must complete all certification requirements by August 2004:

Theory Core: ESS 1201, 3301, 3303, 3305, 3314, 4300
Skill Development Core: ESS 2102, 2107, 2108, 2109, 2209, and four hours from ESS 2106, 2110, 2111, 2112, 2113, 3204
Teacher Education Core: ESS 2205, 3100, 3200 (twice) or 3200 and 3307, 3306 or 3302, 3316, 4303, 4306, 4307

For all-level certification (K-12), students complete the program outlined above in addition to the following courses: ESS 3207, 3208, and 3313.

Both the secondary and all-level certifications require that students complete EDSE 2300 to satisfy the Core Curriculum requirement for Individual and Group Behavior and EDIT 2318 or equivalent to satisfy the Technology and Applied Science requirement. A 2.5 GPA is required to enroll in these teacher education courses. In addition, students must meet other requirements outlined by the College of Education.

Fitness and Wellness Promotion. Students majoring in exercise and sport sciences seeking careers in commercial, corporate, or clinical exercise settings should complete the fitness and wellness promotion track by completing the following courses:

Theory Core: ESS 1201, 3301, 3303, 3305, 3314, 4300
Fitness and Wellness Promotion Core: ESS 2105 (twice), 2209, 3306, 3309, 3310, 3311, 4304 (twice), 4308, F&N 1410
Electives: 6 hours from designated electives (see departmental advisor for list of electives)

Movement Studies. The movement studies track is well-suited for students interested in pursuing advanced graduate study in biomechanical, physiological, or psychological aspects of sport and physical activity. Also, this track may be used by students pursuing entry into allied health programs (i.e., physical therapy, occupational therapy, or medical school). Students interested in continued study in allied health programs must consult with the departmental advisor for fulfilling prerequisites for entry into these programs. In this track, students complete the following course of study:

Theory Core: ESS 1201, 3303, 3305
Skill Development Core: ESS 2102, 2107, 2108, 2109, 2209, and 4 hours from ESS 2106, 2110, 2111, 2112, 2113, 3204
Electives: 24 additional hours of 3000 and 4000 level ESS courses

Minor in Exercise and Sport Sciences: Students seeking a minor in exercise and sport sciences will complete 20 hours of course work as follows: ESS 1201, 3303, 3305; a minimum of 6 hours chosen from ESS 2102, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, and 2209; a minimum of 6 hours from any 3000- and 4000-level ESS courses. Six credit hours of exercise and sport sciences courses are required in residency.

Athletic Training: Students who wish to become athletic trainers must contact the Athletic Training Program in the Texas Tech Department of Intercollegiate Athletics. Students must be accepted into the student athletic training program and complete a noncredit internship of at least 1800 hours over a 3-year period. Students must

complete the following courses: ZOOL 2403, ESS 3301, 3302, 3304, 3305, and one course from health, nutrition, or first aid (ESS 3306). Beginning September 2004, course work in therapeutic exercise-modalities will be required. Upon satisfactory completion of these requirements and an undergraduate degree program, students will be qualified to take the Texas Athletic Training Licensure Examination.

Bachelor of Science, Major in Health

Students may choose to major in health. The general academic requirements for the bachelor degree are listed in the general degree requirements for the College of Arts and Sciences. The minimum number of hours required for the major is 39. Transfer students must complete a minimum of 9 semester hours from the major in residence. Students must complete HLTH 1300, 1302, 3301, 3302, 3311, 3325, 4307, and 18 hours selected from health courses, including 12 hours from the 3000 level or above. Courses used in the health major or minor may not be used to satisfy the social and behavioral sciences requirement. Students majoring in health may pursue teacher certification in the school health track. Teacher certification in health is accomplished by completing requirements stipulated by the College of Education. Students seeking teacher certification must complete EDSE 2300 to fulfill the Individual or Group Behavior requirement and EDIT 2318 to fulfill the Technology and Applied Science Core Curriculum requirement. A 2.5 GPA is required to enroll in these teacher education courses. In addition, students must meet other requirements outlined by the College of Education.

All students majoring in health must complete one of the following 4-hour laboratory sciences or its equivalent: BIOL 1402 or 1403, CHEM 1305 with 1105 (or higher), or PHYS 1303 with 1101 (or higher). Also, all students must complete ZOOL 2403. Students in a preallied health field should consult with the departmental advisor for information on acceptable substitutions.

Minor in Health: A student seeking a minor in health will complete 18 hours of health courses approved by an advisor. Six hours must be completed in residency.

Personal Fitness and Wellness. University students interested in learning sport skills, improving physical fitness, and developing knowledge about sports and exercise may enroll in personal fitness and wellness courses. To satisfy the College of Arts and Sciences requirement of two hours of personal fitness and wellness, students are required to complete successfully any two personal fitness and wellness courses. For a specific physical activity, the completion of the course sequence is allowed if the sequence is taken in the appropriate order from beginning to advanced. Students participating in varsity athletics may enroll in the personal fitness and wellness course that corresponds to their varsity sport. A maximum of 1 credit hour per academic year per sport may be earned in this manner.

Exercise and Sport Sciences (ESS)

1201. Concepts in Exercise and Sport Sciences (2:2:0). An introduction to the professions in exercise and sport sciences including philosophical, historical, and scientific foundations. [PHED 1301]

2102. Track and Field Activities (1:0:2). Skills and knowledge in track and field activities for men and women.

2105. Practicum in Fitness and Wellness (1:0:2). Supervised clinical experience in fitness and sport centers.

2106. Beginning Artistic Gymnastics (1:0:2). Skills and knowledge in gymnastics for men and women.

2107. Court Activities (1:0:2). Skills and knowledge in performance and teaching volleyball and basketball.

2108. Field Activities (1:0:2). Knowledge and skills in performance and teaching soccer and flag football.

2109. Lifetime Activities (1:0:2). Knowledge and skills in performance and teaching golf and tennis.

2110. Field Activities II (1:0:2). Knowledge and skills in performance and teaching of selected field activities.

2111. Lifetime Activities II (1:0:2). Knowledge and skills in performance and teaching of selected lifetime activities including but not limited to rock climbing, hiking, and bowling.

2112. Racquet Activities (1:0:2). Knowledge and skills in performance and teaching racquet activities including but not limited to badminton, pickleball, and squash.

2113. Rhythms and Dance Activities (1:0:2). Skills and knowledge in selected rhythms and dance activities.

2201. Team Sports for Elementary-Age Children (2:1:2). Skills and knowledge in basketball, softball, and volleyball.

2205. Practicum in Teaching (2:1:2). In this course students will obtain practical experience in teaching in university fitness and wellness classes in preparation for teaching in public schools.

2209. Weight Training, Conditioning, and Aerobic Dance (2:0:4). Principles of weight training, aerobic dance and other methods of conditioning. Emphasis on program planning, development, and implementation.

2301. Field Sports for Elementary-Age Children (3:1:4). Skills and knowledge in soccer, speedball, speed-away, and flag football.

3100. Officiating Team Sports (1:1:0). The ethics, rules, and mechanics involved in officiating selected team sports. May be repeated for credit. [PHED 1308]

3200. Coaching of Sports (2:1:2). Advanced analysis of selected sports with emphasis on application of mechanical principles, exercises and conditioning training, and organization for competition. May be repeated for credit.

3201. Educational Gymnastics (2:0:4). Skills and knowledge in fundamental movements and gymnastics for elementary-age children.

3204. Water Safety Instructor and Lifeguard Training (2:1:2). Prerequisite: Swimming proficiency. Skills and knowledge in progressive swimming courses, emergency water safety, and lifeguard training; American Red Cross Lifeguard Training and Water Safety Certification is possible. Open to all students.

3207. Rhythms for Children (2:1:2). Creative movement, singing and rhythmic games, folk and square dances for children.

3208. Games for Children (2:1:2). Indoor, low organization, and lead-up games for children.

3301. Biomechanics (3:2:2). Prerequisite: ZOOL 2403 or equivalent. The mechanical analysis of human motion with emphasis on biomechanical principles and techniques.

3302. Care and Prevention of Athletic Injuries (3:3:0). Prerequisite: ZOOL 2403 or equivalent. An introduction to athletic training and the qualifications and functions of the athletic trainer including emphasis on common athletic injuries.

3303. Motor Learning (3:2:2). A study of the many aspects of learning and performance of motor skills.

3304. Advanced Techniques of Athletic Training (3:3:0). Prerequisite: ESS 3302. Administration of an athletic training program. Includes the use of therapeutic modalities and the advanced care, prevention, and treatment of athletic injuries.

3305. Exercise Physiology (3:2:2). Prerequisite: ZOOL 2403 or equivalent. A study of the various physiological systems as they function during exercise and training.

3306. First Aid (3:2:2). American Red Cross Standard and Instructors First Aid and Personal Safety course. [PHED 1206]

3307. Gender Issues in Sport (3:3:0). Examination of the ways sport experiences differ for males and females emphasizing historical, social, behavioral, and physiological dimensions. (W S 3307)

3308. Sport in World Cultures (3:3:0). Historical and philosophical aspects of contemporary sport and leisure patterns across cultures, emphasizing the role of sport in society.

3309. Development of Fitness and Wellness Centers (3:3:0). Applied knowledge designed to facilitate the operation and development of fitness centers, emphasizing development of practical skills for successful guidance of consumer and employee fitness centers.

3310. Exercise Testing and Prescription (3:2:2). Prerequisite: ESS 3305. Physiological theory and its practical application to exercise testing and prescription. Emphasis on hands-on physiological testing.

3311. Human Behavior in Fitness and Wellness Promotion (3:3:0). An introduction to the principles and techniques of motivation, behavior modification, and leadership important in promoting healthy lifestyles.

3313. Motor Skill Development for Children (3:3:0). A study of skills and knowledge basic to proper motor learning and development for children.

3314. Life Span Motor Development (3:3:0). Examines factors that influence human motor development from conception through adulthood. Discusses theoretical perspectives and practical applications of motor development principles throughout the life span.

3316. Principles of School-Based Personal Fitness (3:2:2). Students will learn how to design personal fitness programs and teach others. These concepts and activities are within the context of a wellness lifestyle.

4000. Independent Studies in Exercise and Sport Sciences (V1-6). Prerequisite: Departmental approval. A structured independent study under the guidance of a faculty member. May be repeated for credit up to 6 hours.

4300. Psychological Dimensions of Sport and Exercise (3:2:2). Emphasis on the social and psychological factors pertaining to participation in sport and exercise.

4302. Practicum in Athletic Training (3). Prerequisite: ESS 3302, 3304, or departmental approval. Supervised clinical experience in athletic training. May be repeated once for credit.

4303. Management in Exercise and Sport Sciences (3:3:0). Basic concepts and practices in the operation and management of exercise and sport organizations.

4304. Internship in Fitness and Wellness (3:3:0). Prerequisite: ESS 2105 (two sections), ESS 3306 (or current certification in first aid), and ESS 3310. Provides observational and managerial opportunities in exercise and sport environments. May be repeated for credit.

4306. Adapted Physical Activities (3:3:0). Theory and practice in administering and interpreting screening tests and adapting motor activities to the needs of the disabled.

4307. Evaluation of Physical Performance (3:3:0). A survey of tests used to evaluate status and progress in the cognitive, affective, and psychomotor domains.

4308. Seminar in Fitness and Wellness (3:3:0). Prerequisite: Senior standing. Selected topics on commercial and industrial fitness, including legal implications of exercise-related injuries, concepts of wellness, fitness and health, diet, and exercise.

Health (HLTH)

1300. Patterns of Healthful Living (3:3:0). A study of patterns of mental, physical, and social development of the individual including relationships of individual and community health. [PHED 1304]

1302. Foundations of Health (3:3:0). Basic knowledge of the health field for persons pursuing a degree in health. Principles of the discipline as well as historical overview will be addressed.

1305. Human Sexuality (3:3:0). Examination of the structural and functional traits of sexuality and how they affect well-being; covers relationships, reproduction, and lifestyle alternatives. [PSYC 2306] (W S 1305)

2302. Environmental Health and Awareness (3:3:0). Examines critical issues and relationships affecting biospheric health including personal, community, and international ecology.

2305. Mental Health (3:3:0). Examines mental health from a preventive health viewpoint. Addresses specific behavior modification techniques that can enhance mental health.

2307. Understanding Death and Dying (3:3:0). Exploration of issues concerning the death and dying process, including death anxiety, bereavement, grief, and mourning. Biological, psychological, social, and cultural aspects will be addressed.

3300. Field Experience in Health (3:0:9). Prerequisite: 9 hours of health. Supervised experience in public, community, or private health agency. Students gain experience in the profession by participating in 150 hours of volunteer work.

3301. Epidemiology (3:2:2). Principles and practices in cause, prevention, and control of diseases in school, community, national, and international settings. Includes examination of culture, belief, and values in disease transmission.

3302. Current Trends in Health (3:3:0). An in-depth analysis of current issues that govern the politics, policies, and practices in the health field.

3311. Communicable and Chronic Diseases (3:3:0). Examines etiology of diseases from a body-systems approach, with special emphasis on sexually transmitted diseases, cancer, and cardiovascular disease.

3312. Health Considerations of Special Populations (3:3:0). A process-oriented course addressing health needs and/or problems of various ethnic, cultural, and socio-economic groups.

3313. Health for Preadolescents (3:3:0). Prerequisite: Junior standing. An in-depth study of health issues relating to children as well as emphasis on behaviors that would affect health for children.

3314. Health for Adolescents (3:3:0). Prerequisite: Junior standing. Studies health factors that affect the adolescent; addresses social, emotional, and physical factors of health.

3325. Health Concerns in Chemical Dependencies (3:3:0). A holistic approach to the nonuse, use, and misuse of substances that alter mood and behavior, focusing on the implications to family relationships and personal health. [PHED 1346]

4300. Individual Studies in Health (3:3:0). Prerequisite: Departmental approval. An independent study program that allows

students to pursue an area of special interest under the guidance of a professor.

4307. Health Program Planning and Evaluation (3:3:0). Principles and applications of planning and implementing health programs in a variety of school and community settings including monitoring techniques.

Personal Fitness and Wellness (PF&W)

1110. Adventure Activities (1:0:2). "Challenge by choice" atmosphere in nontraditional games and adventure. Includes but is not limited to indoor rock climbing and ropes course activities.

1111. Aerobic Dance (1:0:2). Introduction to aerobic dance, fitness, and physiological response to exercise.

1112. Diet and Exercise (1:0:2). A concepts-based activity course in which the student learns to create and participate in an individualized lifetime physical activity program.

1113. Golf (1:0:2). Basic golf rules, etiquette, and mechanics. Four full rounds of golf must be completed by semester's end. Class meets off campus. Extra fee required.

1114. Jogging (1:0:2). Principles and practice of recreational jogging for cardiovascular health. Includes flexibility training, individual progression instruction, complementary weight training, and nutritional practices.

1116. Tai Chi (1:0:2). Basic techniques and applications of martial art of yang style tai chi chuan; also includes philosophy and theory.

1117. Walking (1:0:2). Topics include walking technique, principles and practice of personal walking programming, interval, and circuit training, flexibility and muscular endurance training.

1118. Weight Training (1:0:2). Basic principles and practice of weight training, developing and modifying an individual program. Includes flexibility and cardiovascular fitness.

1119. Yoga (1:0:2). Basic poses, principles of movements and balance in yoga. Breathing techniques, stress reduction, relaxation, advanced poses, and twists will be covered.

1120. Aikido (1:0:2). Provides students with a basic understanding of the philosophy of self-defense and practical application of aikido, a soft martial arts style.

1121. Jui Jitsu (1:0:2). Basic principles of Brazilian jui jitsu. Opportunity to safely learn, practice, and use jui jitsu as an approach to self-defense.

1122. Karate (1:0:2). Practical self-defense techniques and strategies; an appreciation of karate on an aesthetic level through the practice of kata.

1123. Racquetball (1:0:2). Introduction to rules, shots, and strategies for singles, doubles, and cut-throat.

1124. Self-Defense (1:0:2). Emphasizes philosophy, practical applications of both hard (karate) and soft (aikido) martial arts styles, and a better understanding of individual physical capabilities and limitations.

1125. Tennis (1:0:2). Concepts of stroke mechanics, skill development, offensive and defensive strategies, rules, game play, singles and doubles, organization and communication, flexibility, and conditioning for tennis.

1130. Basketball (1:0:2). Concepts of skill development, offensive and defensive strategies, rules, team organization and communication, game play, flexibility and conditioning for basketball.,

1131. Sand Volleyball (1:0:2). Concepts of skill development, offensive and defensive strategies, rules, team organization and communication, game play, flexibility, and conditioning for sand volleyball.

1132. Soccer (1:0:2). Concepts of skill development, offensive and defensive strategies, rules, team organization and communication, game play, flexibility, and conditioning for soccer.

1133. Softball (1:0:2). Concepts of skill development, offensive and defensive strategies, rules, team organization and communication, game play, flexibility, and conditioning for softball.

1134. Volleyball (1:0:2). Concepts of skill development, offensive and defensive strategies, rules, team organization and communication, game play, flexibility, and conditioning for volleyball.

1140. Lifeguard Training (1:0:2). Training for the American Red Cross Certification. Includes lifeguarding, standard first aid, and CPR for the professional rescuer.

1141. Scuba (1:0:2). Allows the student to explore the underwater in a warm, pristine environment. Scuba and snorkeling gear are provided. SSI. Certification is possible.

1142. Beginning Swimming (1:0:2). Swimming principles, basic stroke mechanics, breathing technique, and conditioning for beginning swimmers.

1143. Water Aerobics (1:0:2). Basic water aerobics routines performed as a group in the pool.

1150. Adapted Physical Education (1:0:2). For the student with a temporary or permanent physical impairment.

Departmental approval is necessary prior to the first course registration.

1155. Special Topics in Fitness (1:0:2). Skill development, conditioning, and strategies for various activities including in-line skating, ice skating, cycling, triathlons, and water polo. May be repeated once for credit.

1160. Varsity Baseball (1). For the student listed on the official intercollegiate squad for this sport. Athletics department approval is required prior to enrollment. May be repeated for credit.

1161. Varsity Men's Basketball (1). For the student listed on the official intercollegiate squad for this sport. Athletics department approval is required prior to enrollment. May be repeated for credit.

1162. Varsity Women's Basketball (1). For the student listed on the official intercollegiate squad for this sport. Athletics department approval is required prior to enrollment. May be repeated for credit.

1163. Varsity Cross Country (1). For the student listed on the official intercollegiate squad for this sport. Athletics department approval is required prior to enrollment. May be repeated for credit.

1164. Varsity Football (1). For the student listed on the official intercollegiate squad for this sport. Athletics department approval is required prior to enrollment. May be repeated for credit.

1165. Varsity Golf (1). For the student listed on the official intercollegiate squad for this sport. Athletics department approval is required prior to enrollment. May be repeated for credit.

1166. Varsity Soccer (1). For the student listed on the official intercollegiate squad for this sport. Athletics department approval is required prior to enrollment. May be repeated for credit.

1167. Varsity Softball (1). For the student listed on the official intercollegiate squad for this sport. Athletics department approval is required prior to enrollment. May be repeated for credit.

1168. Varsity Tennis (1). For the student listed on the official intercollegiate squad for this sport. Athletics department approval is required prior to enrollment. May be repeated for credit.

1169. Varsity Track and Field (1). For the student listed on the official intercollegiate squad for this sport. Athletics department approval is required prior to enrollment. May be repeated for credit.

1170. Varsity Volleyball (1). For the student listed on the official intercollegiate squad for this sport. Athletics department approval is required prior to enrollment. May be repeated for credit.

2113. Advanced Golf (1:0:2). Improvement and refinement of stroke mechanisms. Seven full rounds of golf must be completed before the final. Class meets off campus. Extra fee required.

2118. Advanced Weight Training (1:0:2). Advanced principles of weight training, individualized weight training programs, goal specific lifting, flexibility and cardiovascular fitness.

2125. Advanced Tennis (1:0:2). Refinement of stroke mechanics, skill development, offensive and defensive strategies, flexibility, and conditioning for tennis. For players with varsity-level experience and ability.

2130. Advanced Basketball (1:0:2). Refinement of skill development, offensive and defensive strategies, organization and communication, game play and officiating, flexibility and conditioning for basketball. For players with club-level ability.

2132. Advanced Soccer (1:0:2). Refinement of skill development, offensive and defensive strategies, team organization and communication, game play, flexibility and conditioning for soccer. For players with club-level ability.

2134. Advanced Volleyball (1:0:2). Refinement of skill development, offensive and defensive strategies, organization and communication, game play and officiating, flexibility and conditioning for volleyball. For players with club-level ability.

2142. Advanced Swimming (1:0:2). Review and refinement of strokes. For students with the ability to complete multiple lengths of the pool while correctly performing the basic strokes.

2143. Swim Conditioning (1:0:2). For students with the ability to complete multiple lengths of the pool with sound stroke mechanics. Techniques for fitness improvement through swimming will be addressed.

Department of History

Chair: Professor Bruce C. Daniels

Horn Professor Kuethe; ***Professors*** Barr, Bell, Carlson, Howe, King, and Rainger; ***Associate Professors*** Brink, Iber, Miller, Pelley, Reckner, Steinhart, Stoll, Traylor, Troyansky, Walker, and Willett; ***Assistant Professors*** Alford, D'Amico, Deslandes, Forsythe, Gray, Lorcin, McBee, Mosher, Snead, and Wong; ***Lecturer*** Ashby-Martin.

This department supervises the following degree programs: HISTORY, *Bachelor of Arts*, *Master of Arts*, *Doctor of Philosophy*. The department also participates in the LATIN AMERICAN AND IBERIAN STUDIES and RUSSIAN LANGUAGE AND AREA STUDIES programs leading to the *Bachelor of Arts* degree, in the Arts and Sciences minors in community and urban studies, environmental studies, ethnic studies, family life studies, humanities, religion studies, women's studies, and the university Honors College.

The broad liberal arts foundation available through a major in history can deepen students' understanding of the complex world in which they live, stimulate intellectual attitudes conducive to effective participation in contemporary society, and cultivate those mental skills required for meaningful employment in many areas of the modern economic system. A history student may consider a career in teaching in colleges and universities or in the public schools; in park administration; in regional and local historical society work; in archives and records management; in museum work; in various branches of government work; and in business and industry generally. Many students use their undergraduate history major as a preparation for advanced studies in such areas as law, medicine, and theology.

Bachelor of Arts. Students seeking an undergraduate degree in history will complete 30 hours of history including the following:

- HIST 1300 and 1301.
- 6 hours of U.S. history.
- 18 hours in advanced courses, including HIST 4398 and 3 hours each of U.S.; European; and African, Asian, or Latin American history.
- Six hours of the major in addition to HIST 4398 must be in writing intensive 4000-level courses.
- With prior departmental consent, 3 advanced hours in related disciplines may be counted toward the major.
- At least 12 of the 30 hours required for a history major must be taken in residence, including 9 upper-division hours.

Art History Specialization. The department offers an art history specialization in conjunction with the Department of Art. It consists of 33 hours as follows:

- 21 hours of history approved by the undergraduate history advisor, at least 12 of which must be at the advanced level and include HIST 4398 and at least 6 hours of U.S. history.
- 12 hours of art history courses from the Department of Art. One of the courses must be ART 3310, 3315, 4310, or 4311. In exceptional cases, HIST 4397 may be substituted with the prior consent of the undergraduate history advisor.

History of Religions Emphasis. The department also offers a history major with a history of religions emphasis. This program consists of 36 hours as follows:

- 6 hours of Western Civilization (HIST 1300-1301).
- 6 hours of American history.
- 15 hours of advanced history (including HIST 4398 and 3 hours each in American; European; and African, Asian, or Latin American).
- 9 hours chosen from courses taught outside the department and having an emphasis on the study of religion.
- At least 9 of the total history hours must be chosen from HIST 3328, 3340, 3344, 3348, 4347, 4349, and 4374. HIST 4397 may be chosen with consent of instructor.
- All courses must be chosen with the approval of the undergraduate history advisor.

History Minor. A minor in history consists of 18 hours, including the following:

- 6 hours must be in U. S. history.
- 6 hours must be in non-U.S. history.
- 9 hours, including 3 at the 4000 level, must be in advanced courses.
- At least 6 of the 18 hours required for a history minor must be taken in residence, including 3 at the 4000 level and 3 in an advanced course.

General Requirements. Under state law, all students who receive bachelor's degrees from Texas Tech must complete 6

hours in American history. Students will normally fulfill this requirement by completing HIST 2300 and 2301. However, juniors, seniors, or students with approval by the department undergraduate advisor may satisfy this requirement by completing any 6 hours from among the American history courses listed as (US) in the course list.

All courses numbered above 3000 are advanced courses. All courses above 4000 are writing intensive courses and require junior standing or consent of the instructor. A student must receive at least a C in any history course if it is to count toward the major or minor.

Teacher Education. In the teacher education certification programs, history may be used at the secondary level as either a teaching field or as part of the composite field of social studies.

Teaching Field Options:

Secondary Education Teaching Field in History (36 hours—6 hours must be 4000-level)

- HIST 1300 and 1301, also 2300 and 2301
- HIST 3310 (History of Texas) and 3 advanced hours in U.S. History
- HIST 2321 (Studies in World History) and 3 advanced hours in African, Asian, or Latin American History
- 6 advanced hours in European History
- 6 advanced hours in history (including HIST 4398)

Secondary Education Teaching Field in Social Studies (69 hours— 6 hours must be 4000-level history courses and 3 hours must be 4398)

- HIST 1300 and 1301; HIST 2300 and 2301; HIST 3310 or 3316
- 15 advanced hours in history, including 3 in U. S., 3 in European, and 3 in African, Asian, or Latin American
- POLS 1301 and 2302; also two from 3323, 3325, 3327, and 3351
- GEOG 1401 and 2351; 3353 or 3360; and 3352, 3354, or 3356
- ECO 2301, 2302, and 3311
- PSY 1300
- SOC 1301

History (HIST)

Courses in U.S.; European; and African, Asian, or Latin American history are identified as (US), (E), and (AAL).

1300. Western Civilization I (3:3:0). Western civilization from its dawn to the 17th century. Culture and the arts stressed alongside politics. (E) [HIST 2311]

1301. Western Civilization II (3:3:0). The revolutionary transformations of European civilization in the 17th, 18th, and 19th centuries; world dominion and the world wars; intellectual and cultural developments. (E) [HIST 2312]

1325. Introduction to Mexican American History (3:3:0). A broad survey of Mexican-American life in the United States. Culture and economics stressed alongside politics. (US)

2300. History of the United States to 1877 (3:3:0). This course and HIST 2301 satisfy the legislative history requirement. Most sections combine political, military, constitutional, and social history. Special sections emphasize technology, agriculture, business, and family life. (Honors section offered.) (US) [HIST 1301]

2301. History of the United States Since 1877 (3:3:0). Continuation of HIST 2300. (Honors section offered.) (US) [HIST 1302]

2321. Studies in World History (3:3:0). Introduction to histories of Asia, Africa and Latin America, with focus on cities, religion, and trade. (AAL) [HIST 2321]

3306. African American History to 1877 (3:3:0). This course surveys the history of African Americans from the African background through the Civil War and Reconstruction. (US)

3307. African American History from 1877 to Present (3:3:0). This course surveys the history of African Americans from the Post-Reconstruction period through Civil Rights years and new forms of activism in the 1900s to the present. (US)

3308. United States Diplomatic History to 1913 (3:3:0). A survey of U.S. diplomatic history from the American Revolution to 1913 with an emphasis on the development of the U.S. as a world power. (US)

3309. United States Diplomatic History Since 1913 (3:3:0). A survey of U.S. diplomatic history from 1913 to the present with an emphasis on the U.S. as a world leader. (US)

3310. History of Texas (3:3:0). A survey of Texas history beginning with the Native American occupation and tracing the major social, political, and economic developments of the state into the modern era. (US) [HIST 2303]

3311. Social and Cultural History of the Southwest (3:3:0). Survey of the history of the varied cultures of the American Southwest, emphasizing Anglo-American, Spanish-Mexican, and Indian backgrounds. (US)

3312. Spanish-Speaking Peoples in the United States: A Chronological Survey of Mexican Americans, Cuban Americans, and Puerto Ricans (3:3:0). This course will explore the history of Mexican Americans, Cuban Americans, and Puerto Ricans in the United States during the 19th and 20th centuries. (US)

3313. The Old South (3:3:0). Explores the society, politics, economics, and race relations of the antebellum South, the development of sectionalism, and the impact of the Civil War. (US)

3314. The South Since the Civil War (3:3:0). Explores the degree to which the South has remained a separate region socially, politically, economically, and in race relations from Reconstruction to the present. (US)

3315. North American Ranching History (3:3:0). A history of North American ranching from Columbus to the present. (US)

3316. Mexican American History of Texas (3:3:0). Surveys the history, culture, and contribution of Mexican Americans to the history and economic development of Texas. (US)

3317. The Frontier and American West (3:3:0). Explores the settlement of the American West to 1900, with emphasis on trapping, mining, transportation and farming frontiers, Spanish borderlands, and Indian-United States relations. (US)

3318. The Plains Indians (3:3:0). Culture and history of the Plains Indians; cultural developments prior to contact with the Whites; Plains Indians-White relations; Plains Indians in the 20th century. (US)

3320. History of Film and American Society (3:3:0). A history of American film from its beginnings to the present with focus on film and the role it plays in reflecting or changing American society. (US)

3321. Twentieth Century American West (3:3:0). An examination of the history and development of the American West from ca. 1900 to the present. (US)

3323. The History of Women in America (3:3:0). Examines the gender expectations from 1607 to the present that have produced for women and men different experiences, strengths, and perceptions of American history. (US) (W S 3323)

3325. History of Mexican Americans in the United States (3:3:0). Survey of the history of Mexican Americans of the United States during the 20th century, relating their daily life and institutional experience to United States and Mexican history. (US)

3326. History of Native Americans in the United States (3:3:0). Survey of the history of American Indians from their earliest migrations through the acculturation, termination, and civil rights movements of the 20th century. (US)

3327. Survey of American Environmental History (3:3:0). Prerequisite: Junior standing or consent of instructor. A survey of American environmental and conservation history from pre-Columbian America through contemporary environmental awareness. (US)

3328. History of Religion in America (3:3:0). Traces the development of religious groups in America from colonial times to the present. Emphasizes beliefs and interaction with society. (US)

3329. Development of Modern Science (3:3:0). Examines the historical development of the intellectual, institutional, and social dimensions of Western science from the 17th century to the present. (E)

3330. The Vietnam War (3:3:0). Prerequisite: HIST 2300, 2301, or equivalent. Explores the military, diplomatic, political, and social dimensions of the war from its origins in the 1940s through its conclusion in the 1970s. (US)

3331. History of United States Military Affairs to 1900 (3:3:0). Explores American military history from the Colonial period through the Spanish-American War, with an emphasis on strategy and the development of military institutions. (US)

3332. History of United States Military Affairs Since 1900 (3:3:0). Examines 20th American military history up to the present. (US)

3334. History of American Technology Since 1900 (3:3:0). A survey of some of the more important technological achievements that have led to America's world technological leadership and the problems created by technology for modern society. (US)

3337. History of American Science (3:3:0). Explores the social relations of science, its politics, and its relationship with American technology since 1600. No special scientific or technical preparation is expected. (US)

3338. History of Sports and Recreation in the U.S. (3:3:0). Study of the development and role of sports and recreation in American social history with emphasis on organized amateur and professional sports. (US)

3339. The History of Baseball: A Mirror on America (3:3:0). Examines the history of the national pastime with an eye to how the sport has reflected and influenced American society since the late 19th century. (US)

3340. Ancient Civilization (3:3:0). Studies culture and politics of the Near East, Greece, and Rome 3000 B.C.-A.D. 500, particularly emphasizing religion (especially Judaism and Christianity), ethics, and philosophy. (E)

3341. Women in European Civilization (3:3:0). What women were supposed to do; what women did, from prehistory to the vote in 1920. (E) (W S 3341)

3343. Development of Modern Medicine (3:3:0). A chronological study of concepts and treatment of disease and medicine as a social institution in Western culture. (E)

3344. History of Christianity (3:3:0). Surveys Christianity from immediate pre-Christian era to present. Emphasizes various churches and organizations, theology and Biblical studies, and Christianity's impact on Western culture. (E)

3345. The Birth of Europe (3:3:0). Examines the confrontation between the Later Roman Empire and its barbarian invaders, which ultimately produced new economic, political, social, and cultural structures—a new civilization. (E)

3346. The Age of Chivalry (3:3:0). Medieval Europe, 1000-1450, witnesses the domestication of a warrior aristocracy through chivalric ideals, feudal monarchy, and the rise of a powerful bourgeoisie. (E)

3348. The Crusades (3:3:0). Surveys the origins of the holy war ideal, the military campaigns and their leaders, life in the Crusader States, and the Crusades' ultimate results. (E)

3351. History of Spain (3:3:0). A survey of Spanish history from ancient times to the present, including the Roman and Medieval heritage, the Golden Age, Enlightenment, and modern developments. (E)

3353. History of Modern France (3:3:0). Surveys French political, social, and cultural history from the middle of the 18th century to the present. (E)

3354. Twentieth Century Europe (3:3:0). Survey of European history from the immediate origins of World War I to the present. (E)

3355. Europe in Transformation, 1815-1914 (3:3:0). Transformations in the social, cultural, political, and economic structures of Europe, including Russia and Great Britain during the 19th century. Revolution, nationalism, industrialism, and mass culture. (E)

3356. The Lands Between: Eastern Europe 1789-1989 (3:3:0). Survey of East European history from the French Revolution to the collapse of communism. (E)

3358. Modern Germany, 1648-1918 (3:3:0). Surveys the history of Germany from the Peace of Westphalia (1648) through World War I. (E)

3359. The Nazi Era, 1919-1945 (3:3:0). Surveys post-World War I Germany, the rise of national socialism, Hitler in power, the Nazi State, and Germany in World War II. (E)

3360. The British Isles to 1688 (3:3:0). Examines the social, cultural, and political history of British Isles to 1688, focusing on institutions, religious beliefs, literature, art, and everyday life. (E)

3361. British Politics, Society, and Culture Since 1688 (3:3:0). Examines the social, cultural, and political history of Britain since 1688, focusing on the expansion of government, social movements, industrialization, popular culture, and the world wars. (E)

3365. History of European Warfare since the Renaissance (3:3:0). Studies the principal developments in European warfare since the Renaissance, stressing the impact of nationalism and industrialization. (E)

3367. The Second World War (3:3:0). A history of the major diplomatic, military, social, and economic developments associated with the Second World War. (E)

3372. Tsarist Russia (3:3:0). Political, economic, cultural, and social development as well as the territorial expansion of Russia from the earliest times to the beginning of the 20th century. (E)

3373. Revolutionary Russia, 1894 to 1924 (3:3:0). Studies the decline of Tsarist Russia, growth of a revolutionary movement, and events and consequences of the Revolutions of 1905 and 1917 and the Civil War. (E)

3374. History of Soviet and Post-Soviet Russia (3:3:0). Russian history from the revolutions of 1917 to the present, emphasizing the Soviet state's internal development, role in international relations, and collapse. (E)

3381. Colonial Latin America (3:3:0). General introduction to the formation of Latin American civilization, including the Indian empires, voyages of discovery, conquest, extraction of treasure, pirates, and royal administration. (AAL)

3382. Modern Latin America (3:3:0). Survey of the principal events in Latin American history beginning with the independence movement and reaching into the contemporary scene. (AAL)

3384. History of Brazil (3:3:0). Brazil from preconquest times down to the present with emphasis on unique characteristics of Brazilian culture in the context of world history. (AAL)

3389. The British Empire, 1783 to Present (3:3:0). Studies the growth of the British Empire in the 19th century and its later decline in the 20th century under the impact of war and nationalism. (AAL)

3390. The History of Exploration (3:3:0). Studies the history of exploration since the 15th century and the interrelationship between exploration and development of European and non-European societies. (AAL)

3394. Religion, Family, and the State in Asia (3:3:0). Surveys the main religious traditions of Asia and modern transformations; explores traditional and modern notions of family; examines changing political patterns. (AAL)

3395. Africa: Empires and Civilizations (3:3:0). A survey of the development of Africa's civilizations and cultures from ancient Egypt to the West African trading states of the 18th century. (AAL)

3396. Africa: Revolution and Nationalism Since 1800 (3:3:0). Surveys the colonial impact on African political, social, and economic life; the rise of African nationalism; and the creation of new nations. (AAL)

3398. The Modern Middle East, 1800 to the Present (3:3:0). The history of the Middle East from ca. 1800 to the rise of Arab and other nation-states and the coups and revolutions of recent decades. (AAL)

3399. Readings in History (3:3:0). Prerequisite: Junior standing and consent of instructor. An independent study course involving in-depth reading. May be repeated for credit.

4303. Great Leaders of the New Nation, 1800-1850 (3:3:0). Prerequisite: Junior standing or consent of instructor. Biographical treatments of the outstanding men and women who contributed importantly to American development between 1800 and 1850. (US)

4304. Civil War and Reconstruction, 1850-1877 (3:3:0). Prerequisite: Junior standing or consent of instructor. Explores the causes of the Civil War; the military, political, economic, and social aspects of the war; and the issues and results of Reconstruction. (US)

4305. Rise of Modern America, 1877-1919 (3:3:0). Prerequisite: Junior standing or consent of instructor. Focuses on the economic, social, political, and military impact of the transformation of the United States into an urban, industrial nation. (US)

4306. Roaring Twenties, Depression, and War, 1920-1945 (3:3:0). Prerequisite: Junior standing or consent of instructor. Examines political, social, economic, and military developments in the United States during the 1920s, the Great Depression, the New Deal, and World War II. (US)

4307. The United States, 1945 to the Present (3:3:0). Prerequisite: Junior standing or consent of instructor. The study of American society from the Second World War through the 1970s, including political developments, wars, and cultural conflicts. (US)

4308. United States Urban and Immigration History (3:3:0). Prerequisite: Junior standing or consent of instructor. Explores the economic and political issues surrounding U.S. urban and immigration policy and how these policies affected the lives of "ordinary" men and women. (US)

4309. United States and the Cold War (3:3:0). Prerequisite: Junior standing or consent of instructor. Examines the causes, course, and consequences of the Cold War between the U.S. and the Soviet Union. (US)

4311. The Nuclear Age (3:3:0). Prerequisite: Junior standing or consent of instructor. Examines the historical development of nuclear weaponry and power and their impact on 20th century American politics, society, and culture. (US)

4318. 20th Century Rural America (3:3:0). Prerequisite: Junior standing or consent of instructor. Surveys the significance of change in the countryside, the village, and the small town in 20th century America. (US)

4323. Nature and Americans (3:3:0). Prerequisite: Junior standing or consent of instructor. History of the relationship between Americans and their land from prehistory to the present. (US)

4324. Courts and Capitalism (3:3:0). Prerequisite: Junior standing or consent of instructor. Examines relationship between law and economic development from the writing of the Constitution through the regulatory state. Considers court decisions and changing meaning of property rights. (US)

4325. Major Issues in U.S. Women's History (3:3:0). Prerequisite: Junior standing or consent of instructor. Prerequisite: HIST 2300 and 2301, or 3323. In-depth study of the evolution of gender roles, women in literature, the suffrage movement, and modern feminism. (US) (W S 4325)

4326. A History of Sexuality in the United States (3:3:0). Prerequisite: Junior standing or consent of instructor. Examines the history of sexuality in the United States. Themes and topics include relations of power, sexual identities, commercialization of sex, courtship, marriage, and reproduction. (US)

4327. Gender, Race, and Class in United States Law (3:3:0). Prerequisite: Junior standing or consent of instructor. Examines law's treatment of gender, race, and class; legal impact of struggles of women, African-Americans, and workers; meaning of liberty, citizenship, public/private spheres. (US) (W S 4327)

4328. Citizenship, War, and Dissent (3:3:0). Prerequisite: Junior standing or consent of instructor. Examines evolution of citizenship and the Bill of Rights through the study of political trials and Supreme Court decisions during periods of war and domestic conflict. (US)

4337. History of American Seapower (3:3:0). Prerequisite: Junior standing or consent of instructor. Examines history of the American Navy, organizational and technological development, evolution of strategic planning, and impact on foreign relations. (US)

4339. Economic History of the United States Since 1865 (3:3:0). Prerequisite: Junior standing or consent of instructor. Rise of an urban, industrial economy in America from the Civil War to the present. Origins of big business, unions, Great Depression, and government regulation. (US)

4341. Ancient Greece (3:3:0). Prerequisite: Junior standing or consent of instructor. From the origins of classical Greek civilization to the Roman conquest. Tyranny and democracy, imperialism, the Hellenistic age. (E)

4342. Ancient Rome (3:3:0). Prerequisite: Junior standing or consent of instructor. Imperialism and its consequences from the early Republic through the partial collapse of the Empire in the 5th century A.D.; Christianity and the Empire. (E)

4343. Alexander the Great (3:3:0). This course is a detailed study of the rise of ancient Macedonia, the reign of Alexander the Great, and the Hellenistic world. (E)

4344. The History of Early Rome (3:3:0). This course is a detailed study of the numerous problems surrounding the history of Rome's early institution and conquest of Italy. (E)

4347. History of the Medieval Church (3:3:0). Prerequisite: Junior standing or consent of instructor. Origins of the Roman Church, the papacy, monasticism, scholastic and mystical theology, church-state relations, and the decline of medieval Christendom. (E)

4348. The Renaissance (3:3:0). Prerequisite: Junior standing or consent of instructor. Cultural and political history of Italy, France, and England from 1300-1600; the "rebirth" of wisdom through art, architecture, literature, music, economics, and religion. (E)

4349. The Protestant Reformation (3:3:0). Prerequisite: Junior standing or consent of instructor. Europe from 1517 to 1648. Religious revolt and the establishment of Protestantism; the age of religious wars; attempts at religious peace. (E)

4350. European Urban History 1300 to 1800 (3:3:0). This course will explore social, economic, political, and cultural structures of Western European cities from the 14th to the 18th century. (E)

4353. The French Revolution and Napoleon (3:3:0). Prerequisite: Junior standing or consent of instructor. The Old Regime and the Enlightenment. The Revolution and its drama, ideas, events, personalities, and complexities. Napoleon: heir, paladin, or liquidator of the Revolution? (E)

4355. Let's Talk Women; Let's Talk War: Women and Conflict in 20th Century Europe (3:3:0). Prerequisite: Junior standing or consent of instructor. The course will examine the involvement and reactions of European women to situations of war and revolution in the 20th century. (E)

4358. The Habsburg Monarchy in Grandeur and Decline (3:3:0). Prerequisite: Junior standing or consent of instructor. History of this multinational dynastic state and its legacies in East Central Europe. (E)

4360. Germany Since 1945: A Divided Nation Confronts Its Past (3:3:0). A comparative study of capitalism and communism in West and East Germany emphasizing problems of national unity and efforts to atone for Nazi crimes.

4363. Emergence of New Nations in Latin America (3:3:0). Prerequisite: Junior standing or consent of instructor. This 19th century course covers the formation of political systems, challenges to social stability, abolition of slavery, and relationship to North Atlantic world. (AAL)

4373. Tudor-Stuart England, 1450-1688 (3:3:0). Prerequisite: Junior standing or consent of instructor. This course deals with enormous and seminal changes—religious, political, constitutional, intellectual, and geographical—that took place in England from 1450 to 1688. (E)

4374. Love, Death, and Magic in Europe, 1500-1800 (3:3:0). Prerequisite: Junior standing or consent of instructor. Topics in social and cultural history. Underside of civilization, population, social structure, family and household, economic growth, and crisis. Attitudes toward love and death, popular religion and culture, witchcraft, violence, revolt. (E) (W S 4374)

4375. Social and Cultural History of Europe, 1800 to the Present (3:3:0). Prerequisite: Junior standing or consent of instructor. Modernization, industrialization, urbanization, gender, household, new professions, old occupations, and labor unrest. Bourgeois and working-class culture, avant-garde and masses, war, genocide, Europe today. (E)

4376. History of the Italian Mafia (3:3:0). This course discusses the origins and development of the Mafia in the context of Italian politics, economy, and society in the 19th and 20th centuries. (E)

4377. Twentieth Century Britain in Film (3:3:0). Prerequisite: Junior standing or consent of instructor. Examines the history of Britain and British entities in the 20th century through the study of film. (E)

4381. Colonial Mexico and the Spanish Borderlands (3:3:0). Prerequisite: Junior standing or consent of instructor. Study of the Spanish conquest of Mexico and the evolution of the Spanish Empire in North America until Mexican independence in 1821. (AAL)

4391. Modern South Africa (3:3:0). Prerequisite: Junior standing or consent of instructor. Description and analysis of the social, economic, and political development of South African society, focusing on the struggle against apartheid. (AAL)

4393. Modern China (3:3:0). Prerequisite: Junior standing or consent of instructor. Chinese history from late Ming and early Qing period (17th century) until contemporary times. Emphasis on social, cultural, and political history. (AAL)

4394. Modern Japan (3:3:0). Prerequisite: Junior standing or consent of instructor. Social, cultural, political, and economic history of Japan (17th to 20th century). Focus on merchant culture, Tokugawa times, civic training of Meiji period, militarism, postwar period. (AAL)

4395. Modern Vietnam (3:3:0). Prerequisite: Junior standing or consent of instructor. Covers the social, political, and cultural history of Vietnam, beginning with the emergence of frontier society in the 16th century and concluding with the Vietnamese diaspora. (AAL)

4397. Readings and Research in History (3:3:0). Prerequisite: Senior standing and consent of instructor. An independent study course involving in-depth reading and intensive historical writing. May be repeated for credit. [HIST 2341]

4398. Senior Seminar in History (3:3:0). Prerequisite: Senior standing or completion of 18 hours in history. Required of history majors. An intensive study in historical methodology, document analysis, retrieval and collection of data, and synthesis into well-written history. May be repeated once for credit.

School of Mass Communications

Director: Professor Jerry C. Hudson

Professor Harp, ***Associate Professors*** Carveth, Dean, Oskam, Parkinson, Reeves, Saathoff, Thornhill, and Watts; ***Assistant Professors*** Bichard, Callison, Chambers, Johnson, Patwardhan, and Youngblood; ***Lecturers*** Marez, McVay, and Todd; ***Instructors*** M. Wernsman and R. Wernsman.

This school supervises the following degree programs: JOURNALISM, ADVERTISING, TELECOMMUNICATIONS, PHOTOCOMMUNICATIONS, and PUBLIC RELATIONS, *Bachelor of Arts*; MASS COMMUNICATIONS, *Master of Arts*.

The School of Mass Communications is accredited by the Accrediting Council on Education in Journalism and Mass Communications (ACEJMC). The school operates under the general policy of the ACEJMC, which requires students to take a minimum of 90 semester hours in courses outside the major area of journalism and mass communications, with no fewer than 65 semester hours in the basic liberal arts and sciences.

To keep the curriculum abreast of trends and changes in mass communications and to broaden the education of majors by requiring core subjects such as mass communications law and theory, the minimum number of semester hours required by the school for the Bachelor of Arts degree has been set at 132 hours. The minimum number of hours that can be taken within the School of Mass Communications is 39-42.

Students enrolling in or transferring into the school for the first time will be designated as general mass communications students. First semester freshmen enrolling in the school must have scored 25 on the ACT or

1140 on the SAT1 and/or finished high school in the upper one-fourth of the graduating class. Lacking the requirements, first semester freshmen may be admitted into the school on a provisional basis. Continued enrollment would require a 2.5 cumulative GPA in the first 15 hours taken at Texas Tech. Freshmen enrolled in other departments and colleges at Texas Tech may transfer into the school after completing at least 15 semester hours, not including CLEP courses, with a minimum 2.0 cumulative GPA, including repeated courses.

All transfer students, whether from other disciplines at Texas Tech or other two-year and four-year colleges and universities, must have a cumulative 2.0 GPA to be admitted into Mass Communications. Continued enrollment would require a 2.5 cumulative GPA in the first 15 hours taken at Texas Tech as a mass communications major.

All transfer students will enter under the catalog in force at the time of transfer. Freshmen and transfer students must present ACT or SAT1 scores when entering the school. Transfer students must present transcripts for all courses previously completed. No more than 12 hours of Journalism or Mass Communications courses will be accepted in transfer.

The change from the general mass communications status, which is not a major, to a specific major will be accomplished after the following requirements are met:

1. Completed the ACT or SAT1 examination with scores submitted to the school.
2. Made at least a C in ENGL 0301 (if required), 1301, and 1302.
3. Completed the school's economics requirement with a grade or grades of C or better.
4. Completed the school's mathematics requirement with a grade or grades of C or better.
5. Completed the entry-level course in the major sequence with a grade of C or better. (The entry-level course in journalism is JOUR 2310; for advertising, ADV 2310; for public relations, P R 2310; for telecommunications, TELE 3310; for photocommunications, PHOT 2310.)
6. Students must pass the school's grammar, spelling, and punctuation exam.

Other general rules for all students, regardless of major, enrolling in mass communications courses are as follows:

1. The student, regardless of major, must have passed the prerequisite course with a grade of C or better when enrolling in an upper level course (3000 or above).
2. All adjunct courses required for any major-minor sequence must be passed with a grade of C or better and may not be taken pass-fail.
3. Students who make less than a C in a core course or a course required in a mass communications major-minor sequence must repeat and pass the course with a grade of C or better prior to graduation or prior to taking any course for which this course is a prerequisite.
4. All students must have a cumulative 2.5 GPA, including repeated courses, at the end of the semester before entering the second required course in the major-minor sequence.
5. The second required course in the major-minor sequence is JOUR 3312 for news-editorial journalism, JOUR 3314 for broadcast journalism, ADV 3312 for advertising, TELE 3340 for telecommunications, P R 3312 for public relations, and PHOT 3312 for photocommunications.
6. Students must pass the school's grammar, spelling, and punctuation exam prior to enrolling in the first writing course in the School of Mass Communications (JOUR 2310).
7. No course may be repeated for credit unless so designated.
8. No course required by the school may be taken pass-fail unless required by a mass communications major-minor sequence.
9. Prerequisites are governed by the catalog in effect at the time the course is taken.
10. Students in majors and sequences in the school must take the following core courses: MCOM 1300, 3300, 3320, and JOUR 2310.
11. Sophomore standing (at least 30 hours) is required for entry into 3000-level courses in the school if prerequisites are not stated.
12. Junior standing (at least 60 hours) is required for all 4000-level courses in the school if prerequisites are not stated.
13. All students in majors and sequences are required to select a minor outside the school and complete a minimum of 18 semester hours, at least 6 of which must be on the junior-senior (3000-4000) level.
14. Students enrolled in any major or sequence in the school must pass 12 hours of English courses without substitution for the final 3 hours.
15. Major or minor mass communications courses may not be taken by correspondence.
16. Students who register for a course for which they have not passed the prerequisite course with a grade of C or better will be dropped from the course.
17. School of Mass Communications courses used for a major may not be counted toward fulfilling the college's General Degree requirements.

Journalism Major. Students majoring in news-editorial (journalism) are required to complete 39-42 semester hours within the school, including the following courses: JOUR 2300, 2310, 3312, 3350, 3380, 3390, 4370, MCOM 1300 3300, 3320, and PHOT 2310. Also required are ECO 2305 or 2301 and 2302, and MATH 2300 or 2345.

Broadcast Journalism Sequence. Students in this sequence are enrolled as journalism majors and are required to complete 39-42 semester hours within the school, including the following courses: JOUR 2300, 2310, 3312, 3314, 4370, JOUR 3350 or TELE 3310, TELE 3350, 4380, 4390, MCOM 1300, 3300, and 3320. Also required are ECO 2305 or 2301 and 2302, and MATH 2300 or 2345.

Journalism Curriculum (Recommended)

News-Editorial Specialization

First Year	Second Year	Third Year	Fourth Year
MCOM 1300	JOUR 2310, 3312	MCOM 3300	JOUR 3380
JOUR 2300	ECO 2305 or 2301 and 2302	MCOM 3320	JOUR 4370
	MATH 2300 or 2345	Mass Comm. elect.	Mass Comm. elect.
	PHOT 2310	JOUR 3350	JOUR 3390

Broadcast Specialization

First Year	Second Year	Third Year	Fourth Year
MCOM 1300	JOUR 2310, 3312	JOUR 3314	JOUR 4370
JOUR 2300	TELE 3310 or JOUR 3350	MCOM 3300	TELE 4380, 4390
MATH 2300 or 2345	ECO 2305 or 2301 and 2302	TELE 3350	
		MCOM 3320	
		Mass Comm. elect.	

Advertising Major. Students majoring in advertising are required to complete 39-42 semester hours within the school, including the following courses: ADV 2310, 3312 3351, 3361, 4312, JOUR 2310, MCOM 1300, 3300, 3320, and 3380. Also required are ECO 2305 or 2301 and 2302, MATH 1330 and 1331, or 2300 or 2345, MKT 3350, 3352.

Advertising Curriculum (Recommended)

First Year	Second Year	Third Year	Fourth Year
MCOM 1300	JOUR 2310	ADV 3351, 3361	ADV 4312
ECO 2305 or 2301 and 2302	ADV 2310	MCOM 3320	Mass Comm. elect.
MATH 2300, or 1330 and 1331, or 2345	MCOM 3300	MCOM 3380	Mass Comm. elect.
	ADV 3312	MKT 3350	MKT 3352
		Mass Comm. elect.	

Telecommunications Major. Students majoring in telecommunications are required to complete 39-42 semester hours within the school, including the following courses: MCOM 1300, 3300, 3320; JOUR 2310; TELE 3310, 3300 3340, 4320; two courses from TELE 3360, 3370, 4370 or 4375; at least 6 hours from the telecommunications or electronic media and communications courses. Also required are ECO 2305 or 2301 and 2302; and MATH 2300 or 2345.

Telecommunications Curriculum (Recommended)

First Year	Second Year	Third Year	Fourth Year
MCOM 1300	TELE 3310	TELE 3340	TELE 4320
MATH 2300 or 2345	ECO 2305 or 2301 and 2302	MCOM 3320	EM&C or Tele. elect.
	JOUR 2310	MCOM 3300	EM&C or Tele. elect.
		TELE 3300	Mass Comm. elect.
		Tele. writing course	Tele. writing course

Photocommunications Major. Students majoring in photocommunications are required to complete 39-42 semester hours within the school, including the following courses: PHOT 2310, 3312, 3414, 4300, 4303; JOUR 2310; MCOM 1300, 2300, 3300 and 3320; and one

course from JOUR 3312, 3316, or 3317. Also required are ART 3319 or 3326, ECO 2305 or 2301 and 2302, and MATH 2300 or 2345.

Photocommunications Curriculum (Recommended)

First Year	Second Year	Third Year	Fourth Year
ECO 2305 or 2301 & 2302	PHOT 2310, 3312	PHOT 4300	PHOT 4303
MCOM 1300	MATH 2300 or 2345	MCOM 3300, 3320	PHOT 4300
MCOM 2300	JOUR 2310	JOUR 3312, 3316, or 3317	
	Mass Comm. elect.	Mass Comm. elect.	

Public Relations Major. Students majoring in public relations are required to complete 39-42 semester hours within the school, including the following courses: P R 2310, 3312, 4312; ADPR 3341; MCOM 1300, 3300, 3320, 3380; ADV 2310; and JOUR 2310. Also required are ECO 2305 or 2301 and 2302; MATH 1330 and 1331, or 2300 or 2345; MKT 3350, 3352; MGT 3370; and COMS 3358.

Public Relations Curriculum (Recommended)

First Year	Second Year	Third Year	Fourth Year
ECO 2305 or 2301 & 2302	ADV 2310	ADPR 3341	MKT 3352
MATH 2300, or 1330 and 1331,	P R 2310	MCOM 3320	MGT 3370
COMS 3358 or 2345	JOUR 2310	MKT 3350	P R 4312
Mass Comm. elect.	MCOM 3300		
MCOM 1300	Mass Comm. elect.		
MCOM 3380	P R 3312		
	Mass Comm. elect.		

Teacher Education. Students who want to teach journalism in secondary schools must complete a degree in journalism and take the necessary courses in the College of Education to be certified. Students should contact the Teacher Certification Office in the College of Education. The following courses constitute the required courses from the journalism secondary teaching field: JOUR 2300, 2310, 3312, 3350, 3380, 4370, 3390; PHOT 2310; MCOM 3300, 3320. Passing the grammar, spelling, and punctuation exam prior to enrolling in JOUR 2310 is required

Minors. Minor students are required to pass the school's grammar, spelling, and punctuation exam prior to enrolling in the first writing course in the School of Mass Communications (JOUR 2310). A minor consisting of a minimum of 21 semester hours, which must include 6 hours of junior and senior level courses, is available in journalism, advertising, telecommunications, photocommunications, public relations, and mass communications. At least 12 of the 21 hours must be taken in residence. Specific requirements include the following:

Mass Communications: MCOM 1300, 3300, 3320, and 12 hours from ADV 2310, TELE 3300, 3310, JOUR 2300, 2310, MCOM 2300, PHOT 2310, P R 2310.
Journalism: JOUR 2300, 2310, 3312, 3380, 4370, and 6 hours of electives from journalism courses.
Advertising: ADV 2310, 3312, 3351, 3361, 4312, JOUR 2310, MCOM 3380.
Telecommunications: TELE 3300, 3310, 3340, 4320; JOUR 2310; one course from TELE 3360, 3370, 4370, 4375; and 3 hours of electives from telecommunications or EM&C courses.
Photocommunications: PHOT 2310, 3312, 4303, 4300; MCOM 2300; and 6 hours of electives from JOUR 2300, P R 2310, TELE 3310, ADV 2310.
Public Relations: JOUR 2310, P R 2310, 3312, 4312, MCOM 3380, ADV 2310, ADPR 3341.

Mass Communications (MCOM)

1300. Introduction to Mass Communications (3:3:0). A broad survey of communications in modern life with particular emphasis on print media, broadcasting, advertising, and public relations. [COMM 1307]

2300. Visual Communications (3:3:0). An introduction to photographic techniques and visual design, including message interpretation, evaluation, recent trends, theories of visual perception, and use of images in media.

3300. Mass Media Theories and Society (3:3:0). Prerequisite: Sophomore standing. Theory-based exploration of the relationship between the mass media and society, such as aggression and television violence.

3320. Mass Communications Law (3:3:0). Prerequisite: Sophomore standing. A study of the legal problems facing journalists, broadcasters, and advertisers, including libel, privacy, regulation of radio-TV, ethics, and commercial speech.

3380. Mass Communications Research Methods (3:3:0). Prerequisite: Sophomore standing and MATH 2300 or 2345. Comprehensive overview of mass communications research focusing on planning, designing, conducting, analyzing, interpreting, and applying research to address communication issues and problems.

4000. Special Problems in Mass Communications (V1-3). Prerequisite: Consent of instructor. Individual research on approved problems or projects in mass communications areas. May be repeated for 3 hours credit.

Journalism (JOUR)

2300. Principles of Journalism (3:3:0). An overview of the broad field of journalism for journalism and nonjournalism majors. Extensive use of current literature as springboards for discussion of trends, movements, and principles of journalism.

2310. News Writing (3:2:3). Prerequisite: Students must have a 2.0 GPA, C or better in ENGL 0301 (if required), 1301, and 1302, sophomore standing, and pass the grammar, spelling, and punctuation exam. The evaluation of news; news gathering methods and problems; discussion and exercises in writing leads, organizing stories, overcoming grammatical and structural problems; control lab. (Writing Intensive) [COMM 2311]

3312. Reporting (3:2:3). Prerequisite: JOUR 2310, and a 2.5 cumulative GPA. Discussion and practice in interviewing; reporting; and writing various types of stories, including meetings, conventions, accidents, and other general news stories. (Writing Intensive)

3314. Broadcast Journalism (3:2:3). Prerequisite: JOUR 2310, interview with instructor and a 2.5 cumulative GPA. The study and practice of writing and editing news for radio and television. Emphasis on the principles, techniques, and forms of broadcast communication. (Writing Intensive)

3316. Magazine Writing (3:3:0). A study of the scope, influence, and responsibilities of the magazine as a cultural and social force. Survey of editorial problems; intensive writing practice and emphasis on marketing magazine articles. (Writing Intensive)

3317. Publication Design and Graphics (3:2:3). Prerequisite: ADV 3312 or JOUR 2310. Covers the contemporary design and production of mass media publications, including newsletters, annual reports, pamphlets, newspapers and magazines. Secondary emphasis on desktop publishing technologies. (Writing Intensive)

3350. History of American Journalism (3:3:0). Study of the development of journalism in America from its European roots to the present and its interrelation with society.

3380. Editing (3:2:3). Prerequisite: JOUR 2310, 3312. Advanced study of purposes and methods of preparing copy for media presentation, including headline writing and editing. Study and practice in print and online publishing.

3390. Internship in Journalism (3). Prerequisite: Junior or senior standing; JOUR 2310, 3312, plus recommendation of faculty member and internship coordinator. Minimum of 160 hours supervised employment in media or communications organization. Weekly reports, interviews, and term paper required. Must be taken pass-fail.

4300. Individual Study in Journalism (3). Prerequisite: Senior standing, 9 hours of journalism courses, and consent of instructor prior to registration.

4330. Public Opinion and Propaganda (3:3:0). The nature of public opinion and propaganda; the role of the press in its formation and how the press is influenced by public opinion.

4370. Advanced Reporting (3:2:3). Prerequisite: JOUR 2310, 3312. A course in the interrelation and writing of news on social, political, and economic topics. Emphasis on precision journalism and the use of online computer technologies to acquire and disseminate information, implementation through lab assignments.

4390. Journalism Practicum (3). Prerequisite: JOUR 2310, 3312, senior standing in mass communications areas, consent of instructor. A nonpaid supervised opportunity for the student to observe and analyze the methods, techniques, and creative processes of the media professional. Pass-fail.

Advertising (ADV)

2310. Principles of Advertising (3:3:0). Prerequisite: sophomore standing. An overview of the broad field of advertising. Acquaints students with the role of advertising in the American economy and social system and the procedures involved in planning advertising campaigns. [COMM 2327]

3312. Advertising Writing (3:2:3). Prerequisite: ADV 2310, JOUR 2310, and a 2.5 GPA. Principles and practice of writing for advertising. Includes writing for internal audiences as well as for various media to meet advertising goals to persuade and inform mass audiences. (Writing Intensive)

3351. Advertising Media Planning (3:3:0). Prerequisite: ADV 2310 and MATH 2300 or 1330 and 1331 or 2345 and a 2.5 cumulative GPA, or consent of instructor. A study of the various advertising media to provide students with a knowledge of the use of advertising media, methods of selection, and the skills and background required for media buying.

3361. Advertising Creative Strategy (3:2:3). Prerequisite: ADV 2310, 3312, or consent of instructor. Must be taken after or concurrently with ADV 3351. Analysis of the creative aspects of advertising; strategy, copy, layout, typography, and production. Provides practical application of how to plan and execute effective print and broadcast messages.

3390. Internship in Advertising (3). Prerequisite: Junior or senior standing; ADV 2310, 3312, 3351, or 3361, plus recommendation of faculty member and internship coordinator. Minimum of 160 hours supervised employment in media or communications organization. Weekly reports, interviews, and term paper required. Must be taken pass-fail.

4000. Special Projects in Integrated Communications In Advertising (V1-3). Prerequisite: Consent of instructor. A hands-on experience in developing and presenting an integrated communications campaign for a business problem or opportunity. May be repeated once for credit.

4300. Individual Study in Advertising (3). Prerequisite: Senior standing, 9 hours of advertising courses, and consent of instructor prior to registration. May be repeated for credit.

4304. Advanced Creative Strategy (3:3:0). Prerequisite: ADV 3361 and consent of advisor or instructor. Advanced formulation and techniques of creative strategy with emphasis on copywriting. Includes participation in local, state, regional, and/or national advertising competitions.

4312. Advertising Campaigns (3:2:3). Prerequisite: All required mass communications courses taken in final long semester. Introduction to advertising research; methods of message and media research techniques with special application to campaign planning. Basic principles and applications of advertising campaign planning, preparation, and presentation taught in a problem-solving mode. (Writing Intensive)

4313. International Advertising (3:3:0). A study of the practices and procedures of advertising on the international market.

Telecommunications (TELE)

3100. Telecommunications Activities (1:0:3). Prerequisite: Sophomore standing and consent of instructor. Laboratory in radio-television activities; limited to 3 hours for majors and minors, 1 hour for others. Must be taken pass-fail.

3300. Telecommunications Technologies and Society (3:3:0). Prerequisite: Sophomore standing. Current and emerging telecommunications technologies, their integration into modern society and impact on information transfer.

3310. Introduction to Telecommunications (3:3:0). Prerequisite: Sophomore standing. Basic instruction in the origin, history, development, regulation, and social responsibilities of broadcasting and cable communications. Examines new technology and telecommunications systems. [COMM 1335]

3320. Audio Production (3:2:3). Prerequisite: TELE 3310 or consent of instructor. Study of technology and theory of audio media. Opportunity to acquire experience planning and producing broadcast and nonbroadcast audio material. [COMM 2303]

3330. Studio Production for Electronic Media (3:2:3). Prerequisite: TELE 3310 or consent of instructor. A concentrated course in the theory and application of principles, procedures, and techniques of multi-camera studio production. [COMM 1136]

3340. Programming and Promotion for Electronic Media (3:3:0). Prerequisite: JOUR 2310, TELE 3310, MATH 2300 or 2345, and a 2.5 cumulative GPA. A comprehensive study of programming and promotion in the electronic media; covers audience analysis plus historical development and current programming practices and promotions.

3345. Analyzing Television (3:3:0). An introduction to scholarly media analysis that examines the economic, technological, cultural, and creative dimensions of American television.

3350. News Presentation for Electronic Media (3:2:3). Prerequisite: TELE 3310 or JOUR 3350 and JOUR 3314. A concentrated course in the theory and practice of news presentation and the responsibilities and opportunities of the news anchor and news reporter.

3360. Writing for Corporate Media (3:2:4). Prerequisite: TELE 3310, JOUR 2310, or consent of instructor. Development of principles and practice in writing for corporate media. Emphasis on slide-tape and video program research, proposals, budgets, treatments, and script writing.

3370. Writing for Electronic Media (3:2:3). Prerequisite: TELE 3310, JOUR 2310, or consent of instructor. A comprehensive study of the principles, procedures, design, and skill processes in writing informative, persuasive, and news and public affairs copy for electronic media programming.

3380. Advertising for Electronic Media (3:2:3). Prerequisite: ADV 3351 or TELE 3340. Study of the electronic media for persuasive promotion of ideas, goods, and services. Emphasis on principles employed in broadcast advertising budgets, sales promotions, and campaigns.

3390. Internship in Telecommunications (3). Prerequisite: Junior or senior standing; TELE 3310, 3320 for radio; TELE 3310, 3330 for television; JOUR 2310, TELE 3310, 3360 for corporate telecommunications; JOUR 2310, TELE 3310, 3340 for promotion; plus recommendation of faculty member and internship coordinator. Minimum of 160 hours supervised employment in media or communications organization. Weekly reports, interviews, and term paper required. Must be taken pass-fail.

4300. Senior Projects in Telecommunications (3). Prerequisite: Senior standing, 9 hours in area in which project is to be pursued, and consent of instructor prior to registration. May be repeated once for credit with different emphasis.

4320. Electronic Media Operations (3:3:0). Prerequisite: TELE 3340 and senior standing. An analytical study of the legal, economic, operational, sales, and policy factors of station organization and administration. Case studies and individual projects.

4360. Corporate Telecommunications (3:2:4). Telecommunications systems used by industry, business, medicine, education, and the military. Emphasis on video software development and trends in corporate communications. Evaluation of nonbroadcast video programs.

4370. Writing for Series Television (3:3:0). Prerequisite: TELE 3310 and JOUR 2310 or consent of instructor. A long-form intensive writing course. Provides an introduction to the basic skills, professional standards, and creative challenges of scriptwriting for series television. (Writing Intensive)

4375. Writing for Feature Films (3:3:0). Prerequisite: TELE 3310 and JOUR 2310 or consent of instructor. Provides an introduction to the basic skills, professional standards, and creative challenges of scriptwriting for feature films. (Writing Intensive)

4380. Features and Documentaries for Electronic Media (3:2:3). Prerequisite: JOUR 3314 or consent of instructor. Broadcast journalism techniques in writing and producing television features, documentaries, and related programming. Emphasis on pre- and post-production activities from research to final video editing. (Writing Intensive)

4390. Telecommunications Practicum (3). Prerequisite: TELE 3310, 3320 (radio), TELE 3310, 3330 (television), TELE 3310, 3360 (corporate telecommunication), JOUR 3314 (broadcast journalism), senior standing in mass communications areas only, and consent of instructor prior to registration. A nonpaid supervised study opportunity is provided for the student to observe and analyze the methods, techniques, and creative processes of the media professional. Must be taken pass-fail.

Photography (PHOT)

2310. Basic Photography (3:3:0). Prerequisite: Sophomore standing and at least a 2.0 overall GPA. Students need a 35 mm full-frame camera with manual controls. Course will cover the fundamentals of both traditional and digital photography. Outside shooting with image critiques will be required. [COMM 1318]

3312. Intermediate Photography (3:2:3). Prerequisite: PHOT 2310 and a 2.5 cumulative GPA. Study of the materials and processes of photography. Emphasis on print and negative quality, composition, and design elements.

3390. Internship in Photocommunications (3:3:0). Prerequisite: PHOT 2310 and 3312 plus recommendation of faculty member and internship coordinator. Professional work in mass media. Minimum of 160 hours of supervised employment in media or communications organization. Weekly reports and term paper required. Must be taken pass-fail.

3414. Photojournalism (4:2:4). Prerequisite: PHOT 3412. The history of photojournalism and its legal and ethical issues. Laboratory work will include different forms of editorial and newspaper photography.

4300. Special Problems in Photography (3). Prerequisite: PHOT 3312 or consent of instructor. Individual investigation into the areas of documentary news, photography, or advertising. Special section will be taught in senior portfolio required for photocommunications majors. May be repeated for credit.

4303. Color Photography (3:2:3). Prerequisite: PHOT 3312. Study of color negative film, transparencies, printing, filtration, and analysis. Laboratory work includes color printing, negative and transparency film processing.

Public Relations (P R)

2310. Principles of Public Relations (3:3:0). Prerequisite: Sophomore standing. A study of the policies and procedures of creating and maintaining goodwill among organizations' various publics. Examines the many aspects of public relations as a staff and management function.

3312. Public Relations Writing (3:2:3). Prerequisite: P R 2310, JOUR 2310, and a 2.5 cumulative GPA. An overview of the audience analysis, media analysis, and the logic and language skills needed to construct persuasive messages used in the public relations profession. (Writing Intensive)

3341. Public Relations Media (3:2:3). Prerequisite: P R 2310, 3312, ADV 2310, and MCOM 3309 and a 2.5 cumulative GPA. A study of the various avenues of communication available to public relations practitioners. Includes experience in producing the wide variety of communication vehicles employed by contemporary organizations. (Writing Intensive)

3390. Internship in Public Relations (3). Prerequisite: Junior or senior standing; JOUR 2310, P R 2310, 3312, plus recommendation of faculty member and internship coordinator. Minimum of 160 hours supervised employment in media or communications organization. Weekly reports, interviews, and term paper required. Must be taken pass-fail.

4000. Special Public Relations Project in Integrated Communication (V1-3). Prerequisite: Consent of instructor. A hands-on experience in developing and presenting a PR campaign for a business problem or opportunity. May be repeated once for credit.

4300. Individual Study in Public Relations (3). Prerequisite: Senior standing, 9 hours of public relations courses, and consent of instructor prior to registration.

4312. Public Relations Campaigns (3:2:3). Prerequisite: All required mass communication courses taken in the final long semester. Public relations campaign planning, preparation, and presentation in problem-solving mode. Setting objectives, executing research projects, preparation of public relations planning, messages, budgeting, creative media promotion evaluation.

Advertising-Public Relations (ADPR)

3341. Mass Communications Graphics and Production (3:2:3). Prerequisite: ADV 2310 and 3312, or P R 2310 and 3312. Design, composition, layout, typography and production applied to advertising and public relations; use of computer as a layout and design tool for visual communications.

4310. Advertising-Public Relations Administration (3:2:3). Prerequisite: MCOM 3380 and ADPR 3341 or ADV 3361. Case analysis research literature, presentations, special reports, examination of contemporary issues, functions, management, organizational issues, integrated communications problems. (Writing Intensive)

Electronic Media and Communications (EM&C)

3305. Multimedia Development (3:2:3). Prerequisite: ADV 2310, P R 2310, or TELE 3310 and JOUR 2310; for mass communications majors only. Provides students with the working knowledge required for multimedia production, including exposure to current software, design theory, and CD-ROM production.

3315. Principles of Digital Media Production (3:2:3). Provides students with the working knowledge required for basic production of digital graphics, video, and audio.

3335. Digital Imaging and Editing (3:2:3). Prerequisite: EM&C 3315. Introduction to the single video camera production process and audio, lighting, electronic graphics, and postproduction applications for creating and manipulating moving images for digital distribution.

4325. Media Economics (3:3:0). An analytical study of media economics ranging from the local market to the global marketplace, emphasizing case analyses of both traditional and emerging media industries.

Department of Mathematics and Statistics

Chair: Professor Lawrence Schovanec

Horn Professor and Alumni Association Distinguished Professor Martin; **Horn Professor** Ruymgaart; **Professors** E. Allen, L. Allen, Anderson, Barnard, Bennett, Chanda, Dayawansa, Duran, Gilliam, Gustafson, Harris, Lewis, Mansouri, Newman, Pearce, M. Shubov, V. Shubov, Smith, Strauss, Tarwater, Victory, and Yang; **Associate Professors** Ackleh, Byerly, Drager, Gornet, Kellogg, Lee, Seaquist, Sun, Wang, Weinberg, and White; **Assistant Professors** Gelca, Hadjicostas, Juan, Korchagin, Paige, Seshaiyer, Surles, Toda, Ventakaraman, and Williams; **Instructor** Temple.

This department supervises the following degree programs: MATHEMATICS, *Bachelor of Arts* or *Bachelor of Science*, *Master of Arts* or *Master of Science*, *Doctor of Philosophy*; STATISTICS, *Master of Science*. In addition, the department supervises programs leading to minors in mathematics and to teacher certification in mathematics at the elementary and secondary levels.

Flexibility of elective courses in mathematics is designed to allow the student to prepare to enter the industrial job market, graduate school or professional school, or a teaching career. Recent Tech mathematics graduates have been employed by companies in aerospace (N.A.S.A., defense), electronics (computers, telecommunications), engineering, finance (banks, brokerage, insurance), government (federal agencies, offices, laboratories), petroleum (geophysical, oil), and transportation (airlines, trucking). Some graduates have entered law school or medical school, while many have pursued graduate degrees at various universities.

The curricula leading to the Bachelor of Arts or Bachelor of Science degrees follow the general patterns described in the Arts and Sciences section of this catalog. Immediately upon declaring a major in mathematics, students should consult with the department's Director of Undergraduate Studies for the design and approval of their individual mathematics degree programs. A typical program includes proficiency in calculus at the level of MATH 2350, plus MATH 2360, 3354, 3360, 4350 and at least two of MATH 4343, 4351, 4354, and 4360. In addition, candidates for the B.A. degree must take at least 6 additional hours of approved electives in mathematics at the 3000 level and above, while candidates for the B.S. degree must take at least 12 additional hours of approved electives in mathematics at the 3000 level and above.

For a major in mathematics, a minimum of 30 to 39 hours of mathematics is required, depending on where the student can start in calculus and which degree the student seeks. Also, a student must have a grade of C or better in each mathematics course counted toward the degree.

Candidates for the B.S. degree must choose their minor from the following: atmospheric science, biology, botany, chemistry, chemical engineering, civil engineering, computer science, economics, electrical engineering, exercise and sport sciences, geosciences, industrial engineering, mechanical engineering, microbiology, petroleum engineering, physics, or zoology. A minor must include 18 semester hours in the minor department, 6 of which must be advanced. Courses counted for the minor must be approved by the minor department.

In addition to the minor, candidates for the B.S. degree must complete 8 hours of a laboratory science (biology, botany, chemistry, geosciences, microbiology, physical geography, physics, or zoology) outside their minor area.

The Department of Mathematics and Statistics also participates with the Department of Computer Science to offer a dual-degree program in mathematics and computer science. This is a five year program. See the Computer Science portion of the catalog for the curriculum, culminating in a B.S. degree with a major in mathematics and minor in computer science from the College of Arts and Sciences, and a B.S. degree in computer science from the College of Engineering. Students should consult with an academic advisor in each college and may declare either as their primary college.

A minor in mathematics requires 18 semester hours, at least 6 of which must be at the 3000 level or above and must be approved by the Director of Undergraduate Studies. The minor sequence is MATH 1351, 1352, 2350, and 2360 plus 6 semester hours of approved courses at the 3000 level or above. Students cannot receive minor credit for both MATH 3350 and 3354. Students must receive a grade of at least C in all courses counted toward a minor in mathematics.

For the minor and major in mathematics, at least one half of the upper level mathematics courses must be taken in the Department of Mathematics and Statistics at Texas Tech University. This residency requirement will be waived by the department only in very exceptional circumstances.

Teacher Education. The Department of Mathematics and Statistics cooperates with the College of Education in offering plans for teacher certification in mathematics at both the middle and secondary school levels. The student preparing to teach in the secondary school may select mathematics as a teaching field and complete the program for teacher certification in mathematics. The student should consult the Department of Mathematics and Statistics concerning teacher certification. A student must have a grade of C or better in each mathematics course counted toward middle or secondary education certification.

The courses offered in mathematics for students intending to prepare themselves for elementary teaching are MATH 1320, 2370, 2371, 3370, 3371, 4370, and 4371.

The minimum requirements for the teaching field in mathematics (option II) at the secondary level are:

- MATH 1351 and 1352 (See Guide for Initial Enrollment in Mathematics) and MATH 2350, 2360, 3430, and 4331
- One of MATH 2300, 3342, or 4342
- One of MATH 3354, 3360, or 4350

Mathematics Placement. Placement for students into entry-level mathematics courses (0301-2322) is based on either appropriate previous prerequisite collegiate mathematics credit or the results of the departmentally administered Mathematics Placement Examination (MPE). The MPE will be given on the first day of each summer orientation for students enrolling in the fall and during the open registration periods prior to each semester and term. Students without appropriate prerequisite collegiate mathematics credit will be placed into entry-level courses based on the results of the MPE. Students may retake the MPE if necessary. Students who have scored at least 610 on the SATM or at least 26 on the ACTM may enroll in any entry-level mathematics course independent of whether they have the appropriate previous prerequisite collegiate mathematics credit or the appropriate MPE score. However, they are encouraged to take the MPE during an orientation session to provide them with a current assessment of their mathematics skills for advisement purposes.

Students having 6 hours or less of basic mathematics requirements in their degree program may wish to satisfy the requirements by choosing from among these courses: MATH 1320, 1321, 1330, 1331, 1350, 1351, 1352, 2300.

The following list describes the mathematics courses most frequently taken by freshmen:

- MATH 0301 and 0302 are remedial courses and do not carry any degree credit. Students earning a grade of A or B in MATH 0302 will be eligible to enroll in MATH 1320, 1330, or 1550.
- MATH 1320—College Algebra
- MATH 1330—Introductory Mathematical Analysis
- MATH 1321—Trigonometry
- MATH 1350—Analytical Geometry
- MATH 1351—Calculus I
- MATH 1420—College Algebra with Review
- MATH 1430—Introductory Mathematical Analysis with Review
- MATH 1550—Precalculus

NOTE: Satisfactory score on the placement exam is required for entrance to all above courses. TASP students who have not passed the mathematics section of the TASP Test may not enroll in MATH 1320 or 1321 until they have successfully completed their prescribed program of TASP mathematics skills development. See course listings for descriptions and prerequisites for the courses listed above.

Mathematics (MATH)

0301. Essential Mathematics (3:3:0). A developmental course for students with weak preparation in fundamental mathematics, high school algebra, and geometry. MATH 0301 counts in the student's semester load and is recorded on the transcript, but the hours do not count as part of the minimum number of hours required for graduation in any degree program of the university. Grades are awarded for the semester, but they are not computed in the student's grade point average. This course counts for TASP math skills development provided the student has met with an advisor in the TASP Skills Development Office in 72 Holden Hall.

0302. Intermediate Algebra (3:3:0). Prerequisite: Score on the Mathematics Placement Examination of 2 or higher or a grade of B or better in MATH 0301. A developmental course for students with weak preparation in algebra or who need a review of high school algebra before enrolling in MATH 1320 or higher. MATH 0302 counts in the student's semester load and is recorded on the transcript, but the hours do not count as part of the minimum number of hours required for graduation in any degree program of the university. Grades are awarded for the semester, but they are not computed in the student's grade point average. This course counts for TASP math skills development provided the student has met with an advisor in the TASP Skills Development Office in 72 Holden Hall.

1300. Contemporary Mathematics (3:3:0). Prerequisite: Score on MPE of 3 or higher or a grade of B or better in MATH 0302. Quantitative literacy and problem solving with applications to finance, population dynamics, politics, and business.

1320. College Algebra (3:3:0). Prerequisite: Score on the mathematics placement examination of 3 or higher or a grade of B or better in MATH 0302. Inequalities; determinants; theory of equations; binomial theorem; progressions; mathematical induction. [MATH 1314]

1321. Trigonometry (3:3:0). Prerequisite: Score on the mathematics placement examination of 4 or higher MATH 1320, or a grade of A in MATH 0302. Trigonometric functions; radians; logarithms; solutions of triangles; identities; trigonometric equations; complex numbers; De Moivre's Theorem. [MATH 1316]

1330, 1331. Introductory Mathematical Analysis (3:3:0 each). Prerequisite-1330: Score on the mathematics placement examination of 3 or higher or a grade of B or better in MATH 0302; prerequisite-1331: Score on the mathematics placement examination of 4 or higher or MATH 1330. MATH 1330 contains set theory; inequalities; equations, relations; functions; vectors; matrices; linear programming; probability; progressions; mathematics of finance. MATH 1331 contains differential, integral, and multivariable calculus. [MATH 1324,1325]

1350. Analytical Geometry (3:3:0). Prerequisite: Score on the mathematics placement examination of 6 or higher and knowledge of basic trigonometry or MATH 1320 and 1321. Fundamental concepts of analytical geometry. [MATH 1348, 2312]

1351. Calculus I (3:3:0). Score on the mathematics placement examination of 7, MATH 1350, 1550, or score on MPE of 5 and MATH 1321. Differentiation of algebraic and transcendental functions, applications of the derivative, differentials, indefinite integrals, definite integrals. (Honors section offered.) [MATH 2313]

1352. Calculus II (3:3:0). Prerequisite: MATH 1351 or consent. Methods of integration, parametric equations, polar coordinates, hyperbolic functions, applications. (Honors section offered.) [MATH 2314]

1420. College Algebra With Review (4:3:2). Prerequisite: MPE code 2 or higher or grade of B in MATH 0301. Review of topics from high school algebra, inequalities, functions and graphs, linear systems, sequences, mathematics induction. Cannot receive credit for both 1320 and 1420.

1430. Introductory Mathematical Analysis With Review (4:3:2). Prerequisite: MPE code 2 or higher or a grade of B in MATH 0301. Review of topics from high school algebra, set theory, inequalities, equations, relations, functions, vectors, matrices, linear programming, probability, progression, mathematics of finance. Cannot receive credit for both 1330 and 1430.

1550. Precalculus (5:5:0). Prerequisite: Score on the MPE of 3 or higher. Topics from college algebra, trigonometry, and analytical geometry that are necessary prerequisites for calculus I.

2300. Statistical Methods (3:3:0). Prerequisite: Score on MPE of 4 or higher or MATH 1320 or equivalent. Methods of analyzing data; statistical concepts and models; estimation; tests of significance; introduction to analysis of variance, linear regression, and correlation. [MATH 1342]

2322. Analytical Geometry and Calculus for Engineering Technology I (3:3:0). Prerequisite: Score on MPE of 6 or higher or MATH 1320 and 1321. This course is intended for students of engineering technology. It covers selected topics in analytical geometry and stresses the geometric and physical aspects of calculus.

2323. Calculus for Engineering Technology II (3:3:0). Prerequisite: MATH 2322. This course is a continuation of MATH 2322.

2345. Introduction to Statistics with Application to Business (3:3:0). Prerequisite: At least a C in MATH 1331. Statistics and probability for business. Data collection, description, interpretation, prediction, inference, and computer software.

2350. Calculus III (3:3:0). Prerequisite: MATH 1352. Partial differentiation; functions of several variables; multiple integrals, line integrals, surface integrals, Stokes Theorem. (Honors section offered.) [MATH 2315]

2360. Linear Algebra (3:3:0). Prerequisite: MATH 1352. Finite-dimensional vector spaces; linear transformations and matrices; eigenvalues and eigenvectors. [MATH 2318]

2370. Elementary Analysis I (3:3:0). Prerequisite: MATH 1320, and sophomore standing. Analytic geometry and the real number system with applications. Not for engineering, science, or mathematics majors.

2371. Elementary Analysis II (3:3:0). Prerequisite: MATH 1350 or 2370. Elementary differential and integral calculus with application. Not for engineering, science, or mathematics majors.

3322. Higher Mathematics for Engineering Technology (3:3:0). Prerequisite: MATH 2323. Topics include differential equations, Laplace transform, Fourier series, and vector and matrix algebra.

3342. Mathematical Statistics for Engineers and Scientists (3:3:0). Prerequisite: MATH 2350. Descriptive statistics; elementary probability; random variables and distributions; mean; variance; parameter estimation; hypothesis testing; regression; analysis of variance. MATH 3342 and 4332 cannot both be counted toward a mathematics major or minor.

3350. Higher Mathematics for Engineers and Scientists I (3:3:0). Prerequisite: MATH 2350 or concurrent registration with departmental consent. Ordinary differential equations. Laplace transforms. Other selected topics.

3351. Higher Mathematics for Engineers and Scientists II (3:3:0). Prerequisite: MATH 3350 or 3354. Partial differential equations and numerical methods. MATH 3351 and 4354 cannot both be counted toward a mathematics major or minor.

3354. Differential Equations I (3:3:0). Prerequisite: MATH 2350 and 2360. Solutions of ordinary differential equations; geometric and physical applications. MATH 3350 and 3354 may not both be counted toward a mathematics major or minor.

3360. Foundations of Algebra I (3:3:0). Prerequisite: MATH 2360. Fundamental concepts of abstract algebra. Primarily group theory. (Writing Intensive)

3370. Elementary Geometry (3:3:0). Prerequisite: MATH 2370 and junior standing. Congruence and measures of plane and solid figures; similarity; areas; volumes; and a brief introduction to concepts in probability and statistics.

3371. Elements of Finite Mathematics (3:3:0). Prerequisite: MATH 1331, 1351, or 2371. Combinatorics, probability theory. Bayes' Theorem, Bernoulli Trials. Probability distributions and statistics. Not for engineering, science, or mathematics majors.

3430. Computational Techniques for Science and Mathematics (4:3:2). Prerequisite: MATH 2360. Emphasis on scientific computing and problem solving techniques using state-of-the-art mathematics software packages. Restricted to mathematics majors or students enrolled in a secondary mathematics teacher program.

4000. Selected Topics (V1-3). Prerequisite: Consent of undergraduate program director. Selected topics in upper division mathematics. May be repeated for credit.

4310. Introduction to Numerical Analysis I (3:3:0). Prerequisite: MATH 3350 or 3354, including an elementary knowledge of programming or consent of instructor. Interpolation, approximations, numerical integration, and differentiation.

4312. Introduction to Numerical Analysis II (3:3:0). Prerequisite: MATH 2360, including an elementary knowledge of programming or consent of instructor. Numerical techniques in linear algebra.

4330. Mathematical Computing (3:3:0). Prerequisite: Consent of the Director of Undergraduate Programs, Department of Mathematics and Statistics. Topics from computer literacy and programming.

4331. Advanced Geometry (3:3:0). Prerequisite: MATH 2350 and 2360. Euclidean and non-Euclidean geometries.

4342, 4343. Mathematical Statistics (3:3:0 each). Prerequisite: MATH 2350. Frequency functions, moments, probability, correlation and regression, testing

hypotheses, small sample distributions, analysis of variance, nonparametric methods, sequential analysis. 4342 is prerequisite for 4343. MATH 3342 and 4342 cannot both be counted toward a mathematics major or minor.

4350, 4351. Advanced Calculus (3:3:0 each). Prerequisite: MATH 2360 (MATH 3360 recommended). Sets, functions, vector fields, partial derivatives, power series, theory of integration, line, surface, and multiple integrals. 4350 is prerequisite for 4351. (4350 Writing Intensive)

4354. Differential Equations II (3:3:0). Prerequisite: MATH 3354. Partial differential equations and boundary value problems. MATH 4354 and 3351 cannot be counted toward a mathematics major or minor.

4356. Elementary Functions of Complex Variables (3:3:0). Prerequisite: MATH 2360 (MATH 4350 is recommended). The complex number system; functions of a complex variable; differentiation; elementary functions; and contour integration.

4360. Foundations of Algebra II (3:3:0). Prerequisite: MATH 3360. Continuation of MATH 3360. Rings, fields, and applications.

4362. Theory of Numbers (3:3:0). Prerequisite: MATH 2360 (MATH 3360 is recommended). Prime numbers; congruencies; theorems of Fermat, Euler, and Wilson; residues; reciprocity law; Diophantine Equations.

4370. Elementary Problem Solving (3:3:0). Prerequisite: MATH 2371, or equivalent. Techniques of problem solving using elementary number theory.

4371. Basic Computer Literacy and Programming (3:3:0). Prerequisite: MATH 2371 or equivalent. Computer literacy, structured programming, and problem solving using elementary number theory. (For students seeking elementary school certification as mathematics specialists.)

Department of Philosophy

Chair: Professor Frederick Suppe

Professors Averill and Curzer; ***Associate Professors*** Nathan and Schaller; ***Assistant Professors*** Meskin, Rupert, Sowaal, and Webb; ***Visiting Faculty*** Kim and Newhard; ***Emeritus Faculty*** Ransdell.

This department supervises the following degree programs: PHILOSOPHY, *Bachelor of Arts, Master of Arts.* The department also participates in the Honors College natural history and humanities major and minors in humanities and women's studies at the undergraduate level and the doctoral program in fine arts at the graduate level.

Education in philosophy develops abilities in critical thinking, increases understanding of normative issues, provides a unique interdisciplinary perspective on man in the universe, gives opportunities for critically examining methods of inquiry, yields a grasp of the development of human ideas in a cross-cultural perspective, and effectively increases one's ability to understand others and communicate with others. Philosophy majors may qualify for graduate work in philosophy in preparation for college or university teaching careers, but a major in philosophy is also recognized by many professional schools and employers as a fine preparation because students of philosophy are able to think for themselves in a critical and objective manner.

Evidence that a philosophy education has broad application to various fields can be seen in the remarkable performance of majors on admission to professional schools. Over recent years, they have scored higher on average than business majors on admissions tests to business schools (GMAT), higher than any other humanities or social science areas on the graduate record examinations (GRE), and third out of thirty disciplines on the law school admission test (LSAT). Additionally, philosophy majors have been more likely than almost all other majors to gain admission to medical schools. No other undergraduate discipline can match such a record of achievement across the entire range of professional and graduate schools.

The Philosophy Department brings distinguished guest speakers from around the world for public lectures, classroom discussions, and visits with philosophy majors and graduate students. These visits

provide a unique chance to talk informally about philosophical topics with world famous scholars.

Students majoring in philosophy must complete 30 hours in philosophy, including PHIL 2310, 2320, 3301, 3303, and either 4330 or 4340. Majors may not count PHIL 1310 toward fulfilling the 30-hour requirement, but they may substitute PHIL 4310 for the 2310 requirement. Minors are required to complete 18 hours in philosophy. For transfer students, at least 9 hours of the major or 6 hours of the minor must be completed in residency at Texas Tech. Philosophy students must receive at least a C in any philosophy course for it to count toward major or minor requirements.

Approximately a quarter of philosophy majors have majors between philosophy and other departments.

Philosophy (PHIL)

1310. Reasoning (3:3:0). Prerequisite: Freshman or sophomore standing. Basic methods of objective thinking. Considers elementary forms of reasoning, problem-solving techniques, and avoidance of common fallacies. Emphasis is upon developing skills in the practice of everyday logic. [ENGL 1313]

2300. Beginning Philosophy (3:3:0). An introduction to philosophical thinkers, ideas, and methods. [PHIL 1301]

2310. Logic (3:3:0). Development of formal methods for evaluating deductive reasoning. Additional topics may include uses of language, definition, nondeductive inference. [PHIL 2303]

2320. Introduction to Ethics (3:3:0). Discussion of problems and theories of morality. Includes the application of philosophical techniques to issues of contemporary moral concern. [PHIL 2306]

2350. World Religions and Philosophy (3:3:0). Philosophical study of the doctrines and practices of the major world religions, including Hinduism, Buddhism, Christianity, Judaism, and Islam.

3301. Classical Greek Philosophy (3:3:0). Study of the major philosophical ideas as originally developed in the Western world by thinkers such as Socrates, Plato, Aristotle, and others.

3302. Asian Philosophy (3:3:0). Study of the major philosophical ideas originating in India and China, and developed generally in Asia.

3303. Modern European Philosophy (1600-1800) (3:3:0). Study of the major philosophical ideas as they developed in Great Britain and on the European continent since the Renaissance. Considers, among others, Descartes, Hume, and Kant.

3304. Existentialism and Phenomenology (3:3:0). Consideration of the meaning of human existence through study of thinkers such as Neitzsche, Heidegger, Husserl, Merleau-Ponty, Sartre, and others.

3305. American Philosophy (3:3:0). An examination of philosophical thought in the United States from prerevolutionary times to the present through the works of thinkers such as Edwards, Jefferson, Peirce, and Dewey.

3320. Introduction to Political Philosophy (3:3:0). Basic issues and concepts in political philosophy, including discussion of such topics as justice, freedom, equality, authority, community, and the nature of politics and the state. (POLS 3331)

3321. Philosophy of Law (3:3:0). Discussion, based on study of philosophical writings, of various conceptions of law and their relation to morality. Includes philosophical problems about liberty, privacy, justice, and criminal punishment.

3322. Biomedical Ethics (3:3:0). Discussion of conceptual and moral problems surrounding such issues as abortion, euthanasia, genetic research, behavior control, allocation of medical resources, health, and disease.

3324. Philosophy of Religion (3:3:0). An examination of general philosophical problems that arise in connection with religion. Topics may include the nature of religion, the existence of God, the problem of evil, the relation between faith and reason, and the relation between religion and morality.

3325. Environmental Ethics (3:3:0). Discussion of conceptual and moral questions surrounding human population and consumption of resources, loss of biodiversity and wilderness areas, and human use of nonhuman animals.

3330. Philosophy of Science (3:3:0). Inquiry into the nature of science including the examination of basic scientific concepts and the forms of scientific reasoning.

3331. Philosophy of Social and Human Sciences (3:3:0). Study of selected approaches, concepts, and methods in the social and human sciences, especially as these are related to the question of the nature of man and of human society.

3332. Feminism and Philosophy (3:3:0). Discussion of issues involving women in moral, political, and legal philosophy,

including the ethic of care, sexual harassment and discrimination, gender neutrality, and meaning of equality.

3334. Philosophy of Biology (3:3:0). Study of the nature and scope of biological theories. Topics may include evolution and creation, natural selection and design, sociobiology, or genetic engineering.

3335. Philosophy of Technology (3:3:0). This course will give students a chance to reflect on ethical, epistemological, and ontological issues lying behind the production and use of technology.

3340. Minds, Brains, and Computers (3:3:0). Study of the nature of mental entities and how they fit into the causal structure of the world, with particular reference to recent developments in the cognitive sciences.

3341. Philosophy and Literature (3:3:0). Philosophical ideas in literature, including the nature of evil, free will, personal identity, the mind-body problem, and the philosophical status of literature.

3342. Philosophy and Film (3:3:1). Philosophical examination of issues raised by film, such as cinematic representation, realism, film genre, the power of cinema, and the interpretation of film. Required screenings.

4000. Philosophical Problems (V1-3). Prerequisite: Previous course work in philosophy and consent of instructor. Directed individual studies or conferences on selected advanced topics. May be repeated for credit.

4301. Seminar in Ancient Philosophy (3:3:0). Prerequisite: Previous philosophy course work or consent of instructor. In-depth study of one or two philosophical texts or themes from the ancient world. Topics vary.

4310. Advanced Logic (3:3:0). Prerequisite: PHIL 2310 or consent of instructor. Full treatment of sentential logic and first-order predicate logic. May also treat topics such as identity, definite descriptions, axiomatic systems, completeness.

4320. Ethics (3:3:0). Prerequisite: PHIL 2320 or consent of instructor. Advanced topics in ethical theory, with special emphasis on the meaning and justification of moral judgments, the possibility of ethical knowledge, and the nature of moral standards.

4321. Political Philosophy (3:3:0). Prerequisite: Previous courses in philosophy or consent of instructor. Study of contemporary writings in political philosophy. Discussion of selected philosophical issues concerning liberalism, conservatism, communitarianism, liberal neutrality, social choice theory, and political obligation.

4323. Aesthetics (3:3:0). Prerequisite: Previous course work in philosophy or consent of instructor. Discussion of the nature of art and the principles of aesthetic judgment. Emphasis on philosophical problems arising in interpretation and evaluation within the arts.

4330. Epistemology (3:3:0). Prerequisite: Previous course work in philosophy or consent of instructor. An examination of the nature and scope of knowledge, and the justification of various types of knowledge claims.

4331. Philosophy of Language (3:3:0). Prerequisite: Previous course work in philosophy or consent of instructor. General theory of significance, meaning, and interpretation.

4340. Metaphysics (3:3:0). Prerequisite: Previous course work in philosophy or consent of instructor. Consideration of the nature of what there is (ontology) or of the nature of the universe as a whole (cosmology).

4341. Great Figures in Philosophy (3:3:0). Prerequisite: Previous course work in philosophy or consent of instructor. In-depth study of the works of just one or two great philosophers.

Department of Physics

Chair: Professor Lynn L. Hatfield

Horn Professors Menzel and Estreicher; ***Bucy Professor*** Wigmans; ***Professors*** Borst, Cheng, Gangopadhyay, Holtz, Lichti, Lodhi, Myles, and Quade; ***Associate Professors*** Akchurin, Gibson, Glab, Huang, Lamp, and Papadimitriou; ***Assistant Professors*** Thacker and Wilhelm; ***Joint Professors*** Dallas, Kristiansen, Krompholtz, Quitevis, Poirier, and Temkin; ***Adjunct Faculty*** Guenther and Scully.

This department supervises the following degree programs: PHYSICS, *Bachelor of Science, Master of Science, Doctor of Philosophy.* The department also supervises an applied physics option leading to the M.S. and the Ph.D. degrees. The B.S.E.P. program in engineering physics is listed under the College of Engineering.

A typical sequence of courses in physics begins with: PHYS 1305, 1308 and 1105, 2301 and 1106, and 2402, for a total of 15

hours at the introductory level. These are followed by the intermediate and advanced sequences: PHYS 3204 (1 semester required, 2 semesters recommended), 3301, 3305, 3306, 4302, 4304, and 4307. It is recommended that students who intend to pursue graduate work in physics take courses in advanced topics such as Computational Physics (4301), Solid State Physics (4309), and Nuclear and Particle Physics (4312).

The required mathematics courses for physics majors are MATH 1351, 1352, 2350, 3350, and 3351. The sequence MATH 3354 and 4354 can be substituted for MATH 3350 and 3351. Students planning to pursue graduate work in physics should consult the physics advisor about which math courses to take.

In fulfilling degree requirements, majors in this department must have a grade-point average of 2.0 or better in physics courses, at least 37 hours of physics in which a grade of C or better was received, and meet the general requirements of the degree they are seeking (as described in this catalog). The minimum number of hours required for a degree in physics is 133. Credit for transferred physics hours will be handled by the departmental advisor on an individual basis.

Students are encouraged to devote time to undergraduate research. Research in the department includes atomic, molecular, and optical physics, condensed matter physics, nuclear physics, particle physics, and biophysics. Applied physics is pursued in fluorescence spectroscopy, forensic studies, pulsed power, semiconductor, materials, and surfaces.

A broad variety of minor subjects can be elected by a student majoring in physics. These include such traditional choices as mathematics, chemistry, and geophysics, but also other areas such as computer science, business, and electrical engineering. Students contemplating minors outside the College of Arts and Sciences should seek advice from the departmental advisor before beginning that minor.

A minor in physics requires 18 semester hours, at least 6 of which must be at the 3000 level or above and must be approved by the undergraduate advisor. The minor sequence is PHYS 1308, 1105, 2301, 1106, and 2402, plus 6 semester hours of approved courses at the 3000 level or above. Students must receive a grade of at least C in all courses counted toward a minor in Physics. The astronomy courses may not be used to satisfy requirements for the physics major or minor.

Students are encouraged to join The Society of Physics Students, which sponsors the “Physics Circus” and many other academic and social activities.

Physics Curriculum

FIRST YEAR

Fall		*Spring*	
PHYS 1305, Engr. Phys. Anal. I	3	PHYS 2301, Prin. of Phys. II	3
PHYS 1308, Prin. of Phys. I .	3	PHYS 1106, Prin. of Phys. II Lab.	1
PHYS 1105, Prin. of Phys. Lab. I	1	CHEM 1307, Prin. of Chem. I	3
MATH 1351, Calculus I	3	CHEM 1107, Prin. of Chem. I Lab.	1
ENGL 1301, Ess. Coll. Rhetoric	3	MATH 1352, Calculus II	3
*Health and Physical Fitness	1	ENGL 1302, Adv. Coll. Rhetoric	3
TOTAL	14	*Health and Physical Fitness	1
		TOTAL	15

SECOND YEAR

Fall		*Spring*	
PHYS 2402, Prin. of Phys. III	4	PHYS 3204, Intermed. Lab.	2
MATH 2350, Calculus III	3	MATH 3350, High. Math. Eng. & Sci.	3
CHEM 1308, Prin. of Chem. II	3	POLS 2302, Am. Pub. Pol.	3
CHEM 1108, Prin. Chem. II Lab.	1	**English	3
POLS 1301, Am. Govt.	3	Foreign Language	3
Foreign Lang.	3	Social or Behavioral Science	3
TOTAL	17	TOTAL	17

THIRD YEAR

Fall		*Spring*	
†PHYS 3305, Elect. & Magnet.	3	†† PHYS 3204, Intermed. Lab.	2
PHYS 3301, Optics	3	†PHYS 3306, Elect. & Magnet.	3
MATH 3351, High. Math. Eng. & Sci.	3	HIST 2301 Hist. of U. S. Since 1877	3
HIST 2300, Hist. of U. S. to 1877	3	Electives	6
Elective	3	TOTAL	14
**English	3		
TOTAL	18		

FOURTH YEAR

Fall		*Spring*	
PHYS 4307, Quant. Mechanics	3	†PHYS 4301, Comp. Phys.	3
Adv. Physics Elective	3	†PHYS 4302, Stat. and Therm.	3
+Adv. Electives	12	†PHYS 4304, Mechanics	3
TOTAL	18	COMS 2300	3
		+Adv. Electives	6
		TOTAL	18

*Select from Arts and Sciences General Degree requirements.
**See English requirements.
† Offered in alternating years. Check with undergraduate advisor.
†† Recommended.
+ Computer language and advanced physics courses recommended.

Teacher Education. Students seeking secondary certification to teach physics and other sciences should consult the undergraduate advisor in the Physics Department and the "Teacher Education" section of the catalog. For information on certification in physical or composite sciences, the College of Education should also be consulted.

Physics (PHYS)

1101. Experimental Elementary Physics (Laboratory) (1:0:2). Corequisite: PHYS 1303. Designed to introduce students to some experimental techniques and to complement the lecture course PHYS 1303. [PHYS 1105]

1103. Experimental General Physics I (Laboratory) (1:0:2). Corequisite: PHYS 1306. Introduces students to laboratory techniques and to complement the lecture course PHYS 1306. [PHYS 1101]

1104. Experimental General Physics II (Laboratory) (1:0:2). Prerequisite: PHYS 1103 and 1306; and corequisite: PHYS 1307. A continuation of PHYS 1103. [PHYS 1102]

1105. Principles of Physics I (Laboratory) (1:0:2). Corequisite: PHYS 1308. Introduces students to experimental techniques and complements PHYS 1308 lectures. (Honors section offered.) [PHYS 2125]

1106. Principles of Physics II (Laboratory) (1:0:2). Prerequisite: PHYS 1105 and 1308; corequisite: PHYS 2301. Continuation of PHYS 1105. (Honors section offered.) [PHYS 2126]

1303. Physics for Nonscience Majors (3:3:0). Corequisite: PHYS 1101. Course intended to acquaint students with the basic laws and vocabulary of physics. A minimum of mathematics is used. With laboratory PHYS 1101, this course counts toward fulfillment of the natural science requirement in Arts and Sciences. [PHYS 1305]

1304. Physics: Basic Ideas and Methods (3:3:0). Intended to provide physics background to pre-engineering students. Examines basic concepts in physics. Problem-solving techniques, graphical representations, and pertinent mathematics. [PHYS 1310]

1305. Engineering Physics Analysis I (3:3:0). The profession of engineering physics and its relation to energy, materials, resources, computers, communication, and control. Basic computer programming. Synthesis and analysis of typical engineering physics problems.

1306, 1307. General Physics (3:3:0 each). Prerequisite: MATH 1320 and 1321. Corequisite: PHYS 1103 with 1306 and PHYS 1104 with 1307. A noncalculus introductory physics course designed to provide students with a background for further study in science and related areas. Covers mechanics, heat, sound, electricity and magnetism, light, and modern physics. With laboratories PHYS 1103 and 1104, this course may be counted toward fulfillment of the natural science requirement in Arts and Science. [PHYS 1301, 1302]

1308. Principles of Physics I (3:3:0). Corequisite: MATH 1351 and PHYS 1105. Calculus-based introductory physics course. Mechanics, kinematics, energy, momentum, gravitation, waves, and thermodynamics. (Honors section offered.) [PHYS 2325]

1400. Fundamentals of Physics (4:3:3). Prerequisite: MATH 1320. Development of basic concepts of physics: Astronomy, motion, density, sound, electricity, magnetism, atoms, light, and radioactivity. Not for engineering, science, or mathematics majors.

1406. Physics of Sound and Music (4:3:3). A qualitative course designed to acquaint the student with the principles of physics used in the production of sound and music. A minimum of mathematics will be used. Some of the physical principles are exemplified in laboratory sessions. Satisfies natural science requirement in Arts and Sciences.

2301. Principles of Physics II (3:3:0). Prerequisite: PHYS 1308, 1105; corequisite: MATH 1352 and PHYS 1106. Calculus-based introductory physics. Electric and magnetic fields, electromagnetic waves, and optics. (Honors section offered.) [PHYS 2326]

2402. Principles of Physics III (4:3:3). Prerequisite: PHYS 2301, 1106. Study of atomic, molecular, and nuclear phenomena. Relativity, quantum effects, hydrogen atom, many electron atoms, and some molecular physics. Includes laboratory. [PHYS 2427]

3000. Undergraduate Research (V1-6). Individual and/or group research projects in basic or applied physics, under the guidance of a faculty member.

3204. Intermediate Laboratory (2:0:6). Prerequisite: PHYS 1308, 2301, 2402, with laboratories. Laboratory course on advanced physical principles, including experiments in optics, atomic, molecular, solid state, and nuclear physics. May be repeated for credit.

3301. Optics (3:2:3). Prerequisite: PHYS 1308, 2301. Geometrical and physical optics with emphasis on the latter. Waves, reflection, scattering, polarization, interference, diffraction, modern optics, and optical instrumentation.

3305, 3306. Electricity and Magnetism (3:3:0 each). Prerequisite: PHYS 2301. Maxwell's equations, electrostatics, dielectric materials. Magnetic fields and materials. Electromagnetic waves, radiation. Relativity.

4000. Independent Study (V1-4). Prerequisite: Approval of advisor. Study of advanced topics of current interest under direct supervision of a faculty member.

4301. Computational Physics (3:2:2). Prerequisite: PHYS 1308, 2301, 2402. Numerical modeling of physical systems. Data acquisition and analysis. Graphics for displaying complex results. Quadrature schemes, solution of equations. Use of microcomputers in assignments.

4302. Statistical and Thermal Physics (3:3:0). Prerequisite: PHYS 2402 and knowledge of differential equations. Introduction to statistical methods in physics. Formulation of thermodynamics and statistical mechanics from a unified viewpoint with applications from classical and quantum physics.

4304. Mechanics (3:3:0). Prerequisite: PHYS 1308, 2301, or equivalent, and differential equations. Dynamics of particles and extended bodies, both rigid and fluid, using Newtonian mechanics and the Euler-Lagrange equations from Hamilton's principle. Nonlinear systems and chaos with numerical modeling. Applications of the Navier Stokes equation.

4306. Senior Project (3). Prerequisite: Senior standing in physics or engineering physics. Individual research project under the guidance of a faculty member.

4307. Introduction to Quantum Mechanics (3:3:0). Prerequisite: MATH 3350. Experimental and conceptual bases. Dualism, uncertainty principle. Mathematical framework. Schroedinger equation, solutions. Hydrogen atom. Pauli principle, spin. Periodic table. Perturbation theory.

4309. Solid State Physics (3:3:0). Prerequisite: PHYS 3305 and knowledge of elementary quantum mechanics. The structural, thermal, electric, and magnetic properties of crystalline solids. Free electron theory of metals. Concept of energy bands and elementary semiconductor physics.

4312. Nuclear and Particle Physics (3:3:0). Prerequisite: PHYS 4307. Nuclear structure and nuclear models, radioactivity, alpha and beta decays, gamma transitions, nuclear reactions, nuclear energy, elementary particle classification, conservation laws, weak and strong interactions, symmetry.

Astronomy (ASTR)

The 8 hours in ASTR 1300, 1100, 1301, and 1101 meet the 8-semester-hour Arts and Sciences requirement in lab science.

1100. General Astronomy Laboratory I (1:0:2). Corequisite: ASTR 1300. Use of telescopes and other instruments such as cross-staff, quadrant, and spectroscope. Observation of the sun, planets and their moons, stars, nebulae, our galaxy, and other galaxies. [PHYS 1111]

1101. General Astronomy Laboratory II (1:0:2). Corequisite: ASTR 1301. Astronomic observations with instruments and telescopes. Stellar spectra, classification, and photometry. (Honors section offered.) [PHYS 1112]

1300. Solar System Astronomy (3:3:0). Corequisite: ASTR 1100. Structure of the solar system. Gravitation, light, and orbits of the solar system. Planets and their moons, asteroids, and comets. [PHYS 1311]

1301. Stellar Astronomy (3:3:0). Corequisite: ASTR 1101. Structure, models of the universe. Stellar evolution. Gravitation, light, orbits of the stars and galaxies. Endpoints of stellar evolution. (Honors section offered.) [PHYS 1312]

Department of Political Science

Chair: Professor Philip H. Marshall

Professors Cochran, Dometrius, Fox, Lee, and Mayer; ***Associate Professors*** Barkdull, Emmert, Khan, Saideman, and Van Wart; ***Assistant Professors*** Collins, Dicke, Gerber, Greene, Maestas, and Sieberg.

This department supervises the following degree programs: POLITICAL SCIENCE, *Bachelor of Arts, Master of Arts, Doctor of Philosophy;* and PUBLIC ADMINISTRATION, *Master of Public Administration* (NASPAA accredited). The department also participates in both the LATIN AMERICAN AND IBERIAN STUDIES program and the RUSSIAN LANGUAGE AND AREA STUDIES program leading to the *Bachelor of Arts* degree as well as in the urban studies, international studies, ethnic studies, women's studies, Asian area studies, and religion studies minor programs and the university Honors College.

The political science curriculum is designed to provide students with a solid foundation and broad understanding of the discipline of political science and allow them to specialize in areas of particular substantive interest. Students seeking an undergraduate degree in political science must complete 30 hours of course work within the department. Political science majors are required to take POLS 1301. POLS 2302 may be skipped if the student receives an A or B in POLS 1301. Majors may, however, elect to take and count POLS 2302 as part of their program. All majors are required to take POLS 3310 and one of the following: POLS 3341, 3351, 3323, or 3327. In addition, majors must take any two of the following (a, b, c): (a) POLS 3330, 3331, 3332, 3333 or 3334; (b) POLS 3361; (c) POLS 3371. At least 12 of the 30 hours required for a political science major must be taken in residence.

The requirement for a minor in political science is 18 hours, including POLS 1301 and 2302. Minors may skip POLS 2302 if they receive an A or B in POLS 1301. Political science minors are also required to take any two of the courses listed above (a, b, c). At least 6 of the 18 hours required for a political science minor must be taken in residence.

Political science provides excellent instruction for students interested in politics, law, journalism, teaching, or civil service. Insight into political values, domestic policy issues, and foreign policy are invaluable for students interested in such careers as well as for careers in business.

The Department of Political Science coordinates a special multidisciplinary program at the graduate level for students interested in local, state, or federal government careers. The course work is interdepartmental in nature and includes courses tailored to meet the student's career objectives. An integral part of the program is placement as an intern in a unit of government.

Under state law, all students who receive bachelor's degrees from Texas Tech must have received credit for 6 semester hours in political science, covering the federal and Texas constitutions. Students will normally fulfill this requirement by completing POLS 1301, which is a prerequisite for all upper division political science courses, and POLS 2302. A student who earns an A or B in POLS 1301 may substitute in place of POLS 2302 one of the upper level courses marked with an asterisk in the course list. Permission of the instructor may be required for such substitution.

Teacher Education. Students seeking certification to teach in the secondary schools of Texas may qualify for such certification by completing requirements for the Bachelor of Arts. Consult the political

science advisor and the College of Education for details.

Requirements and Prerequisites. POLS 1301 is a prerequisite for all upper division political science courses. A student must receive at least a C in courses in political science that apply to major, minor, or teaching field requirements.

Political Science (POLS)

1301. American Government, Organization (3:3:0). Constitutions and organization of the governments of the United States, the states in general, and Texas in particular. [GOVT 2301]

2302. American Public Policy (3:3:0). Completion of POLS 1301 not required but strongly recommended before enrolling in POLS 2302. The policy-making process in the governments of the United States, the states in general, and Texas in particular. [GOVT 2302]

3300. Selected Topics in Political Science (3:3:0). Topics of contemporary interest, varying from semester to semester. Consult the department for current topic. Open to all students. May be repeated for credit with changing topics.

3310. Introduction to Political Analysis (3:3:0). Survey of methods of and approaches to the study of politics and their underlying assumptions as they apply to the major concepts of the discipline.

***3321. Local Government (3:3:0).** Cities, counties, and special districts are studied in terms of organization, recruitment, and services such as policy, planning, and health; fiscal problems and their impact on citizens.

***3323. Legislation (3:3:0).** Factors involved in the framing and enactment of statutory law with emphasis upon the work of the Congress of the United States.

***3324. Urban Politics (3:3:0).** Governmental structures, politics, settings, and selected policy problems in urban areas of the United States.

***3325. Political Parties (3:3:0).** Party history, functions, organization, finance, nominations, campaign methods, and elections.

***3326. Women in Politics (3:3:0).** A study of female political participation in the United States, including voting, campaign activity, interest group activity, and office holding. (W S 3326)

***3327. The American Presidency (3:3:0).** The presidency, its constitutional basis, structure, powers, functions, and responsibilities.

3330. Ancient and Medieval Political Theory (3:3:0). Political ideas of the great thinkers in the Western world from the time of the Golden Age of Greece until the rise of modern political thought.

3331. Introduction to Political Philosophy (3:3:0). Basic issues and concepts in political philosophy, including discussion of such topics as justice, freedom, equality, authority, community, and the nature of politics and the state. (PHIL 3320)

3332. Modern Political Theory (3:3:0). Major political thinkers starting with Machiavelli and Hobbes and movements such as liberalism, conservatism, utilitarianism, socialism, and communism.

3333. Contemporary Political Theory (3:3:0). Political thought since World War II; liberalism, conservatism, socialism, communism, and existentialism are examined and criticized. Attention is given to the roots of contemporary thought in the 19th century.

***3334. American Political Theory (3:3:0).** Main currents in American political thought from colonial beginnings to the present day.

***3339. Religion and Politics (3:3:0).** Exploration of various aspects of the relationship between major world religions and politics, including questions of church and state.

***3340. Fiscal Administration (3:3:0).** Governmental budgeting and revenue raising, emphasizing theories, techniques, procedures, implementation, the political environment in which such activities take place, and possible alternatives to existing practices.

***3341. The Administrative Process (3:3:0).** A survey of the field of public administration. Principles of administrative organization; distribution of administrative functions together with the structure of government charged with the carrying out of public policy.

***3346. Public Policy Analysis (3:3:0).** The study of public policy formulation, implementation, and evaluation at various levels of government. Particular focus on health, social, and development policies. Attention to policy analysis skills and approaches used in government and consulting.

***3350. Criminal Process (3:3:0).** An introduction to the law and government in action when man and state are in conflict. Areas examined include the nature and rationale of punishment, legislative problems in defining criminal behavior, and judicial problems in adjudicating within the legislative framework.

***3351. The Judicial Process (3:3:0).** Analysis of the judicial process as part of the political process; judicial personnel and organization; sources and instruments of

judicial power; judicial reasoning and behavior; and impact of judicial activity.

***3352. Constitutional Law-Powers (3:3:0).** A case study of American constitutional law emphasizing constitutional bases of governmental power. Leading cases demonstrating the principles of separation of powers, judicial review, taxation, commerce, and implied powers.

***3353. Constitutional Law–Limitations (3:3:0).** Primarily a case study of American constitutional law emphasizing the constitutional limitations on government, with particular emphasis on personal, civil, and political liberties. The administrative process with particular emphasis on public law relating to the powers and procedures of administrative agencies having powers of adjudication and rule making.

***3360. United States Foreign Policy (3:3:0).** Examines the patterns and processes that shape U.S. foreign policy.

3361. International Politics (3:3:0). Introduction to global issues, actions and processes: north-south relations, post-cold war issues, the role of the state, and leading theories of international relations.

3362. Political Geography (3:3:0). Political geography is an interdisciplinary subject. Emphasizes the ways in which geography restricts or enhances political policies and activities.

3363. International Organization (3:3:0). A comparative study of the major organizations of the League of Nations and the United Nations; approaches to peaceful settlement of disputes, collective security, disarmament, regional organizations, and the future of world order.

3364. Comparative Foreign Policy (3:3:0). Surveys theories that connect domestic politics with foreign policy and applies them to a variety of countries.

3365. War and Security (3:3:0). Considers the basic problem in international relations; how to survive. How do countries attempt to secure themselves against foreign threats?

3366. International Political Economy (3:3:0). Explores interaction of politics and economics in trade, investment, finance, and development.

3368. Transnational Issues (3:3:0). Survey of current politics of human rights, migration, environment, and technological change.

3370. Politics of the Developing Areas (3:3:0). A broad introduction to the politics of developing areas, from the perspective of competing theories of development. Topics for consideration include the roles of revolution and violence, the military, ideology, parties, bureaucracies, and traditional leaders.

3371. Comparative Politics (3:3:0). The primary institutions (e.g., parties, groups, executives, legislatures) and processes (e.g., voting, instability) of politics as well as relevant social structures are viewed in various national settings. Questions of how and why to compare also are considered.

3372. Governments of Russia and the Commonwealth of Independent States (3:3:0). Examination of the politics, governments, and cultures of Russia and the republics of the former Soviet Union.

3373. Governments of Western Europe (3:3:0). Political culture, party systems, institutions, and behavior in selected countries of Western Europe. Primary attention paid to France, Germany, and Italy. Comparison between European and American political systems will be emphasized.

3374. Governments of Mexico and the Caribbean (3:3:0). Culture and constitutional development, ideologies, and functions of political parties and pressure groups in Mexico and selected countries of Central America and the Caribbean. Special attention will be given to problems of nationalism, revolution, and interaction with foreign powers and corporations.

3375. South American Governments (3:3:0). The government and politics of countries such as Argentina, Bolivia, Brazil, Chile, and Peru. Includes consideration of special problems such as land tenure and terrorism.

3376. Asian Governments and Politics (3:3:0). Political culture, party systems, political structure, policy-making, and foreign policy in selected Asian countries. Primary attention focused on Japan, China, and South Korea.

3378. Middle Eastern Governments and Politics (3:3:0). Major political institutions in the nations of the Middle East; the impact of Islam on the Ottoman Empire; nationalism, constitutionalism, parliaments, parties, and governments in Turkey, Egypt, Syria, Lebanon, Iraq, Jordan, Saudi Arabia, Iran, and Israel.

3379. British Government (3:3:0). Principles, policies, and politics of the government of Great Britain. Particular emphasis on political parties, governmental structure, and political behavior. Comparison with the United States and the Commonwealth. The impact of Britain on the development of democracy and parliamentary government.

4397. Practicum in Politics (3). Prerequisite: Consent of instructor. Practical experience integrated with academic study of politics through study programs or work

experience. Credit or no credit. (May be repeated once for credit.)

4399. Individual Studies (3). Prerequisite: 15 hours of political science and consent of instructor. Independent research under the guidance of a staff member. (May be repeated once for credit.)

Department of Psychology

Chair: Professor Ruth H. Maki

Horn Professor C. Hendrick; ***Professors*** Clopton, D. Cogan, R. Cogan, Durso, S. Hendrick, W. Maki, Marshall, McGlynn, Richards, and Winer; ***Associate Professors*** Cook, DeLucia, Epkins, Fireman, Harter, Mumma, Robitschek, and Taraban; ***Assistant Professors*** Bleckley, Borrego, Cohen, Desmond, Garos, Morgan, and Reich.

This department supervises the following degree programs: PSYCHOLOGY, *Bachelor of Arts, Master of Arts, Doctor of Philosophy.*

The advanced degree programs encompass a number of specialties within clinical, counseling, and experimental psychology. The clinical and counseling doctoral programs are fully accredited by the American Psychological Association. A combined B.A-M.A. degree is also offered. The B.A. is in Psychology and the M.A. is in Experimental Psychology with a specialization in Human Factors.

The undergraduate psychology curriculum is designed to provide a core of knowledge of the subject matter in experimental, theoretical, and applied psychology. Sufficient curricular flexibility is provided to permit a student to emphasize the acquisition of useful skills for later life, both vocational and personal; prepare for a graduate degree program in psychology or related fields; or both.

All undergraduate psychology majors must complete the following core program: PSY 1300, 3400, and 3401 or MATH 2300.

All majors must select at least one course from *each* of the following five areas:

1. Cognitive and Physiological Bases of Behavior: PSY 3317, 3327, 4323, or 4324;
2. Personality, Social, and Abnormal Bases of Behavior: PSY 3304, 3306, 3341, or 4305;
3. Developmental Bases of Behavior: PSY 3318, 4301, 4310, or 4330;
4. Applications: PSY 3334, 4320, 4321, 4326, 4327, 4334, 4342, 4343, or 4380;
5. Additional Topics in Psychology: PSY 2301, 2305, 3301, 3305, 3310, 4000, 4300, 4316, 4322, 4325, or 4336.

The required number of hours for the major is 34, including 2 writing intensive (WI) courses in psychology (PSY 3317, 3401, and 4336 are always WI; other courses are WI on a rotating basis). At least 21 hours of the total credits towards the major must be from 3000-4000 level courses. Transfer students who major in psychology must complete at least 9 credit hours in psychology at Texas Tech. **All psychology majors must have a minor**.

Students wishing to major in some field other than psychology but minor in psychology must complete at least 18 credit hours in psychology, including PSY 1300 and at least three courses numbered at the 3000 or 4000 level. Transfer students who minor in psychology must complete at least 6 credit hours in psychology at Texas Tech.

Teacher Education. See the "Teacher Education" section of this catalog and consult the College of Education for current teacher certification requirements.

Grades below C in psychology courses will not be acceptable for fulfilling major, minor, or teacher certification requirements.

Psychology majors and minors may take 6 credits of correspondence courses in psychology and have these credits count towards the major or minor *without* any permission from the department. These 6 credits can be taken at any point during completion of the bachelor's degree. However, taking *more* than 6 credits of correspondence course in psychology *will* require written permission from a psychology faculty advisor or the departmental chair.

In addition to offering regularly structured courses, the department provides opportu-

nities to participate in various research and service activities of faculty members. These are particularly valuable for the student who intends to pursue a career in psychology. Interested students should confer with an advisor or any of the faculty with whom they come into contact. Such activities may contribute to the completion of major and/or minor requirements through enrollment in PSY 4000 during the junior and senior years. Six hours of PSY 4000 may be counted toward the major and 12 hours may be counted toward the degree.

Psychology Curriculum

FIRST YEAR

Fall		*Spring*	
PSY 1300	3	ENGL 1302	3
ENGL 1301	3	*Oral Communication	3
MATH 1320 (or above)	3	American History	3
American History	3	Political Science	3
Political Science	3	Technology & Applied Science	3
TOTAL	15	TOTAL	15

SECOND YEAR

Fall		*Spring*	
Minor Elective	3	Foreign Language	5
Foreign Language	5	Minor Elective	3
Natural Science	4	Natural Science	4
MATH 2300	3	PSY-Group 2 (P)	3
†Health & Physical Fitness	1	Psychology Elective	3
TOTAL	16	TOTAL	18

THIRD YEAR

Fall		*Spring*	
Foreign Language	3	Foreign Language	3
**PSY 3401	4	Minor Elective	3
English Literature	3	English Literature	3
PSY-Group 3 (D)	3	PSY-Group 1 (C-P)	3
Minor Elective	3	††Humanities	3
TOTAL	16	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
Psychology Elective	3	Psychology Elective	3
PSY-Group 4 (App.)	3	Psychology Elective	3
PSY-Group 5 (Add.)	3	Minor Elective	3
Minor Elective	3	††Humanities	3
†Health & Physical Fitness	1	Fine Arts	3
Fine Arts	3	TOTAL	15
TOTAL	16		

*Choose from Core Curriculum requirements.
**PSY 3401 is always writing intensive. Another writing intensive psychology course is also required.
†Select from health and physical fitness section of the Arts and Sciences General Degree requirements.
††Some humanities classes will also count toward the multicultural requirement.

Psychology (PSY)

1300. General Psychology (3:3:0). Introduction to fundamental concepts in psychology. Emphasis on the physiological, social, and environmental determinants of behavior. (Honors section offered.) [PSYC 2301]

2301. Child Psychology (3:3:0). A study of the developmental processes and environmental factors that shape the personality and affect the achievement of the child. [PSYC 2308, 2315]

2305. Adolescent Psychology (3:3:0). A review of approaches to the understanding of the social behavior and development of the adolescent. Physical, mental, and emotional growth and adjustment are covered.

3301. An Introduction to the Psychology of the Arts (3:3:0). An introduction to various psychological perspectives on artistic production and appreciation.

3304. Introduction to Social Psychology (3:3:0). Prerequisite: PSY 1300. Study of individual experience and behavior in relation to social stimulus situations. Survey of experimental work and reports on current problems. [PSYC 2319]

3305. Stereotypes and Prejudice (3:3:0). Prerequisite: PSY 1300. Examines psychological processes contributing to the development and persistence of stereotypes and prejudice, and discusses strategies for promoting positive intergroup relations.

3306. Personality (3:3:0). Prerequisite: PSY 1300. Principles of normal personality structure. [PSYC 2316]

3310. Psychology and Religion (3:3:0). Prerequisite: PSY 1300. Examines historical perspectives on the psychology of religion, the experience of religion and spirituality from a psychological perspective, and the relations between psychology and religion.

3317. The Psychology of Learning (3:2:2). Prerequisite: PSY 2400. A critical survey of methods, results, and interpretations of human and animal studies of learning processes. The laboratory paradigms will highlight principles discussed in lecture.

3318. The Development of Children's Thinking (3:3:0). Prerequisite: PSY 1300. Considers cognitive development from infancy to adulthood with attention to topics such as spatial cognition, concepts and categories, problem-solving, and language.

3327. Introduction to Physiological Psychology (3:3:0). Prerequisite: PSY 1300. Introduction to neuroanatomy, electrophysiological measuring techniques, and the mechanisms of receptor and effector systems. A study of the relationships between behavior and the physiological substrate.

3334. Introduction to Professional Psychology (3:3:0). Prerequisite: PSY 1300. Introduction to current practices of clinical and counseling psychologists, including clinical, diagnostic, and intervention strategies. Survey of career opportunities, professional issues, and ethical problems.

3341. Close Relationships (3:3:0). Prerequisite: PSY 1300. Social psychology theory and research on topics in close relationship literature, including attitudes toward love and sexuality, friendship, intimacy, power, conflict, and divorce.

3400. Statistical Methods (4:3:2). Prerequisite: PSY 1300 or EPSY 3330. Introduction to descriptive and inferential statistics. Emphasis is placed on application to psychological research problems and an introduction to computer functions. [PSYC 2317]

3401. Research Methods (4:3:2). Prerequisite: PSY 1300. Survey of research methods in psychology. Emphasis on critical aspects of experimentation such as designing, conducting, and critiquing experiments, as well as interpreting and communicating results. (Writing Intensive)

4000. Individual Problems Course (V1-6). Prerequisite: PSY 1300. Independent work under the individual guidance of a faculty member. May be repeated for up to 12 hours credit, only 6 of which may count toward fulfillment of the major in psychology.

4300. Psychology of Human Sexual Behavior (3:3:0). Prerequisite: Junior standing. Study of human sexual behavior from a psychosocial viewpoint with emphasis on contemporary research methods and findings. [PSYC 2306] (W S 4302)

4301. Developmental Psychology (3:3:0). Prerequisite: PSY 1300. An advanced study of the process of development through consideration of data, theories, and contemporary research issues.

4305. Abnormal Psychology (3:3:0). Prerequisite: PSY 1300 and junior standing. Personality deviations and maladjustments; emphasis on clinical descriptions of abnormal behavior, etiological factors, manifestations, interpretations, and treatments.

4310. Abnormal Child Psychology (3:3:0). Prerequisite: PSY 1300 and junior standing. Description, classification, assessment, treatment, and research methods pertaining to behavioral and emotional disorders of childhood and adolescence.

4316. History of Psychology (3:3:0). Prerequisite: PSY 1300 and junior standing. A survey of the historical development of modern psychology.

4320. Psychoanalytic Theory and Research (3:3:0). Prerequisite: PSY 1300 and junior standing. From readings in psychoanalytic theory, a hypothesis will be chosen and tested by the group. The results will be discussed with psycholanalysts. Topics will vary.

4321. Interviewing Principles and Practices (3:3:0). Prerequisite: PSY 1300. Review of interviewing principles. Emphasis on skills that will apply directly to interview situations, such as industrial, clinical, and vocational counseling. Demonstration, recordings and discussion.

4322. Physiological Bases of Perception and Performance (3:3:0). Prerequisite: PSY 3401. Surveys sensation and perception with attention given to underlying physiological mechanisms such as energy transduction, visual and auditory channels to the cortex, and intersensory cooperation.

4323. Perception: Theories and Applications (3:3:0). Prerequisite: PSY 1300. Survey of methods and findings in perception. Emphasis on demonstrations of perceptual phenomena; theories of visual perception (cognitive and ecological); applications. Topics include illusions, depth, motion.

4324. Cognition (3:3:0). Prerequisite: PSY 3401. Introduction to cognitive psychology, including perception, attention, memory, language, problem-solving, decision-making, and the development of expertise.

4325. Drugs, Alcohol, and Behavior (3:3:0). Prerequisite: PSY 1300. Survey of psychological factors involved in drug use and an introduction to chemotherapy used in treatment of mental illness.

4326. Human Factors Psychology (3:3:0). Prerequisite: PSY 3401. Introduction to methods and findings in human factors psychology. Applications of psychological research to designs of machines, environments, and tasks.

4327. Human Performance Psychology: Cognition, Stress, and Fatigue (3:3:0). Prerequisite: PSY 3401. Overview of human performance psychology, including topics such as attention, stress, and fatigue. Addresses application of research to health psychology and human factors.

4330. Psychology of Lifespan Development and Aging (3:3:0). Prerequisite: Sophomore standing. Designed to give an overview of the physiological, cognitive, social-role, and motivation changes that occur with age from a psychological development viewpoint. [PSYC 2314]

4331. Social Psychology of Groups (3:3:0). Prerequisite: PSY 3304. Social psychology theory and research on topics in group dynamics, including group structure, influence, conflict, performance, decision making, and leadership.

4334. Introduction to Counseling and Psychotherapy (3:3:0). Prerequisite: PSY 1300. Survey of current practice and theory in counseling and psychotherapy. Consideration of the research support for counseling and psychotherapy as an agent of change of behavior.

4336. Research in Personality and Social Psychology (3:2:2). Prerequisite: PSY 3400, 3401 or MATH 2300, and junior standing. An in-depth examination of selected substantive research areas in experimental personality and social psychology. Surveys of current research literature and design and execution of empirical studies.

4342. Practicum In Peer Mentoring (3:1:7). Prerequisite: PSY 1300. Application required. A closely supervised individual experience in the delivery of services to a multiethnic population. Placement site: University Counseling Center. May be repeated once for a total of 6 credits.

4343. Language and Literacy Research and Applications (3:2:2). Prerequisite: PSY 3318 or 4324. Integration of the study of language, reading, and comprehension with research and tutoring experiences.

4380. Intermediate Statistics for Psychologists (3:3:0). Prerequisite: PSY 3400 or MATH 2300. Second course in psychological statistics recommended for students planning to attend graduate school. Includes probability, correlation and regression, basic parametric and nonparametric inferential statistics.

Department of Sociology, Anthropology, and Social Work

Chair: Professor D. Paul Johnson

Professors Curry, Dennis, Lowe, Peek, and Tsai; ***Associate Professors*** Dunham, Elbow, Hall, Koch, Matthews, Paine, and Roberts; ***Assistant Professors*** Cannon, Crabtree, House, Nisbett, Schneider, and Walter; ***Instructors*** Carter and Marwah; ***Visiting Faculty*** Marshall-Gray and Phelps; ***Adjunct Faculty*** Benson, E. Johnson, Stein, and Way; ***Emeritus Faculty*** Campbell, Chandler, Goss, Hickerson, and Mayer-Oakes.

This department supervises the following degree programs: SOCIOLOGY and ANTHROPOLOGY, *Bachelor of Arts* and *Master of Arts;* SOCIAL WORK, *Bachelor of Arts*. In addition, the department participates in the LATIN AMERICAN AND IBERIAN STUDIES program leading to the Bachelor of Arts degree. The department also participates in the women's studies, urban studies, ethnic studies, environmental studies, family life studies, religion studies, Asian studies, and substance abuse studies minor programs. The minimum number of hours required for majors in all baccalaureate programs in the department is a total of 125 hours.

Sociology Program. The Sociology Program includes most of the major substantive areas of the discipline, ranging from interpersonal relations in families and elsewhere to

the growth of cities and complex organizations to international relations. The department also offers a criminology concentration for sociology majors who wish to specialize in this area. Areas of faculty expertise include criminology and delinquency, marriage and the family, minority relations, gender, gerontology, social psychology, international development, medical sociology, sociology of religion, social research methods, and social theory. A major or minor in sociology is beneficial to students planning careers in a variety of areas, including business, law and law enforcement, international development, medicine, and social work. Courses in sociology fulfill Core Curriculum requirements in the social and behavioral sciences in Arts and Sciences and the university.

A student majoring in sociology must complete 30 hours in sociology; 18 hours should be advanced. A maximum of 9 hours of transfer credit may be accepted for the major. Specific course requirements are as follows:

I. SOC 1301, 3391, 3392, and 4395.
II. Either SOC 3393 or 3394. Students expecting admission to graduate work in sociology should take both of these courses.

Criminology Concentration. Sociology majors who wish to specialize in the study of criminology by completing the criminology concentration are required to take 15 hours in the following courses: SOC 3329, 3383, 4325, 4327, and ANTH 4343. Students who choose the criminology concentration must also fulfill the sociology major requirements as listed above plus take 6 hours of additional sociology electives. Total hours required for sociology majors who select the criminology concentration are 36. The criminology concentration will be noted on the students' transcripts.

A student minoring in sociology must complete 18 hours of sociology, including SOC 1301. No more than 6 hours of transfer credit will be accepted for the minor.

Students must receive a grade of C or better in each sociology course if they wish it to count toward a major or minor in sociology or in the criminology concentration.

The minimum prerequisite that is recommended for all advanced courses is SOC 1301 or consent of instructor, unless otherwise indicated in the course description. Freshmen and sophomores who wish to take an advanced course are required to obtain the consent of the instructor in writing.

Teacher Education. See the "Teacher Education" section of this catalog and consult the College of Education for current teacher certification requirements.

Anthropology Program. The Anthropology Program reflects the broad scope of the discipline, including the four areas of sociocultural and physical anthropology, archaeology, and linguistics. Well-equipped laboratories promote research in archaeology and physical anthropology. The Summer Field School in Archaeology and field trips in Texas and the surrounding region are a highlight of the curriculum. Sociocultural anthropology includes special emphasis on the multicultural U.S. and on Latin America.

A student majoring in anthropology must complete 31 semester hours in anthropology, including ANTH 2100, 2300, 2301, 2302 (or 1301), 3303 or 3308, 3345, 3305 or 3351, and 3310 or 3311. A maximum of 9 hours of transfer credit may be accepted for the major. With prior departmental approval, 3 advanced hours in related disciplines may be counted toward the major. A minor in anthropology consists of 18 hours, with at least 6 hours in upper-level courses. No more than 6 hours of transfer credit will be accepted for the minor. A grade of C or better must be received in each anthropology course by those working for a major or minor in the subject. No more than 6 hours of individual studies or field courses may be credited to the major.

Anthropology courses provide distribution credit in three areas of Arts and Sciences: humanities, natural science, and social and behavioral sciences. Courses so indicated give humanities or natural science credit; some others give social and behavioral sciences credit. In addition, anthropology courses fulfill a variety of humanities and social science requirements in other colleges of the university. Students in these

colleges should check with advisors in their major departments to learn which anthropology courses will fulfill their college and Core Curriculum requirements.

Social Work Program. The degree program in social work is accredited at the baccalaureate (B.A.) level by the Council on Social Work Education. The curriculum is based on the generalist social worker model and the application of an ecosystems and strengths perspective. The generalist model of social work practice does not attempt to educate the graduate for a specific social work job or field of employment; instead, our graduates are prepared to work in a wide variety of social service settings with diverse populations and their problems. The program is designed to prepare the graduate for entry into social work at the beginning level of professional social work practice in public, private, and voluntary social agencies. The curriculum may serve as a preparatory foundation for those interested in and qualified to continue their study at the master's degree level.

The social work curriculum covers the areas of social services and policy (S W 2301 and 4311), human behavior and the social environment (S W 3311, 3312, and 3331), social work practice (S W 3332, 3333, and 3334), evaluation and research (S W 3339), and an educationally directed field practicum (S W 4340 and 4611). The curriculum is based in the liberal arts; humanities; and social, behavioral, and biological sciences, including one semester (4 hours) of human biology. The overall curriculum is comprised of the specific Core Curriculum requirements of the university, as enhanced by the College of Arts and Sciences.

Along with a major of 36 semester hours, social work majors generally complete a minor in sociology. The content for the minor in sociology will consist of 18 semester hours of required and elective courses (obtain list from advisor) taken from three specific content areas. Students able to demonstrate that a different minor in the area of human behavior will more appropriately supplement their career goals may have a different minor approved by the social work faculty advisor. Students may see the social work advisor for a list of possible alternative minors. Students selecting an alternative minor will have adjunct course requirements in sociology (see advisor for options). Only when the student's minor is other than sociology or anthropology will the adjunct requirements be necessary. Regardless of minor selected, SOC 1301 is a perquisite for S W 2301.

Individuals intending to go into social work and who are entering the university as freshmen or transfer students with less than 32 hours should declare sociology as their major on their admissions application. Students should take the prerequisite of SOC 1301, Introduction to Sociology, during the first year but must take it prior to enrollment in the first social work courses. Students will normally begin the social work curriculum in the sophomore year taking S W 2301 and 3311 in the fall semester and S W 3312 and 3331 in the spring semester. Application for admission to the social work degree program will occur at the end of the semester in which S W 3311 is taken.

Individuals wishing to change their majors to social work and who are currently enrolled in the university must have completed 30 semester hours. Students should complete the prerequisite SOC 1301 and at the first available opportunity enroll in S W 2301 and 3311. At the end of that semester, they should complete the application for admission to the social work degree program. Individuals transferring (with more than 32 semester hours) from a junior college or a four-year institution should declare social work as a major on their admissions application. Individuals transferring into the social work program without having taken any social work courses should follow the procedure described in the information relating to change of majors. Individuals transferring to the social work program will be limited to a maximum of 9 semester hours of social work transfer courses if taken in a CSWE accredited program (S W 3333 and 3334 must be taken at Texas Tech). The minimum time for completion of the sequence of social work courses is 5 semesters.

Requirements for Application to Major in Social Work

A student must complete 30 semester hours of college or university course work from the following Core Curriculum requirements of the university:

- 15 semester hours from English, mathematics (recommend MATH 1320 or 1330 and 2300), U. S. history, and political science.
- 15 semester hours from foreign languages, oral communication, technology and applied sciences, fine arts, humanities, and natural sciences (the course in human biology may be selected from BIOL 1402, ANTH 2300 and 2100, ZOOL 2403, or an equivalent course).

In addition to the above requirements, a student must:

- Have satisfactorily completed SOC 1301.
- Have completed S W 2301 and 3311 with a minimum grade of C.
- Have a cumulative GPA of 2.5 (students with a GPA of 2.0 to 2.49 may be provisionally admitted but must receive at least a B in either S W 2301 or 3311).

The social work division provides a variety of courses useful to individuals with career plans in the human services areas or related fields. The courses will provide the student with an introduction to the field of social work and the social welfare system, the human behavior content required of human service workers, research and evaluation skills needed, and social welfare policy analysis skills. Students interested in social work as a minor will enroll in 18 semester hours. The following courses are required but substitution may be necessary: S W 2301 (Introduction to the Social Welfare Institution); S W 3311 (Human Behavior and the Social Environment I); S W 3312 (Human Behavior and the Social Environment II); S W 3331 (Social Work Practice With Diverse Populations) or S W 3332 (Social Work Practice: Interaction Skills); S W 3339 (Social Work Research and Evaluation); and S W 4311 (Social Policy and Social Welfare Legislation). Some social work practice courses (S W 3333 and 3334) and field practicum courses (S W 4340 and 4611) are restricted to social work majors only.

Sociology (SOC)

1301. Introduction to Sociology (3:3:0). Human group behavior, influence on the individual, and relationships of individuals to each other as members of groups. [SOCI 1301]

1320. Current Social Problems (3:3:0). Problems in basic social institutions as marriage and the family, community, economy, government, education, health and welfare, recreation, etc. [SOCI 1306]

2331. The Sociology of Marriage (3:3:0). History, present status, and current problems of the marriage institution. [SOCI 2301] (W S 2331)

3311. Socialization (3:3:0). The process whereby individuals learn to behave in accordance with the prevailing standards of their culture, emphasizing the family as the primary socialization unit.

3324. American Minority Problems (3:3:0). Sociological analysis of the major racial and ethnic groups in the present United States.

3325. Women in the Modern World (3:3:0). Prerequisite: SOC 1301. Course treats women as group with unique sex role socialization, work, family, and political experience. Emphasis on women in contemporary United States. (W S 3325)

3327. Sociology of Law and Policing (3:3:0). Examines social forces affecting the development and current operation of criminal law and policing. Special attention given to contemporary issues concerning each.

3329. Sociology of Corrections (3:3:0). Prerequisite: SOC 1301. Introduction to U.S. corrections systems. Sociological examination of trends and issues in prisons, parole, probation, and community corrections.

3331. Sociology of the Family (3:3:0). Changing family life styles, mate roles, parent-child relationships, adoption, abortion, population control, technical-industrial impact on American family unit. (W S 3331)

3332. Sociology of Bureaucracy (3:3:0). Governmental, business, and industrial bureaucracies in international perspective with an emphasis on internal structure, relationship between organization and society, and their impacts on human behavior.

3337. Inequality in America (3:3:0). Inequality as expressed in occupational, class, ethnic, and sexual hierarchies is examined from varying sociological perspectives. (W S 3337)

3348. Sociology of China and Japan (3:3:0). A sociological approach to the peoples and institutions of China and Japan.

Emphasis is placed on comparing Chinese and Japanese ways of life vis-'a-vis the American way of life.

3352. Technology and Society (3:3:0). Explores the interrelationships between technology and society, emphasizing the impacts of technology on society and social factors contributing to the development and diffusion of technology.

3383. Alcohol, Drugs, and Society (3:3:0). Analysis of social factors related to the use and abuse of alcohol and other drugs.

3391. Introduction to Social Research I (3:3:0). Nature of research process; elementary problems of design; data collection and analysis; interpretation of research.

3392. Introduction to Social Research II (3:3:0). Prerequisite: SOC 3391. Nature of research process; elementary problems of design; data collection and analysis, interpretation of research.

3393. Development of Sociological Theory (3:3:0). Emergence of systematic sociological theory out of social philosophy; evolution of sociology as a discipline in the late 19th century.

3394. Contemporary Sociological Theories (3:3:0). Review of major present-day perspectives on society, including structural functionalism, conflict theory, symbolic interactionism. Occasional consideration of emerging perspectives, such as ethnomethodology, phenomenology, and sociobiology.

4307. Individual Studies in Sociology (3). Prerequisite: Consent of instructor and high scholastic achievement. Independent study. May be repeated for credit.

4311. Sociology of the Person (3:3:0). Prerequisite: SOC 1301. Effects of group membership on individual attributes and behavior; focuses on the influence of experience in primary groups and positions in social structure.

4316. Social Gerontology (3:3:0). Prerequisite: Advanced standing for undergraduates. Theory and research on aging; covering demographic, socio-cultural, economic, individual, and social factors.

4325. Criminology (3:3:0). Crime and deviant behavior as a social process and their regulation in a democratic society.

4327. Juvenile Delinquency (3:3:0). Delinquency is reviewed as a form of deviant behavior. Attention is given to prevalent theories of causation, distribution, and frequency of delinquency, and the treatment, prevention, and control of delinquent patterns of behavior.

4331. Religion and Society (3:3:0). The sociological study of religious groups and beliefs. The reciprocal relationships between religious institutions and society.

4362. Cities and City Life (3:3:0). The modern city in its ecological, cultural, and social aspects.

4381. Sickness, Health, and Society (3:3:0). The sociological study of the medical institution and its interrelationship with other societal institutions. Differential definitions of health and illness.

4382. The Sociology of Mental Illness (3:3:0). Analysis of the problems of mental health and illness from the sociological perspective. Study of sociological approaches to the definition of mental illness; the social epidemiology of mental illness, problems of recognizing and defining conditions of mental illness, and hospital and community treatment of mental illness.

4395. Senior Seminar (3:3:0). Prerequisite: Senior standing. A capstone course for sociology majors that integrates, extends, synthesizes, and applies sociological knowledge.

Anthropology (ANTH)

1301. Understanding Multicultural America (3:3:0). Introduction to the variety of cultures in America, designed to foster an appreciation for the diversity and integrity of American cognitive, linguistic, and cultural styles. (Fulfills the state standard requirement in multicultural education for education majors.)

2100. Physical Anthropology Laboratory (1:0:3). Corequisite: ANTH 2300. Study of human and nonhuman primate skeletons and fossils; blood types, genetics, anthropometry.

2300. Physical Anthropology (3:3:0). Corequisite: ANTH 2100. Study of human biological evolution and racial variation. Includes principles of human heredity and evolution and discussion of body build, skin color, blood types, and population genetics. [ANTH 2301]

2301. Introduction to Archaeology (3:3:0). Introduces archaeology and what it has told us about our past, from the earliest beginnings to the birth of civilization.

2302. Cultural Anthropology (3:3:0). An introduction to the study of human culture and its variations in contemporary and recent historic peoples, western and nonwestern. (Honors section and Spanish language section offered in some semesters.) [ANTH 2351]

3300. Anthropology and Contemporary Life (3:3:0). An anthropological approach to topics of current interest in American culture. Content varies. Topics have included anthropology and literature, the writings of Carlos Castañeda, evolution vs. creation, and sex and gender. May be repeated for credit.

3303. World Ethnology (3:3:0). Prerequisite: ANTH 1301, 2302 or consent of instructor. A survey of world culture areas and culture types, with in-depth use of selected case studies.

3305. Anthropological Linguistics (3:3:0). A survey of the origins and development of human language, phonological and grammatical characteristics of languages, and distribution and relationship of languages and language families.

3306. Women in Culture and Society (3:3:0). A comparative study of sex and gender in human society; biological and cultural factors that influence women's roles, status, and their contributions to cultural institutions. Counts toward women's studies minor. (W S 3306)

3308. Cultural Ecology (3:3:0). A comprehensive study of the interaction between human communities and their environments, emphasizing the cultural consequences of changes in this ecological relationship.

3310. Human Evolution (3:2:3). Prerequisite: ANTH 2300 or consent of instructor. Study of human origins and evolution as a mammal, primate, and bioculturally adapting species. Emphasizes principles in evolution and systematics and recent discoveries in paleoanthropology.

3311. Human Variation (3:2:3). Prerequisite: ANTH 2300 or consent of instructor. ANTH 3310 is not a prerequisite. Study of human heredity, biodiversity, and adaptations. Survey of the physical and genetic variations of modern populations throughout the world.

3312. Primate Behavior (3:3:0). A survey of the biological and behavioral diversity of nonhuman primates. Emphasizes issues concerning evolution, social organizations, and conservation of prosimians, anthropoids, and hominoids.

3314. Human Ecology and Adaptation (3:3:0). Prerequisite: ANTH 1301 or 2300 and 2100, or consent of instructor. Survey of human biological adaptability, the dual inheritance of genes and culture, human survival. emerging infectious disease.

3315. Health, Medicine, and Culture (3:3:0). The anthropology of health; concepts of illness, health, and aging in different cultures, including the role of the healer in the Third World. Recommended for health preprofessionals.

3317. Anthropology, Epidemiology, and Global Health (3:3:0). Prerequisite: ANTH 1301 or 2300 and 2100, or consent of instructor. Introduction to communicable-disease epidemiology; covers theory and methods, transmission, surveillance and control, emerging infectious diseases.

3323. Religion and Culture (3:3:0). An examination of the elements of religion: belief systems, sacred symbols, ritual, and shamanism. Emphasis is on primitive religion. Gives humanities credit in Arts and Sciences.

3325. Anthropological Folklore (3:3:0). The role of folklore not only as entertainment but as explanation and validation of ways of life: myth, parable, legend, proverbs, riddles, and fairy tales. Gives humanities credit in Arts and Sciences.

3331. Indians of North America (3:3:0). The experience of Native American peoples from their discovery of the New World to their present status. Incorporates historical and ethnographic approaches; selected case studies.

3332. Peoples of Latin America (3:3:0). The anthropology of Latin America: the high cultures of prehispanic times, the conquest and colonial periods, and the tribal and peasant peoples of today, including such groups as Amazonian tribesmen, Andean peasants, and Chicanos. Recommended for Latin American and Iberian Studies students.

3341. Laboratory Archaeology (3:0:3). Provides hands-on training in processing and analysis of archaeological materials in the laboratory and exposure to other aspects of archaeological research centered in the lab.

3343. Maya Archaeology (3:3:0). A survey of ancient Maya prehistory and archaeology with emphasis on religion, world view, iconography, and hieroglyphic writing.

3345. North American Archaeology (3:3:0). Prerequisite: ANTH 2301 or consent of instructor. A study of the archaeological background of aboriginal Americans with a particular interest in artifacts and art and the architecture of past civilizations.

3346. Ancient Civilizations of Middle and South America (3:3:0). Prerequisite: ANTH 2301 or 3304 or 3345 or consent of instructor. The origins, development, and cultural achievements of the great civilizations of Middle and South America: the Incas, Aztecs, Mayas, and their predecessors. Gives humanities credit in Arts and Sciences.

3347. Texas Prehistory (3:3:0). Prerequisite: ANTH 2301 or consent of instructor. A comprehensive survey of 12,000 years of human activity in Texas; the major prehistoric sites and findings of archaeological studies.

3348. Introduction to Historical Archaeology (3:3:0). Introduces students to the methods and theories of historical archaeology. The course will focus on the post-1492 era in North and South America.

3351. Language and Culture (3:3:0). An inquiry into the interrelations of language and other aspects of culture; languages as reflecting or actively molding human perception and experience. Gives humanities credit in Arts and Sciences.

3371. Peoples of the Southwest (3:3:0). A survey of this area's cultural heritage, including prehistoric and contemporary Indian peoples, and the immigrant Anglo, Hispanic, and other cultural groups of recent times.

4000. Individual Problems in Anthropology (V1-3). Prerequisite: ANTH 1301, 2300, 2301, or 2302 plus advanced standing and consent of instructor prior to registration. May be repeated for credit.

4300. History of Anthropology (3:3:0). Prerequisite: Junior standing or consent of instructor. Survey of main currents in the history of anthropology, with selected readings from major theorists in the field.

4341. Archaeological Methods and Techniques (3:2:3). Prerequisite: ANTH 2301 or consent of instructor. A presentation of the methods and techniques, such as field reconnaissance and site excavation, laboratory analysis, and reporting used by archaeologists to determine and define the ancient human past.

4343. Human Skeletal Biology and Forensic Techniques (3:3:0). Prerequisite: ANTH 3310 or 3311. Intensive study of skeletal biology emphasizing subadult and adult morphological variation. Includes analysis of paleopathology, trauma, age sex, and stature estimation.

4345. Paleopathology (3:3:0). Prerequisite: ANTH 2300, 2100, and 4343, or consent of instructor. This course offers students an appreciation of the dynamic nature of human bone as it relates to the health of prehistoric populations.

4347. Evolution Medicine (3:3:0). Prerequisite: ANTH 2300 and 2100 or consent of instructor. Examines human evolutionary biology; biocultural context of health, illness, medicine, and reservoir-vector studies of human infectious diseases.

4372. Society and Culture of Mexico (3:3:0). A survey of contemporary Mexico, emphasizing Indians and other peasant villagers, migrants to the cities, and other groups studied by anthropologists. Study of the cultural processes that have created modern Mexico.

4642. Field Archaeology (6:2:8). Prerequisite: ANTH 2301 and 4341 or consent of instructor. A summer session field school providing instruction in basic archaeological field techniques, including site survey, test excavations, record keeping, mapping, and collection documentation.

Social Work (S W)

2301. Introduction to the Social Welfare Institution (3:3:0). Prerequisite: SOC 1301 or consent of instructor. Introduction to the social welfare system: An examination of society's response to human needs and social problems through development of voluntary and governmental social services.

3311. Human Behavior and the Social Environment I (3:3:0). Prerequisite or corequisite: S W 2301. A systems, ecology, and strengths perspective for examining the person-environment-in-interaction with emphasis on systemic-related behaviors, populations-at-risk, and diversity. (Writing Intensive)

3312. Human Behavior and the Social Environment II (3:3:0). Prerequisite: S W 3311. A systems, ecology, and strengths perspective for understanding human behavior with emphasis on interaction between biological, social, emotional, and cultural systems across the life span.

3331. Social Work with Diverse Populations (3:3:0). Prerequisite: S W 2301 and 3311; corequisite: S W 3312. Integrated approach to theory, values, and skills of social work practice with culturally diverse populations. Emphasizes empowering vulnerable populations to fulfill their potential. Social work majors only.

3332. Social Work Practice: Interaction Skills (3:3:0). Prerequisite: S W 2301, 3311, 3312; corequisite: S W 3333. Foundation course in theory and principles of interviewing and professional relationship-building skills for generalist social workers.

3333. Social Work Practice: Macro Systems (3:3:0). Prerequisite: S W 3311; corequisite: S W 3332. Examination of knowledge base and application of intervention skills for generalist social work practice with organizations and communities. Social work majors only.

3334. Social Work Practice: Micro Systems (3:3:0). Prerequisite: S W 3332 and 3333. Examination of knowledge base and application of intervention skills for generalist social work practice with individuals, families, and small groups. Social work majors only.

3339. Social Work Research and Evaluation (3:3:0). Prerequisite or corequisite: MATH 2300 or SOC 3391 or consent of instructor. Introduction to the cycle and process of social work knowledge building through the scientific approach. Emphasis on designs for evaluation of programs or individual practice.

4311. Social Policy and Social Welfare Legislation (3:3:0). Prerequisite: Senior standing. In-depth analysis of the process of social policy and social legislation as it pertains to the field of social welfare and social service delivery systems.

4340. Social Work: Field Placement Integrative Seminar (3:3:0). Prerequisite: S W 3334 and corequisite: S W 4611. A seminar designed to increase the integration of social work knowledge and skills used in the student's individual practice of social work. Social work majors only.

4611. Social Work: Field Experience (6:0:30). Prerequisite: S W 3334; corequisite: S W 4340. A closely supervised individual experience in the practice of social work knowledge, methods, and skills in a welfare or related agency. Pass-fail. Social work majors only. Professional liability insurance required.

Jerry S. Rawls College of Business Administration

Professor Allen T. McInnes, *Dean*

Web Site: www.ba.ttu.edu

Horn Professors Conover, J. G. Hunt, and S. Hunt; ***Professors*** L. Anderson, Blair, Boal, Bowlin, Burns, Clancy, Dowell, Duhan, Dukes, Freeman, Goebel, Hein, Hoffman, Howell, Lampe, Macy, Mann, Nichols, Pasewark, Randolph, Ricketts, Sears, R. Sorenson, Viator, Westfall, Wetherbe, Whitehead, Wilcox, Wilkes, and Yadav; ***Associate Professors*** Bravoco, Bremer, Browne, Dunne, Jones, Krefting, Laverie, Malone, Phillips, and Ritchey; ***Assistant Professors*** Antony, Arnett, Brigham, Buchheit, Burkman, Durrett, English, Giambatista, Koch, Kuipers, Lin, Mansi, Masselli, Maxwell, McDonald, Moore, Nix, Robinson, Sherif, Szyliowicz, and Washington; ***Visiting Faculty*** Giddens and Sellers; ***Lecturers*** Allen, D. Anderson, Brown, Busby, Debord, Faver, Hughes, Janamanchi, Kelley, Lynn, McWhorter, Ramirez, Schuetzeberg, P. Sorenson, Trotter, and Westney.

The College of Business Administration offers educational programs in all areas of business while advancing knowledge through research, providing community service, and supporting the development of business in the global economy. Fulfilling these objectives creates a stimulating learning environment for the student and expands the frontiers of knowledge.

The baccalaureate and master's programs in business administration and accounting are fully accredited by the International Association for Management Education, the national accrediting organization for business and management programs.

Degree Programs

The college offers programs leading to the degrees of Bachelor of Business Administration, Master of Business Administration, Master of Science, Master of Science in Accounting, and Doctor of Philosophy. At the undergraduate level, students may major in Accounting, Economics, Finance, General Business, International Business, Management, Management Information Systems, Marketing, and Petroleum Land Management.

150-Hour Program: Joint B.B.A.—Master's. This program is a 150-hour track leading to a bachelor's in business administration and a master's in business administration or accounting. The B.B.A. is comprised of a minimum of 120 hours. The program is designed for academically outstanding undergraduate students who wish to complete a master's degree at Texas Tech. Completion of this program can enhance starting salaries and career advancement.

Students should apply to the graduate component of the program during the first semester of their junior year. Graduate course work cannot be taken prior to acceptance. Application materials are available in the College of Business Administration's Graduate Services Center.

Admitted students will combine undergraduate and graduate courses during the final semester of their undergraduate work, thus allowing a student to obtain both bachelor's and master's degrees with 150 hours.

Joint Program: B.B.A. and Master of Architecture. This program is designed to provide a broad background for a variety of careers in business, government, architecture, and building-related industries with particular emphasis on developing analytical tools and skills with managerial perspectives, thereby enhancing worldwide career opportunities. See the College of Architecture section of this catalog for a full program outline of this joint program.

Joint Program: B.B.A. and B.S. in Agricultural and Applied Economics. This joint program leads to two degrees: a Bachelor of Business Administration with a major in General Business and a Bachelor of Science with a major in Agricultural and

Applied Economics. Students completing these joint programs will have increased understanding of business management principles, concepts, and analytical abilities as applied to agribusiness. See the College of Agricultural Sciences and Natural Resources section of this catalog for a full program outline of this joint program.

Joint Program: B.S. in Agribusiness. This distinctive Bachelor of Science program prepares students for careers in agribusiness by providing a curriculum that includes courses designed to develop interpersonal and communication skills, business-economics skills, technical-quantitative skills, and ethics. Courses in international business equip students for the world economy and provide marketability for a wide range of careers. This is a joint program administered by the College of Agricultural Sciences and Natural Resources and the College of Business Administration. See the College of Agricultural Sciences and Natural Resources section of this catalog for a full program outline of this joint program.

B.B.A. Degree Requirements

Honors College for Business Majors. Students from all areas of the College of Business Administration may enter the Honors College. Students with high grade point averages are encouraged to apply for admittance into this prestigious program. Honors sections are offered in the following business courses: ACCT 2300, 2301, 3304, 3307, FIN 3320, MGT 3370, 3373, 4373, 4374, 4377, 4378, 4379, and MKT 3350.

Lower Division Curriculum. The Lower Division requirements should be completed during the freshman and sophomore years.

All students wishing to major in business are classified as COBA (College of Business Administration) until completion of the Lower Division Business Core (I S 1300, ENGL 1301, 1302, MATH 1330, 1331, 2345, ACCT 2300, 2301, ISQS 2440, and ECO 2301, 2302) with grades of C or higher and attainment of a minimum 2.5 or higher adjusted Texas Tech GPA. Upon the attainment of these minimum requirements, application may then be made to the Undergraduate Services Center for a specific major. Admission to the lower division COBA designation does not assure admission to any upper division major in the College of Business Administration. Note that the minimum GPA for any major may increase due to limited space availability.

Mathematics Requirement. A mathematics course must be taken each enrollment until the math requirement is finished since both MATH 1330 and 1331 must be completed with grades of C or higher before taking some of the required sophomore business courses.

Foreign Language Requirement. Any student who is admitted to the university without two years of high school credit (8th through 12th grades) in the same foreign language must complete two semesters of a single foreign language in college. The college-level foreign language courses will replace free electives in the B.B.A. program.

Multicultural Requirement. The college is committed to a globally oriented curriculum that includes international and multicultural issues throughout a student's course work. The university's multicultural requirement will be satisfied by completion of the B.B.A. degree requirements for all students except 150 accounting majors.

Lower Division Curriculum

FIRST YEAR

Fall		*Spring*	
MATH 1330, Intro. Math. Anal.	3	MATH 1331, Intro. Math. Anal.	3
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
I S 1300, Professional Enterprise	3	*HIST 2301, Hist. of U.S. Since 1877	3
*†Laboratory Science	4	*†Laboratory Science	4
*HIST 2300, Hist. of U.S. to 1877	3	*†Humanities (Foreign Lang. for Int'l. Business majors)	3
TOTAL	16	TOTAL	16

SECOND YEAR

Fall		*Spring*	
ACCT 2300, Fin. Acct.	3	ACCT 2301, Man. Acct.	3
ISQS 2440, Intro. Comp. Sys. in Bus.	4	MATH 2345, Intro. Stats. Bus.	3
ECO 2301, Prin. Economics I	3	ECO 2302, Prin. Economics II	3
*POLS 1301, Amer. Govt., Org.	3	*POLS 2302, Amer. Pub. Pol.	3
*†Visual and Performing Arts	3	*Elective (Non B A or Non Eco.) or	3
Plus Foreign Language		ISQS 2341 with a grade of A or B	
for Int'l. Business majors		for MIS majors or Foreign Language	
TOTAL	16	for Int'l. Business majors	
		TOTAL	15

*These are the only courses not requiring a grade of C or higher.
†Choose from Core Curriculum requirements.
Minimum hours required for Lower Division–63.

Upper Division Curriculum. Junior and senior level business and economics courses may be taken upon admission to the upper division of the college. Admission to upper division will be granted upon completion of the lower division business core with grades of C or higher and attainment of a minimum 2.5 adjusted Texas Tech GPA. Upon attainment of these minimum requirements, application may then be made to the Undergraduate Services Center for a specific major. Admission to the lower division COBA designation does not assure admission to any upper division major in the College of Business Administration. Note that the minimum GPA for any major may increase due to limited space availability.

Accounting Major. The primary objective of the undergraduate accounting program is to prepare students for accounting positions at the entry level in public accounting, government, industry, and other organizations in the public and private sectors. A major in accounting is also excellent preparation for law school or graduate school. A 2.5 or higher adjusted Texas Tech GPA is required to declare accounting as a major and to take ACCT 3305 and 3306. The requirements to take the CPA examination in Texas include a bachelor's degree, 30 hours of accounting beyond introductory courses, and a minimum of 150 total hours. The B.B.A. in accounting includes 24 hours of accounting beyond introductory. Thus, B.B.A. students who plan eventually to take the CPA examination are strongly urged to include an additional 6 hours of accounting in their programs beyond the 120 total hours required for the B.B.A. degree. Those students should consult with the faculty advisor for appropriate course work.

THIRD YEAR

Fall		*Spring*	
ACCT 3304, Intermed. Acct. I	3	ACCT 3305, Intermed. Acct. II	3
ACCT 3307, Income Tax Acct.	3	MKT 3350, Intro. to Marketing	3
**Economics Course	3	ACCT 3315, Acct. Systems	3
ISQS 3344, Intro. Prod. & Oper. Management	3	FIN 3320, Corp. Fin. I	3
MGT 3373, Managerial Comm.	3	MGT 3370, Organiz. & Management	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
BLAW 3391, Business Law I	3	MGT 4380, Strategic Management	3
*ENGL 3365, Prof. Rept. Writing or		††Group B	3
COMS 3358	3	***Nonaccounting electives	6
ACCT 3306, Prin. Cost & Mgr. Acct.	3	TOTAL	12
†Group A	3		
††Group B	3		
TOTAL	15		

*This course does not require a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332.
***These courses may be business (except accounting) or nonbusiness.
†Group A—Choose one course from ACCT 4301 or 4305.
††Group B—Choose two courses from ACCT 4301, 4302, 4303, 4304, 4305, 4306, 4307, 4308, 4309, and 4310.
Minimum hours required for graduation–120.

150-Hour Accounting Major. The primary objective of the 150-hour program is to prepare students for careers in public accounting, consulting, industry, and other organizations. This program is recommended for students intending to become certified public accountants. Upon admission to the 150-Hour Program, a concentration must be selected from Accounting Information Systems Assurance, Accounting Information Systems Design and Control, Auditing-Financial Reporting, Controllership, or Taxation. The program may differ if the student elects to participate in an internship. The appropriate graduate faculty accounting advisor should be consulted for approval of the graduate program prior to the seventh semester. Upon completion of all requirements for the M.S.A. degree, the B.B.A. degree will be granted.

THIRD YEAR

Fall		*Spring*	
ACCT 3304, Intermed. Acct. I	3	ACCT 3305, Intermed. Acct. II	3
ACCT 3307, Income Tax Acct.	3	MKT 3350, Intro. to Marketing	3
**Economics Course	3	ACCT 3315, Acct. Systems	3
ISQS 3344, Intro. Prod. & Oper. Management	3	FIN 3320, Corp. Fin. I	3
MGT 3373, Managerial Comm.	3	MGT 3370, Organiz. & Management	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall *Spring*

The following courses apply to the Accounting Information Systems Assurance, Accounting Information Systems Design and Control, Auditing-Financial Reporting, and Taxation concentrations:

ACCT 4301, Prin. of Auditing	3	ENGL 3365, Prof. Rept. Writing	3
BLAW 3391, Business Law I	3	Graduate Courses	9
ACCT 3306, Prin. Cost & Mgr. Acct.	3	*Nonaccounting elective	3
*Nonaccounting electives	6	TOTAL	15
TOTAL	15		

The following courses apply to the Controllership concentration†:

ACCT 4301, Prin. of Auditing	3	ENGL 3365, Prof. Rept. Writing	3
BLAW 3391, Business Law I	3	Graduate Courses	9
FIN 3321, Fin. Statement Anal.	3	***Group A	3
ACCT 3306, Prin. Cost & Mgr. Acct.	3	TOTAL	15
***Group A	3		
TOTAL	15		

*These are the only courses not requiring a grade of C or higher. These courses may be business (except accounting) or nonbusiness and are eligible for the pass/fail option. If not already fulfilled, the multicultural requirement should be completed with an elective.
**Any upper level economics course except ECO 3323 and 4332.
***Group A—Select two courses from FIN 4324, 4330, MGT 4370, 4375, MKT 4351 and 4358.
†The controllership concentration is also available with a Health Organization Management emphasis for accounting majors.
Minimum hours required for graduation—150.

Economics Major

THIRD YEAR

Fall		*Spring*	
ECO 3311, Intermed. Macroecon.	3	BLAW 3391, Business Law I	3
FIN 3320, Corp. Fin. I	3	ECO 3312, Intermed. Econ. Theory	3
MGT 3370, Organiz. & Management	3	ECO 3323, Prin. Money, Bank. & Cr. or FIN 3323	3
MKT 3350, Intro. to Marketing	3	MGT 3373, Managerial Comm.	3
ISQS 3344, Intro. Prod. Oper. Management	3	**Group A	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
ECO 4323, Monetary Theory	3	MGT 4380, Strategic Management	3
**Group A	3	*Free Electives	9
†Group B	6	TOTAL	12
*Elective (Non B A or Non Eco.)	3		
TOTAL	15		

*These are the only courses not requiring a grade of C or higher.
**Group A–Choose two courses from ECO 3320, 4326, 4332 (or FIN 4328), FIN 4323, 4325, and 4329.
†Group B–Choose two courses from ECO 3322, 3324, 3326, 3330, 3333, 3334, 3336, 4305, 4314, 4331, 4334, MGT

4372, and remaining Group A courses.
Minimum hours required for graduation–120.

150-Hour Economics Major. Upon admission to the 150-Hour Program, the student should stay in contact with the Graduate Services Center concerning the graduate portion of the program. The B.B.A. degree will be granted upon completion of the following requirements and the master's degree will be granted after completion of the remaining 30 hours of graduate courses.

THIRD YEAR

Fall		*Spring*	
ECO 3311, Intermed. Macroecon.	3	BLAW 3391, Business Law I	3
FIN 3320, Corp. Fin. I	3	ECO 3312, Intermed. Econ. Theory	3
MGT 3370, Organiz. & Management	3	ECO 3323, Prin. Money, Bank. & Cr. or FIN 3323	3
MKT 3350, Intro. to Marketing	3	MGT 3373, Managerial Comm.	3
ISQS 3344, Intro. Prod. & Oper. Mgt.	3	**Group A	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
ECO 4323, Monetary Theory	3	MGT 4380, Strategic Management	3
**Group A	3	*Free Elective	3
†Group B	6	Graduate Courses	6
*Free Elective	3	TOTAL	12
TOTAL	15		

*These are the only courses not requiring a grade of C or higher.
**Group A–Choose two courses from ECO 3320, 4326, 4332 (or FIN 4328), FIN 4323, 4325, and 4329.
†Group B–Choose two courses from ECO 3322, 3324, 3326, 3330, 3333, 3334, 3336, 4305, 4314, 4331, 4334, MGT 4372, and remaining Group A courses.
Minimum hours required for undergraduate degree–120.

Finance Major. The goal of the undergraduate program in finance is to enhance leadership potential by providing a high quality and thorough educational experience in preparation for careers in banking, business finance, investment management, and real estate.

THIRD YEAR

Fall		*Spring*	
ACCT 3304, Intermed. Acct. I	3	ECO 3311, Intermed. Macroecon.	3
BLAW 3391, Business Law I	3	FIN 3321, Fin. Statement Anal.	3
FIN 3320, Corp. Fin. I	3	FIN 3323, Prin. Money, Bank, & Credit	3
MGT 3370, Organiz. & Management	3	MGT 3373, Managerial Comm.	3
MKT 3350, Intro. to Marketing	3	†Group B	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
ECO 3320, Managerial Eco.	3	FIN 4330, Corp. Fin. II	3
FIN 4324, Investments	3	MGT 4380, Strategic Management	3
ISQS 3344, Intro. Prod. Oper. Management	3	*Elective (Non B A or Non Eco.)	3
**Group A	6	**Group A	3
TOTAL	15	TOTAL	12

*This is the only course not requiring a grade of C or higher.
**Group A–Choose three courses from FIN 3332, 3334, 4323, 4325, 4326, 4328, 4329, 4333, 4336, 4381, and 4383.
†Group B-Choose one course from ACCT 3305, 3306, 3307, 3315, BLAW 3393, ISQS 3343, ECO 3312, 3322, 3324, 3330, 3333, 4323, 4331, FIN 4382, MKT 3356, or remaining Group A courses.
For those students with a cumulative GPA of 3.25 or higher, FIN 3321 may be taken concurrently with FIN 3320 in the first semester of the junior year, which will permit students to take finance major courses earlier.
Minimum hours required for graduation–120.

Finance-Real Estate Emphasis. While all real estate courses and most other business courses offered at Texas Tech University can be used to partially satisfy current education licensing requirements set forth by the Texas Real Estate Commission, they will not completely satisfy all of the current and proposed requirements. Additional courses will be needed that are not currently offered at Texas Tech, although the additional courses are offered via correspondence through the Center for Professional Development. For information on licensing requirements, contact the finance area.

THIRD YEAR

Fall		*Spring*	
ACCT 3304, Intermed. Acct. I	3	ECO 3311, Intermed. Macroecon.	3
BLAW 3391, Business Law I	3	FIN 3321, Fin. Statement Anal.	3
FIN 3320, Corp. Fin. I	3	FIN 3323, Prin. Money, Bank. & Credit	3
MGT 3370, Organiz. & Management	3	ISQS 3344, Intro. Prod. & Oper. Management	3
MKT 3350, Intro. to Marketing	3	MGT 3373, Managerial Comm.	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
ECO 3320, Managerial Eco.	3	FIN 4330, Corp. Fin. II	3
FIN 4324, Investments	3	MGT 4380, Strategic Management	3
**Group A	6	**Group A	3
*Elective (Non B A or Non Eco.)	3	†Group B	3
TOTAL	15	TOTAL	12

*This is the only course not requiring a grade of C or higher.
**Group A–Choose three courses from FIN 3332, 3334, 4329, 4333, 4336 and BLAW 3393.
†Group B–Choose one course from AAEC 4303, CTEC 1312, 2301, ECO 3324, FIN 1307, 4382, GEOG 3351, PHIL 4320, POLS 3324, and SOC 4362 or remaining Group A courses.
Minimum hours required for graduation–120.

150-Hour Finance Major. Upon admission to the 150-Hour Program, the student should stay in contact with the Graduate Services Center concerning the graduate portion of the program. The B.B.A. degree will be granted upon completion of the following requirements and the master's degree will be granted after completion of the remaining 30 hours of graduate courses.

THIRD YEAR

Fall		*Spring*	
ACCT 3304, Intermed. Acct. I	3	ECO 3311, Intermed. Macroecon.	3
BLAW 3391, Business Law I	3	FIN 3321, Fin. Statement Anal.	3
FIN 3320, Corp. Fin. I	3	FIN 3323, Prin. Money, Bank. & Credit	3
MGT 3370, Organiz. & Management	3	ISQS 3344, Intro. Prod. Oper. Management	3
MKT 3350, Intro. to Marketing	3	MGT 3373, Managerial Commun.	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
ECO 3320, Managerial Eco.	3	FIN 4330, Corp. Fin. II	3
FIN 4324, Investments	3	MGT 4380, Strategic Management	3
**Group A	6	Graduate Courses	6
*Undergraduate Free Elective	3	TOTAL	12
TOTAL	15		

*This is the only course not requiring a grade of C or higher.
**Group A–Choose two courses from FIN 3332, 3334, 4323, 4325, 4326, 4328, 4329, 4333, 4336, 4381, and 4383.
Minimum hours required for undergraduate degree–120.

General Business Major

THIRD YEAR

Fall		*Spring*	
**Economics Course	3	BLAW 3391, Business Law I	3
FIN 3320, Corp. Fin.	3	MGT 3373, Managerial Comm.	3
ISQS 3344, Intro. Prod. & Oper. Management	3	†Advanced Courses	9
MGT 3370, Organiz. & Management	3	TOTAL	15
MKT 3350, Intro. to Marketing	3		
TOTAL	15		

FOURTH YEAR

Fall		*Spring*	
†Advanced Courses	9	MGT 4380, Strategic Management	3
*Elective (Non B A or Non Eco.)	3	†Advanced Course	3
*Free Elective	3	*Free Electives	6
TOTAL	15	TOTAL	12

*These are the only courses not requiring a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332.
†Advanced Courses–Choose 21 hours from at least three of the following areas: ACCT, ECO, FIN, ISQS, MGT, MKT not used to fulfill another requirement. At least 9 hours must be senior level courses.
Minimum hours required for graduation–120.

General Business Major—International Emphasis

THIRD YEAR

Fall		*Spring*	
**Economics Course	3	BLAW 3391, Business Law I	3
FIN 3320, Corp. Fin.	3	FIN 3323, Prin. Money, Bank. & Cr.	3
ISQS 3344, Intro. Prod. & Oper. Management	3	MGT 3373, Managerial Comm.	3
MGT 3370, Organiz. & Management	3	*Elective (Non B A or Non Eco.)	3
MKT 3350, Intro. to Marketing	3	***Group A	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
FIN 4328, Internat. Finance	3	MGT 4380, Strategic Management	3
MGT 4375, Int'l Management	3	***Group A	3
MKT 4358, Int'l Marketing	3	†Group B	3
*Free Electives	6	*Free Elective	3
TOTAL	15	TOTAL	12

*These are the only courses not requiring a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332.
***Group A—Choose two courses from ECO 3333, 3334, 4331, 4333, GEOG 3358, 3363, 3364, 4305, HIST 3353, 3354, 3374, 3382, 3384, 3392, 4383, 4394, I B 4383, POLS 3361, 3363, 3366,3373, 3374, 3375, 3376, and 4364.
†Group B–Choose one additional junior or senior level course in ACCT, B A, FIN, ISQS, MGT, or MKT.
Minimum hours required for graduation–120.

150-Hour General Business Major. Upon admission to the 150-Hour Program, the student should stay in contact with the Graduate Services Center concerning the graduate portion of the program. The B.B.A. degree will be granted upon completion of the following requirements and the master's degree will be granted after completion of the remaining 30 hours of graduate courses.

THIRD YEAR

Fall		*Spring*	
**Economics Course	3	BLAW 3391, Business Law I	3
FIN 3320, Corp. Fin.	3	MGT 3373, Managerial Comm.	3
MGT 3370, Organiz. & Management	3	†Advanced Courses	9
ISQS 3344, Intro. Prod. & Oper. Management	3	TOTAL	15
MKT 3350, Intro. to Marketing	3		
TOTAL	15		

FOURTH YEAR

Fall		*Spring*	
†Advanced Courses	9	MGT 4380, Strategic Management	3
*Free Electives	6	†Advanced Course	3
TOTAL	15	Graduate Courses	6
		TOTAL	12

*These are the only courses not requiring a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332.
†Advanced Courses–Choose 21 hours from at least three of the following areas: ACCT, ECO, FIN, ISQS, MGT, MKT not used to fulfill another requirement. At least 9 hours must be senior level courses.
Minimum hours required for undergraduate degree–120.

International Business Major. The goal of the undergraduate program in international business is to provide understanding of and experience with international environments and business practices. The foreign language requirement and recommended overseas study periods enhance the depth and breadth of this understanding.

THIRD YEAR

Fall		*Spring*	
Study Abroad Semester	12	BLAW 3391, Business Law I	3
(May also be done in spring		FIN 3320, Corp. Fin.	3
of 3rd year or fall of 4th year)		MGT 3370, Org. & Management	3
		MGT 3373, Managerial Comm.	3
		MKT 3350, Intro. to Marketing	3
		***Directed Elective	1
		TOTAL	16

FOURTH YEAR

Fall		*Spring*	
FIN 3323, Prin. Money, Bank., & Cr.	3	FIN 4328, Int'l. Finance	3
ISQS 3344, Intro. Prod. & Oper.Management	3	MGT 4380, Strategic Management	3
MGT 4375, Int'l Management	3	MKT 4358, Int'l. Marketing	3
*Group A	6	**Group B	3
***Directed Elective	1	***Directed Elective	1
TOTAL	16	TOTAL	13

*Group A—Choose two courses from ACCT 4314, GEOG 3358, 3363, 3364, 4305, HIST 3353, 3354, 3374, 3382, 3384, 3392, 4383, 4394, I B 4383, POLS 3361, 3363, 3366, 3373, 3374, 3375, 3376, and 4364.
**Group B—Choose one course from ECO 3333, 3334, and 4331.
***Directed Electives—One-hour semesters of International Business Language labs.
Minimum hours required for graduation—125.
Students interested in the International Business major are required to complete the equivalent of three semesters of a single foreign language while in the lower division and then make application for the major. The humanities requirement will be satisfied with completion of the foreign language.

Management Major. The undergraduate management program provides high quality preparation for a wide range of managerial careers. It provides the broadest background of any of the business disciplines for understanding and managing organizations and behavior in these systems. Students may group courses to emphasize their particular interest.

General management is particularly suited for management training programs sponsored by many larger firms and entry level positions in smaller firms. These programs serve as the first step up the management ladder. A 2.5 or higher adjusted Texas Tech GPA is required to declare management as a major.

THIRD YEAR

Fall		*Spring*	
**Economics Course	3	BLAW 3391, Business Law I	3
FIN 3320, Corp. Fin.	3	ISQS 3344, Intro. Prod. & Oper. Mgt.	3
MGT 3370, Organiz. & Management	3	MGT 3376, Organizational Behavior	3
MGT 3373, Managerial Comm.	3	MGT 3379, Adv. Org. & Management	3
MKT 3350, Intro. to Marketing	3	†Group A	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
†Group A	6	MGT 4380, Strategic Management	3
†Group B	3	*Free Electives	6
*Electives (Non B A or Non Eco.)	3	†Group A	3
*Free Elective	3	TOTAL	12
TOTAL	15		

*These are the only courses not requiring a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332.
†Group A–Choose four courses from MGT 3374, 4370, 4371, 4372, 4375, 4376, and 4397.
††Group B—Choose one additional junior- or senior-level business course, provided it is not used to fulfill another requirement.
Minimum hours required for graduation–120.

Honors Program in Management (HPM). The HPM specialization is a joint program of the Honors College and the area of management in the College of Business Administration. HPM is the university's first formal "honors major." Students have the option of the general management program or selecting a concentration in applied leadership, entrepreneurship, or health organization management. A minimum 3.0 adjusted Texas Tech GPA is required to declare HPM.

THIRD YEAR

Fall		*Spring*	
**Economics Course	3	BLAW 3391, Business Law I	3
FIN 3320, Corp. Fin.	3	ISQS 3344, Intro. Prod. & Oper. Management	3
MGT 3370, Organiz. & Management	3	MGT 3376, Org. Behavior	3
MGT 3373, Managerial Comm.	3	†Group A	3
MKT 3350, Intro. to Marketing	3	††Group B	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
††Group B	6	MGT 4380, Strategic Management	3
†††Group C	6	†††Group C	3
*Elective (Non B A or Non Eco.)	3	*Free Electives	6
TOTAL	15	TOTAL	12

*These are the only courses not requiring a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332.
†Group A—Choose one course from MGT 3374 or 3379.
††Group B–Choose three courses from MGT 4373, 4374, 4377, 4378, 4379, 4384, 4387, 4388, and 4389.
†††Group C—Choose three courses from MGT 4370, 4371, 4372, 4375, 4376, 4381, 4382, 4397, remaining Group A or Group B courses, or any other honors seminars, not used to fulfill another degree requirement.
Minimum hours required for graduation—120.

150-Hour Honors Program in Management (HPM). The HPM specialization is a joint program of the Honors College and the area of management in the College of Business Administration. HPM is the university's first formal "honors major." It is a "pre-M.B.A." program and prepares students for pursuing a master's degree within the College of Business Administration and provides a seamless transition from undergraduate to graduate status. Students have the option of the general management program or selecting a concentration in either applied leadership, entrepreneurship, or health organization management. Upon admission to the 150-Hour Program, the student should stay in contact with the Graduate Services Center concerning the graduate portion of the program. The B.B.A. degree will be granted upon completion of the following requirements and the master's degree will be granted after completion of the remaining 30 hours of graduate courses.

THIRD YEAR

Fall		*Spring*	
**Economics Course	3	BLAW 3391, Business Law I	3
FIN 3320, Corp. Fin.	3	ISQS 3344, Intro. Prod. & Oper. Management	3
MGT 3370, Organiz. & Management	3	MGT 3376, Org. Behavior	3
MGT 3373, Managerial Comm.	3	†Group A	3
MKT 3350, Intro. to Marketing	3	††Group B	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
††Group B	6	MGT 4380, Strategic Management	3
†††Group C	6	†††Group C	3
*Elective (Non B A or Non Eco.)	3	Graduate Courses	6
TOTAL	15	TOTAL	12

*This is the only course not requiring a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332.
†Group A—Choose one course from MGT 3374 or 3379.
††Group B–Choose three courses from MGT 4373, 4374, 4377, 4378, 4379, 4384, 4387, 4388, and 4389.
†††Group C—Choose three courses from MGT 4370, 4371, 4372, 4375, 4376, 4381, 4382, 4397, remaining Group A or Group B courses, or any other honors seminars, not used to fulfill another degree requirement.
Minimum hours required for undergraduate degree—120.

Management Information Systems (MIS) Major. The Information Systems and Quantitative Sciences (ISQS) area has a major field called Management Information Systems (MIS). The MIS graduate is prepared to be the liaison person between managers and computers and is therefore in great demand by industry. A 2.5 adjusted Texas Tech GPA is required to declare MIS as a major and to enroll in ISQS 2341, 3346, and 3347. Instead of a lower division elective, ISQS 2341 must be completed with a grade of A or B. Grades of C or higher are required in ISQS 3346 and 3347 to continue in the management information systems program.

THIRD YEAR

Fall		*Spring*	
FIN 3320, Corp. Fin.	3	BLAW 3391, Business Law I	3
ISQS 3346, Adv. Appl. Prog. Tech.	3	ISQS 3344, Intro. Prod. & Oper. Mgt.	3
ISQS 3347, Data Struct. & Prog. Lang.	3	ISQS 3345, Appl. of Distributed Sys.	3
MGT 3373, Managerial Comm.	3	ISQS 3348, Data Base Management. Sys.	3
MKT 3350, Intro. Marketing	3	*Elective (Non B A or Non Eco.)	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
**Economics or Computer Science	3	ISQS 4349, Info. Sys. Des.	3
ISQS 3349, Intro. Data Comm. Sys.	3	ISQS 4350, Info. Sys. Proj. Mgt.	3
ISQS 4348, Systems Anal.	3	MGT 4380, Strategic Management	3
MGT 3370, Org. & Mgt.	3	*Elective (Non B A or Non Eco.)	3
†Restricted Elective	3	TOTAL	12
TOTAL	15		

*These are the only courses not requiring a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332 or any upper level computer science course.
†Restricted Elective–Any junior or senior level course in B A or computer science or any other upper level courses as approved by a faculty advisor. (Some approved and recommended courses are ENGL 3365, COMS 3358, ISQS 3343, MGT 4370, ISQS 4382, and ACCT 3315.)
Minimum hours required for graduation–120.

150-Hour Management Information Systems (MIS) Major. Upon admission to the 150-Hour Program, the student should stay in contact with the Graduate Services Center concerning the graduate portion of the program. The B.B.A. degree will be granted upon completion of the following requirements and the master's degree will be granted after completion of the remaining 30 hours of graduate courses.

THIRD YEAR

Fall		*Spring*	
FIN 3320, Corp. Fin. I	3	BLAW 3391, Business Law I	3
ISQS 3346, Adv. Appl. Prog. Tech.	3	ISQS 3344, Intro. Prod. & Oper. Management	3
ISQS 3347, Data Struct. & Prog. Lang.	3	ISQS 3345, Appl. of Distributed Sys.	3
MGT 3373, Managerial Comm.	3	ISQS 3348, Database Management Sys.	3
MKT 3350, Intro. to Marketing	3	*Elective (Non B A or Non Eco.)	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
**Economics Course	3	ISQS 4349, Info. Sys. Des.	3
ISQS 3349, Intro. Data Comm. Sys.	3	ISQS 4350, Info. Sys. Proj. Management	3
ISQS 4348, Systems Anal.	3	MGT 4380, Strategic Management	3
MGT 3370, Org. & Management	3	Graduate Courses	6
TOTAL	12	TOTAL	15

*This is the only course not requiring a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332.
Minimum hours required for undergraduate degree—120.

Marketing Major. The goal of the undergraduate program in marketing is to enhance leadership potential by providing a high quality and thorough educational experience in preparation for careers in marketing. The required marketing courses and the major elective courses allow the breadth or depth in marketing and related subject areas.

THIRD YEAR

Fall		*Spring*	
BLAW 3391, Business Law I	3	ISQS 3344, Intro. Prod. & Oper. Management	3
FIN 3320, Corp. Fin. I	3	†Group A	9
MGT 3370, Organiz. & Management	3	††Group B	3
MGT 3373, Managerial Comm.	3		15
MKT 3350, Intro. to Marketing	3		
	15		

FOURTH YEAR

Fall		*Spring*	
**Economics Course	3	MGT 4380, Strategic Management	3
†Group A	6	†Group A	3
*Free Elective	3	††Group B	3
*Elective (Non B A or Non Eco.)	3	*Free Elective	3
	15		12

*These are the only courses not requiring a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332.
†Group A–Choose six courses from MKT 3352, 3353, 3356, 4351, 4354, 4358, 4359, and 4360.
††Group B–Choose two additional junior- or senior-level business courses provided they are not used to fulfill another requirement.
Minimum hours required for graduation–120.

150-Hour Marketing Major. Upon admission to the 150-Hour Program, the student should stay in contact with the Graduate Services Center concerning the graduate portion of the program. The B.B.A. degree will be granted upon completion of the following requirements and the master's degree will be granted after completion of the remaining 30 hours of graduate courses.

THIRD YEAR

Fall		*Spring*	
BLAW 3391, Business Law I	3	ISQS 3344, Intro. Prod. & Oper. Management	3
FIN 3320, Corp. Fin. I	3	†Group A	9
MGT 3370, Organiz. & Management	3	††Group B	3
MGT 3373, Managerial Comm.	3	TOTAL	15
MKT 3350, Intro. to Marketing	3		
TOTAL	15		

FOURTH YEAR

Fall		*Spring*	
**Economics Course	3	MGT 4380, Strategic Management	3
†Group A	6	†Group A	3
*Free Electives	6	Graduate Courses	6
TOTAL	15	TOTAL	12

*These are the only courses not requiring a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332.
†Group A–Choose six courses from MKT 3352, 3353, 3356, 4351, 4354, 4358, 4359, and 4360.
††Group B–Choose one additional junior- or senior-level business course, provided it is not used to fulfill another requirement.
Minimum hours required for undergraduate degree—120.

Petroleum Land Management Major. The goal of the undergraduate program in petroleum land management is to enhance leadership potential by providing a high quality and thorough educational experience in preparation for a career as a petroleum landman. A petroleum landman is involved in obtaining the legal rights to explore for and produce natural resources and has a responsibility for managing and maintaining these mineral rights. Petroleum Land Management majors must take GEOL 1303 and 1101 or GEOG 1402 to fulfill one of their lower division laboratory science requirements. This major is offered by the Management Area.

THIRD YEAR

Fall		*Spring*	
**Economics Course	3	BLAW 3391, Business Law I	3
FIN 3320, Corp. Fin.	3	GEOL 3323, Environ. Geol.	3
MGT 3370, Organiz. & Management	3	†Group A	3
MGT 3373, Managerial Comm.	3	††Group B	3
MKT 3350, Intro. to Marketing	3	*Free Elective	3
TOTAL	15	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
GEOL 4324, Geol. of Hydrocarbons	3	MGT 4380, Strategic Management	3
ISQS 3344, Intro. Prod. & Oper. Mgt.	3	MGT 4385, Petroleum Land Mgt.	3
†Group A	3	††Group B	3
+Group C	3	*Free Elective	3
*Free Elective	3	TOTAL	12
TOTAL	15		

*These are the only courses not requiring a grade of C or higher.
**Any upper level economics course except ECO 3323 and 4332.
†Group A—Choose two courses from MGT 3374, 3376, 3379, 4372, and 4375.
††Group B–Choose two courses from BLAW 3393, FIN 3332, 3334, 4333, and 4336.
+Group C–Choose one course from GEOG 3300, 3303, 3335, PETR 2301, and RWFM 4403.
Minimum hours required for graduation–120.

Minor for Non-Business Students. The requirements for a minor for students in colleges other than the College of Business Administration are as follows:

- Must have a minimum 2.5 adjusted Texas Tech GPA to declare a minor.
- All prerequisites must be met prior to taking each course.
- A minimum grade of C is needed to complete minor requirements.
- All junior and senior level business courses with the exception of BLAW 3391, must be taken at Texas Tech University.
- Correspondence courses cannot be used in the minor.

Finance Minor -24 hours

ACCT 2300 Financial Accounting. (Prerequisite: Sophomore standing or completion of any college level mathematics course)
ACCT 2301 Managerial Accounting. (Prerequisite: ACCT 2300)
MATH 2345 Introduction to Business Statistics. (Prerequisite: At least a C in MATH 1331)
ACCT 3304 Intermediate Accounting I. (Prerequisite: At least a C in ACCT 2301)
FIN 3320 Corporation Finance I. (Prerequisite: ECO 2301, 2302, ACCT 2301, MATH 2345, and a minimum 2.5 GPA)
FIN 3321 Financial Statement Analysis. (Prerequisite: FIN 3320 or may be taken concurrently if GPA is 3.25 or higher)
FIN 3323 Principles of Money, Banking, and Credit. (Prerequisite: FIN 3320 or concurrent)
FIN 4324 Investments. (Prerequisite: FIN 3320)

Finance Minor for Agricultural and Applied Economics Majors-21 hours

In addition to AAEC 3401, 4303, and 4316, the following courses will complete a minor in finance:

ACCT 2300 Financial Accounting. (Prerequisite: Sophomore standing or completion of any college level mathematics course)
ACCT 2301 Managerial Accounting. (Prerequisite: ACCT 2300)
ACCT 3304 Intermediate Accounting I. (Prerequisite: At least a C in ACCT 2301)
FIN 3320 Corporation Finance I. (Prerequisite: ECO 2301, 2302, ACCT 2301, MATH 2345, and a minimum 2.5 GPA)
FIN 3321 Financial Statement Analysis. (Prerequisite: FIN 3320 or may be taken concurrently if GPA is 3.25 or higher)
FIN 3323 Principles of Money, Banking, and Credit. (Prerequisite: FIN 3320 or concurrent)
FIN 4324 Investments. (Prerequisite: FIN 3320)

General Business Minor–18 Hours

ACCT 2300 Financial Accounting. (Prerequisite: Sophomore standing or completion of any college level mathematics course)
ACCT 2301 Managerial Accounting. (Prerequisite: ACCT 2300)
MATH 2345 Introduction to Business Statistics. (Prerequisite: At least a C in MATH 1331)
FIN 3320 Corporation Finance I. (Prerequisite: ECO 2301, 2302, ACCT 2301, MATH 2345, and a minimum 2.5 GPA)
MKT 3350 Introduction to Marketing. (Prerequisite: ECO 2301 or AAEC 2305 or ECO 2305 and a minimum 2.5 GPA)
MGT 3370 Organization and Management. (Prerequisite: A minimum 2.5 GPA)

General Business Minor for Chemical Engineering Majors–18 Hours

Grades of A or B in the following minor, plus ECO 2301 and 2302 and computer competency, provide a background for Chemical Engineering majors to pursue a Master of Business Administration degree. Credit-by-examination and correspondence courses are not accepted to meet requirements.

ACCT 2300 Financial Accounting. (Prerequisite: Sophomore standing or completion of any college level mathematics course)
ACCT 2301 Managerial Accounting. (Prerequisite: ACCT 2300)
BLAW 3391 Business Law I. (Prerequisite: A minimum 2.5 GPA)
FIN 3320 Corporation Finance I. (Prerequisite: ECO 2301, 2302, ACCT 2301, MATH 2345, and a minimum 2.5 GPA)
MKT 3350 Introduction to Marketing. (Prerequisite: ECO 2301 or AAEC 2305 or ECO 2305 and a minimum 2.5 GPA)
MGT 3370 Organization and Management. (Prerequisite: A minimum 2.5 GPA)

Management Minor–18 Hours

MGT 3370 Organization and Management. (Prerequisite: A minimum 2.5 GPA)

Three additional Management courses chosen from MGT 3374, 3376, 3379, 4371, 4372, 4375, and 4397. Two courses chosen from ACCT, BLAW, FIN, ISQS, MGT, and MKT.

Management Information Systems Minor–21 Hours

ISQS 2341 Business Computer Programming. (Prerequisite: ISQS 2440 or a similar course on introduction to computers and a minimum 2.5 GPA)
ISQS 3346 Advanced Application Programming Techniques. (Prerequisite: An A or B in ISQS 2341 and a minimum 2.5 GPA plus a minimum grade of C in ISQS 3347 or concurrent registration in ISQS 3347)
ISQS 3347 Data Structures and Programming Languages. (Prerequisite: An A or B in ISQS 2341 and a minimum 2.5 GPA)
ISQS 3348 Data Base Management Systems. (Prerequisite: Minimum grade of C in ISQS 3346 and 3347)
ISQS 3349 Introduction to Data Communication Systems. (Prerequisite: Minimum grade of C in ISQS 3346 and 3347)
ISQS 4348 Systems Analysis. (Prerequisite: ISQS 3348)
ISQS 4349 Information Systems Design. (Prerequisite: ISQS 4348)

Marketing Minor–18 Hours

MKT 3350 Introduction to Marketing. (Prerequisite: ECO 2301 or AAEC 2305 or ECO 2305 and a minimum 2.5 GPA)

Three additional marketing courses chosen from MKT 3352, 3353, 3356, 4351, 4354, 4358, 4359, and 4360. Two courses chosen from ACCT, BLAW, FIN, ISQS, MGT, and MKT.

Prelaw Studies. Students interested in attending law school after graduation may pursue any of the regular programs offered.

Graduation Requirements

The Bachelor of Business Administration degree will be awarded to all students who fulfill the following minimum requirements:

- Satisfactory completion of all courses and minimum hours as outlined for each major.
- A minimum Texas Tech adjusted 2.0 GPA.
- Completion of the last 30 hours following official admission into the College of Business Administration.

Application for Graduation. At least one year before the proposed graduation date, application for the degree must be made through the Undergraduate Services Center. Graduation is attained by fulfilling the requirements for a B.B.A. degree using an eligible catalog edition. It is the student's responsibility to fulfill all catalog requirements.

Admission of Transfer Students

Students planning to take their first two years of work at a junior or community college should follow our lower division degree plan. A maximum of 66 hours can be accepted provided none of the courses are vocational, career, or upper division courses (with the exception of BLAW 3391).

Courses that are acceptable from a four-year institution are our lower division requirements, junior-senior level economics courses (except ECO 3323 and 4332), and free electives plus the following upper division core: FIN 3320, ISQS 3344, MGT 3370, MKT 3350, and BLAW 3391. The last 30 hours must be taken while registered in the College of Business Administration.

Students transferring from any institution must have at least a cumulative 2.5 GPA or higher on all hours taken at any college or university. Transfer credit is not used in the calculation of a student's Texas Tech grade point average. The College of Business Administration has the authority for determining which transfer courses apply toward a B.B.A. degree program. Only free electives may be accepted on a pass-fail basis. Official transcripts from all institutions are needed before the acceptance of transfer credit.

Students requesting permission to transfer from another college at Texas Tech must have a 2.5 adjusted GPA or higher on a minimum of 12 credit hours and must bring a copy of all transcripts to the Undergraduate Services Center prior to being officially admitted to the College of Business Administration. A student is officially admitted to the college by a formal transfer completed by the Undergraduate Services Center. Upper division business and economics courses will be used in the degree program if the student had an adjusted 2.5 GPA when the courses were taken and the B.B.A. lower division business core was completed.

The last 30 hours prior to graduation must be taken while enrolled in the College of Business Administration.

General Standards and Requirements

Accreditation. The International Association for Management Education prescribes that at least 50 percent of the total hours in the undergraduate program must be in General Education courses. At least 50 percent of the business credit hours required for the business degree must be earned at the institution awarding the degree.

Catalog Selection. Students will use the catalog issued for the year in which they were first officially admitted to the College of Business Administration or a more recent catalog if approved. However, if they later transfer to another institution or another college at Texas Tech, they will use the catalog in effect when they are readmitted to the College of Business Administration. For these purposes, a catalog expires after seven years.

Correspondence Courses. Free electives and lower division non B A or noneconomics courses may be taken by correspondence,

up to a maximum of 18 hours. Lower division business core, upper division core and major courses and requirements are excluded. A correspondence course cannot be used for graduation when completed during the student's last semester or term.

Course Load. The normal course load for a semester is 15 to 16 hours. The maximum load for a semester is 19 hours (8 hours for a summer term). Correspondence courses are included in a student's course load. The maximum course load for students on probation is 16 hours.

Course Prerequisites. Prerequisites are governed by the catalog in effect when the course is taken.

Grades of Incomplete. Grades of Incomplete must be removed at Texas Tech University, not by transfer credit.

Ineligible Registrations. The College of Business Administration reserves the right to drop any ineligibly registered student from a course for reasons such as lower division-upper division rule infractions and lack of prerequisites. Courses taken ineligibly are not used in the degree program.

Nondegree Students. A nondegree form must be signed in the Undergraduate Services Center before registration. The nondegree status will continue until a written request for a change has been approved by the Undergraduate Services Center. All prerequisites and academic regulations based on GPA, such as probation and suspension, apply to nondegree students. Courses taken while in the nondegree status may not be used as part of a degree program.

Pass-Fail. Only free electives are eligible for the pass-fail option. No free elective in a student's major area may be taken pass-fail (e.g., accounting course for an accounting major) even if major courses have been completed, nor can a course be taken pass-fail that could be used for a group A or B requirement unless that group has been satisfactorily completed. Pass-fail hours are excluded in determining eligibility for the Dean's Honor List and President's Honor Roll.

Probation and Suspension. See the section of the catalog entitled "Academic Status" concerning probation and suspension policies.

Requirements to Declare an Upper Division Major. The College of Business Administration curriculum consists of two parts: A lower division and an upper division. The lower division requirements should be completed during the freshman and sophomore years. All students who wish to major in business are classified as prebusiness majors (COBA designation) until completion of the lower division business core with grades of C or higher, and attainment of a minimum 2.5 adjusted Texas Tech GPA. Upon attainment of the minimum requirements, application may be made to the Undergraduate Services Center for a specific business major. Admission to the prebusiness major (the lower division COBA designation) does not assure admission to any upper division major in the college. Students must meet minimum GPA requirements in effect when a major is declared. Note that the minimum GPA for any major may increase due to limited space availability.

Second Undergraduate Degree. No second bachelor's degree is conferred until the candidate has completed at least 24 semester hours (exclusive of credit by exam) after admission for the second degree.

Study Abroad. Students requesting permission to study abroad must have a minimum 2.5 adjusted Texas Tech GPA.

Summer Work. Course work to be taken at other institutions must be approved by a COBA undergraduate advisor. Credit from other institutions is not calculated into the student's Texas Tech GPA.

Services

Advising. Each undergraduate student in the college is provided with an academic advisor located in the Undergraduate Services Center on the second floor of the B A building. COBA advisors have the expertise and capability to provide the necessary guidance during each student's degree program and are aided by a computerized degree audit to ensure

accuracy. The freshman course "Professional Enterprise" assists students in career planning, and aptitude tests are available in the university Counseling Center.

Upper division students should maintain contact with a COBA advisor in the Undergraduate Services Center concerning degree requirements and with faculty advisors for help in selecting courses to achieve career objectives.

Courses

Courses numbered 1000 and 2000 are lower division courses; those numbered 3000 and 4000 are upper division courses. Refer to preceding pages for eligibility to take upper level (3000-4000) courses.

Business Administration (B A)

4000. Directed Experience (V1-6). Prerequisite: Consent of instructor and Dean of the College. Enhance the student's classroom knowledge through internships, projects in the workplace, mentoring experiences, and other approved experiences.

4182. Business Administration Internship (1). Prerequisite: Consent of instructor, Enhance the student's knowledge within fields of business specialization through application of concepts, principles, and techniques learned in the classroom.

4381. Individual Problems in Business Administration (3). Prerequisite: Senior standing. 3.0 GPA in major, 2.75 cumulative GPA, and written consent of instructor prior to registration. Independent problem research under guidance of a faculty member. Student should register for section appropriate to the academic area in which the work will be done.

4382. Internship in Business Administration (3). Prerequisite: At least 6 hours of professional courses (excluding core courses) to be determined by the area faculty; other minimum standards determined by area; written approval form contains specific requirements for participation. This course permits students to enhance their knowledge within their field of specialization through application of concepts, principles, and techniques learned in the classroom. A maximum of 3 hours may be earned (with approval prior to employment) by internships toward a degree program.

4383. Special Topics in Business (3:3:0). Prerequisite: Determined by area. Examination of specialized problems including such varied topics as working capital management, commodity and financial futures investment, and small business finance. May be repeated once for credit with no duplication of topic.

Accounting (ACCT)

2300. Financial Accounting (3:3:0). Prerequisite: Sophomore standing or completion of any college-level mathematics course. Concepts and terminology of accounting and financial reporting for modern business enterprises and the relationships between accounting information and business activities.

2301. Managerial Accounting (3:3:0). Prerequisite: ACCT 2300. Uses of accounting information for planning decisions about products and services, activities and processes, suppliers and customers, organizational subunits, and time periods as these relate to organizations in a changing environments.

3304. Intermediate Accounting I (3:3:1). Prerequisite: C or higher in ACCT 2301. Net income concepts, corporations, current assets, and investments.

3305. Intermediate Accounting II (3:3:1). Prerequisite: C or higher in ACCT 3304 and 2.5 adjusted Texas Tech GPA. Fixed assets, liabilities and reserves, interpretation and analysis of financial statements, application of funds, cash flow statement, reorganizations, and price level impact on financial statements.

3306. Principles of Cost and Managerial Accounting (3:3:1). Prerequisite: C or higher in ACCT 3304, MATH 2345, and 2.5 adjusted Texas Tech GPA. A study of principles and techniques of accounting information systems for organizations.

3307. Income Tax Accounting (3:3:0). Prerequisite: C or higher in ACCT 2300. A study in detail of certain provisions of the Internal Revenue Code, combined with elementary tax planning in business and individual transactions.

3315. Accounting Systems (3:3:1). Prerequisite: C or higher in ACCT 2301. The theories, procedures, and techniques of accounting information systems for organizations.

4301. Principles of Auditing (3:3:1). Prerequisite: ACCT 3305 and 3315. An introduction to the theory and practice of auditing, emphasizing auditor decision making through a cycle approach to an audit engagement.

4302. Public Sector Accounting (3:3:0). Prerequisite: C or higher in ACCT 3304. Application of accounting principles to selected governmental and not-for-profit organizations, including state and local governments, universities, hospitals, and other public sector entities.

4303. Advanced Accounting Theory (3:3:0). Prerequisite: ACCT 3305. In-depth discussion and analysis of selected topics in financial accounting. Broadens the students' knowledge of topics introduced in ACCT 3304 and 3305 and covers new topics as they emerge in practice. Concentrates on the applicability of important promulgated accounting standards.

4304. Advanced Accounting Problems (3:3:0). Prerequisite: ACCT 3305. Accounting for corporate business combinations and the preparation of consolidated financial statements. The accounting and reporting problems associated with partnerships and foreign operations are also discussed.

4305. Internal Auditing (3:3:1). Prerequisite: ACCT 3305 and 3315. Extension and application of general auditing concepts to internal auditing in both private and public sectors.

4306. Advanced Accounting Systems (3:3:0). Prerequisite: ACCT 4301 or 4305. An analysis of the effects of information technology on the control and maintenance of accounting information systems.

4307. Advanced Income Tax Accounting (3:3:0). Prerequisite: C or higher in ACCT 3304 and 3307. Study of taxation of corporations, partnerships, estates, gifts, and trusts.

4308. Advanced Internal Auditing (3:3:1). Prerequisite: ACCT 4301 or 4305. A further extension of audit concepts and techniques to internal auditing. Emphasis is placed on cases in sampling, statistics, and EDP technology.

4309. Advanced Cost and Managerial Accounting (3:3:1). Prerequisite: ACCT 3306. A study of advanced cost and managerial topics and an overview of contemporary issues in management accounting.

4310. Petroleum Accounting (3:3:0). Prerequisite: C or higher in ACCT 3304. Accounting for the production, refining, and distribution of oil and gas with emphasis upon production.

4314. International Accounting (3:3:0). Prerequisite: ACCT 3304 or consent of instructor. Study of the accounting issues affecting organizations operating in a global economy.

4381. Individual Problems in Accounting (3). Prerequisite: Consent of instructor. For students with high academic achievement who are interested in enhancing their degree program by pursuing individual research or study under the guidance of an accounting faculty member.

4382. Internship in Accounting (3). Prerequisite: Approval prior to employment. This course permits students to apply the concepts, principles, and techniques learned in the classroom. Up to 3 hours of internships can be applied toward a degree program. Must be taken pass-fail.

Finance (FIN)

1307. Personal Financial Planning and Investing (3:3:0). Emphasis on elements that should be considered before investing in real estate, insurance, personal property, and securities. Introduction to the operation of securities markets. [BUSI 1307]

3320. Corporation Finance I (3:3:0). Prerequisite: ECO 2301, 2302, ACCT 2301, MATH 2345, and a minimum 2.5 GPA. An introductory survey of corporation finance covering financial mathematics, capital budgeting, sources of funds, financial analysis, and working capital decision.

3321. Financial Statement Analysis (3:3:1). Prerequisite: FIN 3320 or may be taken concurrently if GPA is 3.25 or higher. The analysis and interpretation of financial statement reports. Effective financial statement evaluation examined from the perspective of managers, investors, and creditors. Proforma statement development for effective financial management.

3323. Principles of Money, Banking, and Credit (3:3:0). Prerequisite: FIN 3320 or concurrent. A basic course, including consideration of monetary standards, organization and functioning of the commercial banking system and the Federal Reserve System, problems of money, prices, and credit control. Recent monetary and banking trends are emphasized.

3332. Real Estate Fundamentals (3:3:0). Prerequisite: FIN 3320. Introduction to property law, finance, valuation, investment analysis and brokerage. Operations of the real estate market and the study of urban land use, including urban growth, city structure, and land use planning.

3334. Real Estate Finance and Investments (3:3:0). Prerequisite: FIN 3320. Mechanisms of real estate financing, sources of funds and financial institutions, governmental agencies. The framework for urban real estate investment decisions by individuals and institutions. Use of financing techniques, leverage, risk analysis and control, and taxation.

4182. Internship in Business Administration (1). Prerequisite: at least 6 hours of professional courses to be determined by the area. This course permits students to

enhance their knowledge within their field of specialization through application of concepts, principles, and techniques learned in the classroom. Must be taken pass-fail.

4323. Management of Financial Institutions (3:3:1). Prerequisite: FIN 3320, 3321, and 3323. Operation and management policies of depository financial institutions. Commercial bank management is stressed. Examines internal operation, regulation, and supervision of institutions studied. Problems and cases.

4324. Investments (3:3:0). Prerequisite: FIN 3320. Overview of various investment media and markets associated with them. Emphasis on fundamental and technical analysis, sources of information, and the efficient markets concept.

4325. Principles of Portfolio Management (3:3:0). Prerequisite: FIN 4324 and ACCT 3304. Advanced study of selecting and combining securities into a portfolio. Includes setting investment goals, diversification and risk reduction, capital market theory, and portfolio selection models.

4326. Student-Managed Investment Fund (3:3:0). Prerequisite: FIN 4324 and consent of instructor. Advanced application of the process of selecting securities as well as forming and managing a portfolio involving real money. Focus is on managing risk and return. May be repeated for credit.

4328. International Finance (3:3:0). Prerequisite: FIN 3320 and 3323. A study of the international monetary system in its theoretical and institutional setting. The position of an individual business firm in conducting international trade; procedures in financing international transactions.

4329. Money and Capital Markets (3:3:0). Prerequisite: FIN 3320 and 3323. Determinants of savings and investments, interest rates, flow of funds, portfolio selection, and security pricing. Studies of various money and capital markets and government impacts on markets.

4330. Corporation Finance II (3:3:1). Prerequisite: FIN 3320, 3321, and ACCT 3304. Advanced study of corporation finance topics including capital budgeting, risk, cost of capital, capital structure, and dividend policy. Cases may be used.

4333. Real Estate Appraisal (3:3:0). Prerequisite: FIN 3332 or 3334. Appraisal and valuation techniques applied to residential, commercial, and industrial property.

4336. Urban Land Development (3:3:0). Prerequisite: FIN 3332 or 3334. The land conversion process including feasibility analysis, market and merchandising targets, site selection, design, construction, and financial analysis. Land use controls, planning, and environmental constraints.

4381. Individual Problems in Finance (3). Prerequisite: Senior standing, minimum 3.0 GPA in major, minimum overall cumulative GPA of 2.75, and consent of instructor. Independent problem research under guidance of a faculty member.

4382. Internship in Finance (3). Prerequisite: At least 6 hours of professional courses (excluding core courses) to be determined by the area faculty. This course permits students to apply the concepts, principles, and techniques learned in the classroom. Up to 3 hours of internships (with approval prior to employment) can be applied as a free elective toward a finance major. Must be taken pass-fail.

4383. Special Topics in Finance (3:3:0). Prerequisite: Consent of instructor. Examination of specialized problems in such topics as working capital management, capital budgeting, cost of capital, commodity and financial future investment, and small business finance. May be repeated once for credit as topic varies.

International Business (I B)

3100. Language Workshops (1:2:0). Prerequisite: Consent of director. Business language and cultural workshops taught in a foreign language. May be repeated for 3 hours credit.

4383. Special Topics in International Business (3:3:0). Prerequisite: Consent of instructor. Examines specialized problems relating to international business such as exporting, international trade, etc. May be repeated once for credit as topic varies.

Information Systems and Quantitative Sciences (ISQS)

2341. Business Computer Programming (3:3:1). Prerequisite: ISQS 2440 and a 2.5 adjusted Texas Tech GPA. Business problem solving using a programming language. The student is expected to demonstrate a basic competency in using the language to solve several problem situations.

2440. Introduction to Computer Systems in Business (4:3:2). Prerequisite: At least a C in any college-level mathematics course. This course surveys computer principles, procedures, hardware, and business-oriented computer systems. Students gain hands-on exposure to programming, information, and communication tools such as the Internet.

3343. Management Science and Operations Research I (3:3:0). Prerequisite: MATH 2345. Developing and understanding

business decision tools and models to be applied to the managerial decision process.

3344. Introduction to Production and Operations Management (3:3:1). Prerequisite: ISQS 2440 MATH 2345, and a minimum 2.5 GPA. An overview of the production and operations function in organizations with examples of the application of computer and quantitative skills to management problems. Both design and operating problems are discussed.

3345. Applications of Distributed Systems (3:3:1). Prerequisite: Minimum grade of C in ISQS 3346 and 3347. Should be taken concurrently with ISQS 3348. Must be completed prior to taking senior level ISQS courses. Managerial and technical aspects of distributed system architectures. Protocols and capacity considerations, client/server development tools, data warehouses, open systems, groupware, and applications frameworks.

3346. Advanced Application Programming Techniques (3:3:1). Prerequisite: An A or B in ISQS 2341, a 2.5 adjusted Texas Tech GPA, plus a minimum grade of C in ISQS 3347 or concurrent registration in ISQS 3347. Application of data structures in solving business problems. Students are required to work on projects involving the writing of large programs that use appropriate data structures and techniques.

3347. Data Structures and Programming Languages (3:3:1). Prerequisite: An A or B in ISQS 2341 and a 2.5 adjusted Texas Tech GPA. Introduces students to a structured programming language. Introduces algorithmic analysis, string processing, recursion, data structures, file processing techniques, and bulk storage devices.

3348. Data Base Management Systems (3:3:1). Prerequisite: Minimum grade of C in ISQS 3346 and 3347. Basic concepts of data base management systems; recent developments in the area of data base systems. Students develop a prototype data base application of their own.

3349. Introduction to Data Communication Systems (3:3:1). Prerequisite: Minimum grade of C in ISQS 3346 and 3347. Introduction to the concepts and terminology of data communications, network design, and distributed information systems. Emphasis on management of equipment, architectures, and transmission alternatives.

4348. Systems Analysis (3:3:1). Prerequisite: ISQS 3345 and 3348. Methods for analyzing information needs and specifying application system requirements, the development life cycle and the life cycle phases leading to the determination of system requirements.

4349. Information Systems Design (3:3:1). Prerequisite: ISQS 4348. Introduces the skills needed to develop a physical design and implement an operational system from the logical design of systems analysis.

4350. Information Systems Project Management (3:3:1). Prerequisite: ISQS 4348. Methods for management of software development projects; procurement and financial control; career and professional considerations.

4381. Individual Problems in Information Systems and Quantitative Sciences (3). Prerequisite: Consent of instructor. For students with high academic achievement who are interested in enhancing their degree programs by pursuing individual research or study under the guidance of an ISQS faculty member.

4382. Internship in Information Systems and Quantitative Sciences (3). Prerequisite: Approval prior to employment. This course permits students to apply the concepts, principles, and techniques learned in the classroom. Up to 3 hours of internships can be applied toward a degree program.

4383. Special Topics in Information Systems and Quantitative Sciences (3:3:0). Prerequisite: Consent of instructor. Examines specialized problems relating to information systems and quantitative sciences. May be repeated once for credit as topic varies.

Management (MGT)

3370. Organization and Management (3:3:0). Prerequisite: Minimum 2.5 GPA. The management function; basic principles, concepts, and practices in the operation of organizations.

3373. Managerial Communication (3:3:1). Prerequisite: Junior standing, ISQS 2440 and a C or better in ENGL 1301 and 1302. The application of oral and written communication principles to managerial situations; an overview, simulation, and analysis of the communication process in the business environment.

3374. Personnel Administration (3:3:0). Prerequisite: MGT 3370. Principles and methods in general personnel management and work force maintenance.

3376. Organizational Behavior (3:3:0). Prerequisite: MGT 3370. Focuses on managerial and employee attitudes and behavior. Topics include performance, job

satisfaction, motivation groups, and task design.

3379. Advanced Organization and Management (3:3:0). Prerequisite: MGT 3370. Study of the design and management of organizations in considerable depth beyond the basic course.

4370. Consulting to Entrepreneurial Organizations (3:3:0). Prerequisite: A 2.5 adjusted Texas Tech GPA, FIN 3320, MKT 3350, MGT 3370, 3373, and BLAW 3391. Field experience in small business counseling involving problem solving and applications of business management principles.

4371. Health Organization Management (3:3:0). Prerequisite: MGT 3370. Designed to provide an overview of the health care system and its managerial, social, behavioral, and economic aspects from an organizational viewpoint.

4372. Labor Relations (3:3:0). Prerequisite: MGT 3370. A study of labor union development, organization, leadership, and operational techniques. Consideration of collective bargaining issues and procedures.

4373. Leadership Concepts and Skills (3:3:0). Prerequisite: MGT 3370; 3.0 adjusted Texas Tech GPA; and HPM, MGT, or PLM majors or Honors College student. Behavior and managerial practices with emphasis on organizational contexts.

4374. International Entrepreneurship (3:3:0). Prerequisite: MGT 3370; 3.0 adjusted Texas Tech GPA; and HPM, MGT, or PLM majors or Honors College student. Focuses on how entrepreneurs and firms recognize and fulfill opportunities for wealth creation in an international context.

4375. International Management (3:3:0). Prerequisite: MGT 3370 or ECO 3333. Exploration of organization and management issues in international enterprise.

4376. Entrepreneurship (3:3:1). Prerequisite: A 2.50 adjusted Texas Tech GPA and MGT 3370. Introduces concepts and skills associated with wealth creation. Examines managerial processes and strategies in emerging, growing, and revitalizing firms.

4377. Managing the Entrepreneurial Family Business (3:3:0). Prerequisite: MGT 3370; 3.0 adjusted Texas Tech GPA; and HPM, MGT, or PLM majors or Honors College student. Exploration of major issues and strategies for initiating, building, and managing a family business.

4378. Clinical Aspects of Health Organization Management (3:3:0). Prerequisite: MGT 3370; 3.0 adjusted Texas Tech GPA; and HPM, MGT, or PLM majors or Honors College student. Managerial implications of the natural history of disease, epidemiology, and health policies and their relevance to modern health care organizations.

4379. Managed Care Aspects of Health Organization Management (3:3:0). Prerequisite: MGT 4378; 3.0 adjusted Texas Tech GPA; and HPM, MGT, or PLM majors or Honors College student. Fundamental issues surrounding today's managed care organizations and their impact on stakeholders.

4380. Strategic Management (3:3:0). Prerequisite: Business students who have completed BLAW 3391, ISQS 3344, FIN 3320, MKT 3350, MGT 3370, and 3373 with grades of C or higher and are in their final semester. Strategy is an integrative course focusing on an organization's pursuit of superior economic performance by deciding what business to be in and how to compete.

4381. Individual Problems in Management (3). Prerequisite: Consent of instructor. For students with high academic achievement who are interested in enhancing their degree program by pursuing individual research or study under the guidance of a management faculty member.

4382. Internship in Management (3). Prerequisite: Approval prior to employment. This course permits students to apply the concepts, principles, and techniques learned in the classroom. Up to 3 hours of internships can be applied toward a degree program.

4383. Special Topics in Management (3:3:0). Prerequisite: Consent of instructor. Examines specialized problems relating to management. May be repeated once for credit as topic varies.

4384. Managing Conflict and Negotiations (3:3:0). Prerequisite: MGT 3370; 3.0 adjusted Texas Tech GPA; and HPM, MGT, or PLM majors or Honors College student. Develop the skills necessary to manage organizational stakeholders effectively. Emphasizes negotiation skills.

4385. Petroleum Land Management (3:3:0). Spring seminar required of and open only to petroleum land management majors.

4386. High Performance Management—Advanced Skills (3:3:0). Prerequisite: MGT 4373 or 4384 plus HPM major. Develops applied skills in advanced techniques (e.g., project and stakeholder management) that leads to high performing managers and organizations.

4387. History of Management Thought: Honors Seminar in Management (3:3:0). Prerequisite: A 3.0 adjusted Texas Tech GPA and HPM, MGT, or PLM

majors or Honors College student. Offers interdisciplinary perspective on development of management knowledge.

4388. Change and Innovation Processes (3:3:0). Prerequisite: MGT 3370; 3.0 adjusted Texas Tech GPA; and HPM, MGT, PLM majors or Honors College student. Focuses on understanding and managing innovation and change processes.

4389. Honors Senior Internship in Management (3:3:0). Prerequisite: HPM major. Under joint faculty-employer supervision, the student will intensively interrelate an experiential workplace component with an integrative written thesis.

4397. Management and the Business Environment (3:3:0). Prerequisite: MGT 3370. Study and cases in social responsibility, business ethics, and other problems in the external environment of the business organization.

Marketing (MKT)

3350. Introduction to Marketing (3:3:0). Prerequisite: ECO 2301 (AAEC 2305 or ECO 2305 for nonbusiness majors) and minimum 2.5 GPA. Marketing structures and agencies; motives and buying habits; types of middlemen, marketing institutions, and channels; current marketing practices; marketing of industrial and consumer goods.

3352. Consumer Behavior (3:3:0). Prerequisite: At least a C in MKT 3350. The buyer as a problem solver; buying decision processes; factors influencing behavior; principles, theories, and models; behavioral research techniques.

3353. Marketing Channels and Distribution Systems (3:3:0). Prerequisite: At least a C in MKT 3350. An analysis of policies, decisions, and planning related to distribution channels for consumer and industrial goods.

3356. Marketing Research and Analysis (3:3:1). Prerequisite: At least a C in MKT 3350 and MATH 2345. Scientific marketing research methods; emphasis on collection, analysis, and interpretation of data as applied to the solution of marketing problems.

4351. Retail Management (3:3:0). Prerequisite: ACCT 2300 and at least a C in MKT 3350. Comprehensive introduction to an evaluation of retailing with emphasis on profit elements, pricing and merchandising policies, inventory and merchandising control.

4354. Market Promotion (3:3:0). Prerequisite: MKT 3352. Management of the promotional mix of advertising, personal selling, and sales promotion. Emphasizes the interaction and coordination of these three elements and relates them to the other components of the firm's marketing strategy.

4358. International Marketing (3:3:0). Prerequisite: At least a C in MKT 3350. A survey of international marketing principles, cultural differences, world markets, and political constraints.

4359. Sales Management (3:3:0). Prerequisite: At least a C in MKT 3350. Problems and methods of organization and administration of sales departments, sales operations, sales control, sales promotion, and sales policies.

4360. Marketing in E-Business Environments (3:3:0). Prerequisite: At least a C in MKT 3350. Overviews the Internet and marketing-related technological developments. Primary focus is on strategic issues in creating market advantages in electronic commerce.

4381. Individual Problems in Marketing (3). Prerequisite: Consent of instructor. For students with high academic achievement who are interested in enhancing their degree program by pursuing individual research or study under the guidance of a marketing faculty member.

4382. Internship in Marketing (3). Prerequisite: At least 6 hours of approved marketing courses and approval prior to employment. Internship must include at least 10 consecutive calendar weeks of full-time employment; compensation must be commensurate with the work assignment for the entire internship.

4383. Special Topics in Marketing (3:3:0). Prerequisite: Consent of instructor. Examines specialized problems relating to marketing. May be repeated once for credit as topic varies.

Business Law (BLAW)

3391. Business Law I (3:3:0). Prerequisite: Minimum 2.5 GPA. Nature and source of law, courts and procedure, contracts, Texas law of separate and community property. [BUSI 2301]

3393. Real Estate Law (3:3:0). Rights in land, classification of estates, acquisition and creation of property rights, titles, and common conveyances.

4330. E-Business and Cyber Law (3:3:0). Prerequisite: BLAW 3391. Study of the legal issues surrounding electronic commerce and other computer law matters.

4392. Business Law II (3:3:0). Prerequisite: BLAW 3391. Second course in business law. Law of negotiable instruments, business organizations, partnership and corporation sales, with emphasis on subject matter appearing frequently in the CPA law examination.

College of Education

Horn Professor Gerald Skoog, *Dean*

Web Site: www.educ.ttu.edu

The College of Education is accredited by the State Board for Educator Certification, the Southern Association of Colleges and Schools, and the National Council for Accreditation of Teacher Education. Texas Tech University holds membership in the American Association of Colleges for Teacher Education. The teaching certificate earned at Texas Tech is accepted in a majority of the states in the nation through reciprocity agreements.

The primary function of the College of Education is to provide degree and certification programs for both undergraduate and graduate students who plan careers in education. For many individuals, this means a future in teaching. However, a variety of other degrees and certificates are available in such areas as educational leadership, counselor education, curriculum and instruction, educational psychology, higher education, and instructional technology. Furthermore, the College of Education prepares individuals to work with a variety of special populations and at a variety of levels—early childhood, middle level, secondary, two-year colleges, and senior colleges and universities.

The general curricula for undergraduate degree and certification programs are outlined in this section; graduate degree programs leading to the Master of Education degree, the Doctor of Education degree, and professional certificates are detailed in the *Graduate Catalog*. A descriptive list of the undergraduate courses offered by the College of Education is presented in the following pages. Any deviation from the approved curriculum for a particular degree must be approved by the student's advisor and by the office of the Dean of the College of Education.

Because of state law, majors using the term "Education" (e.g., Secondary Education, Art Education) are not offered at Texas Tech University. Individuals will be certified to teach in elementary and secondary schools, but must complete noneducation majors.

Students preparing to teach in secondary schools will generally complete an academic major in Agricultural Sciences and Natural Resources, Arts and Sciences, Human Sciences, or Visual and Performing Arts, with additional courses in professional education required for certification. Students interested in teaching composite science (certified to teach in secondary schools) may complete a Multidisciplinary Science major in the College of Education, or an academic major in one of the teaching fields.

Students preparing to teach in grades 4-8 will complete a Multidisciplinary Studies major in the College of Education. Students seeking early childhood certification may do so through a degree in the College of Human Sciences. Certification guidelines are determined by the state and may be subject to change.

Core Curriculum Requirements. The university has established Core Curriculum requirements for all students. These requirements will ensure breadth in each academic program.

Students should consult their academic advisor regarding specific course requirements. Students are urged to seek advisement prior to their first enrollment to avoid losing credit. Students may find a listing of Core Curriculum requirements in the Academic Information section of the catalog.

Advisory Program. The advisory program in the College of Education is designed to provide aid to each student in planning and completing the appropriate degree and teacher certification program. *Each student is expected to have at least one individual conference each semester with an advisor during which the current semester's work will be evaluated and the next semester's plan will be developed.*

The academic advisor is responsible for (1) assisting the student in planning a program and in selecting courses to be taken each semester prior to registration, (2) helping

the student in selecting the proper areas of specialization and/or teaching fields, and (3) advising the student in meeting admission and retention standards of teacher education and student teaching. Either advisor or advisee may ask the Dean of the College of Education for a change in assignment.

Degree and Teacher Certification Programs. Degree and teacher certification programs are two distinct programs. Freshman or transfer students are admitted to a degree program in the College of Education that leads to a Bachelor of Science degree. Eligible students at the junior level are admitted to a teacher certification program that leads to a Texas teaching certificate. The certification program culminates with the state mandated TExES exams. Students must pass all appropriate certification exams by the Texas Examination of Education Standards. These exams are required only for the certification and not for the bachelor's degree. Language related certification also requires passage of the Texas Oral Proficiency Test. A fee is associated with all such examinations.

Admission to the Bachelor of Science Degree Program and Admission to the Teacher Certification (Education) Program. The College of Education seeks to maintain rigorous academic programs to produce outstanding educators for Texas and the nation. Admission to College of Education degree and certification programs is open to all individuals on the basis of academic preparation, ability, and availability of space in the program selected. When there are more qualified applicants than can be adequately instructed by available faculty or accommodated in available facilities, the college will control enrollment in specific programs by limiting the admission of new students. The number of students accepted into the undergraduate Early Childhood, Middle-Level Education, All-Level, Secondary, and Career and Technology Education programs is limited. Therefore, admission into a teacher education program is competitive and based on GPA and other criteria. A complete description of eligibility requirements is available in the Educator Certification Office in the College of Education. (Entrance criteria may be subject to change.) Admission to a college degree program does not ensure admission to an upper-division teacher certification program. Students seeking teacher certification may apply to a certification program through a twice per year admission process. Application forms from the College of Education should be completed during the second semester of the sophomore year. Application deadlines are generally February (for the fall semester) and mid-September (for the spring semester). For specific details, consult a College of Education advisor. To be considered for admission to teacher certification programs, students must meet the following minimum prerequisites:

1. A minimum of 60 semester hours including current enrollment with an acceptable scholastic GPA. Students seeking early childhood certification (through a degree in Human Sciences) must have a 2.70 or better overall GPA. Students seeking all other certificates (middle level, secondary, career and technology, and all-level) must have a 2.50 or better overall GPA.
2. A satisfactory level of performance on the Texas Academic Skills Program (TASP).
3. Good character and high ethical standards. All applicants for Texas certification are screened for a record of felony or misdemeanor convictions through the Texas Department of Public Safety. All potential certificate applicants with criminal felony or misdemeanor convictions should immediately contact the Texas Tech Certification Office to seek clarification of their certification status.
4. Possess the ability to speak and understand the English language sufficiently to use it easily and readily in conversation and teaching.
5. Possess such personal and social qualities, and physical and mental health to indicate a fitness for the education profession.
6. Evidence of critical thinking.
7. Admission to upper division teacher education programs will be subject to additional entrance criteria depending on availability of space in the program selected.

No student meeting these prerequisites will be denied admission to a degree program, certification program, or student teaching because of race, religion, national origin, age, gender, or disability. Under some circumstances a student may be requested to leave a certification program. Such a request can be initiated by the college or by the student. Due process will be observed. Individuals who lack the minimum GPA or have not passed the TASP examination due to extenuating circumstances may also

apply for admission to teacher education. The Admission Committee will review each such request.

Students in other colleges may complete the requirements for teacher certification when these are taken together with an appropriate teaching major. Generally, all persons seeking early childhood certification to grade 4 will enroll in the College of Human Sciences; students seeking certification at the middle level (grades 4-8) will enroll in the College of Education; those interested in secondary school level may enroll in the College of Education or in the College of Arts and Sciences, the College of Agricultural Sciences and Natural Resources, the College of Human Sciences, or the College of Visual and Perfoming Arts, depending upon the teaching field desired. Students planning to teach agricultural science or family and consumer sciences will enroll in the appropriate respective college.

Academic Foundations. During their freshman and sophomore years, students normally complete their general degree requirements for both the Bachelor of Science degree and a teaching certificate. Course work in professional education and advanced courses in particular academic specializations or teaching fields are usually taken in the junior and senior years.

Professional Education. The standards for admission to a program leading to teacher certification are described in the section of the catalog entitled “Admission to the Teacher Certification Program.”

Methods courses for initial certification programs include field experience in schools and are offered only when the elementary and secondary schools are in session.

Student Load. The maximum load for a student in the College of Education is 18 semester hours. No student will be permitted to enroll in more than 18 semester hours, including work taken by correspondence, without written approval from the division chair or associate dean. During the student teaching semester, the maximum load is 12 semester hours—9-12 hours of student teaching plus any required corequisite education course. Requests to take more than 12 hours must be approved by the certification officer.

Length of Degree Program. The Bachelor of Science degree can be completed in approximately eight semesters. The Multidisciplinary Studies major requires 133 hours, and the Multidisciplinary Science major requires 129 hours. A student may be required to attend either one summer term or a ninth semester to complete all requirements. Students should complete a degree and certification plan no later than the first semester of the freshman year. Assistance in completing the degree and certification plan is found in the office of the Dean of the College of Education. An Intent to Graduate form should be filed in the office of the Dean of the College of Education one year prior to graduation.

Pass-Fail Option. Courses used to meet stated degree plan requirements may not be taken pass-fail. Up to 13 hours of courses that are taken as free electives to total 133 hours and are not used to meet any other degree requirement may be taken pass-fail. Courses that are designated pass-fail by departmental policy rather than student choice do not count in the 13 hour limit on elective courses that may be taken pass-fail. No student on probation is allowed the pass-fail option.

Transferability. Developmental courses (e.g., basic or introductory reading and math courses) and vocational courses (auto mechanics, nursing) will not transfer for degree or certification programs. Courses with “D” grades may or may not transfer depending on Coordinating Board, university, and College of Education guidelines.

Please see the university Teacher Education section of this catalog for information on recommendations for teacher certification and admission to student teaching.

Education Minor. Students seeking secondary certification may minor in secondary education. The following sequence of courses may be used by students who complete student teaching as undergraduates: EDSE 4000 (9-12 hours); 4310; 4311; 4320, 4351, 4360, or 4376; 4322, and EDLL 4380. The following sequence of courses may be used by students **not**

completing student teaching on the undergraduate level: EDSE 2300; 4310; 4311; 4320, 4351, 4360, or 4376; 4322, and EDLL 4380. The minimum number of hours for a minor in secondary education is 18.

Division of Curriculum and Instruction

Chair: Associate Professor Margaret Johnson

Horn Professor Skoog; ***Professors*** Askins and Baines; ***Associate Professors*** Butler, Button, Cooper, Geer, Morgan-Fleming, and Thomas; ***Assistant Professors*** Bush, Halsey, Hovey, Janisch, H. Johnson, Morris, Price, Wilhelm, and Xu; ***Visiting Faculty*** Anderson and Jamison; ***Instructors*** Lupton, Pratt, and Talkmitt.

This division supervises two degree programs: MULTIDISCIPLINARY STUDIES and MULTIDISCIPLINARY SCIENCE, *Bachelor of Science*. Graduate programs in this division are described in the *Graduate Catalog*.

Middle-Level Education. This degree is designed primarily for individuals seeking teacher certification in grades 4-8. The State Board for Educator Certification recently approved the following certificates for middle-level (grades 4-8) certification: Generalist, Bilingual Generalist, English Language Arts, Social Studies, Mathematics, Science, and English Language Arts-Social Studies. These new certificates will be available for students who complete their programs after September 1, 2002. Students should consult with an advisor in the College of Education to determine which certificates are available and which degree plan best suits their career aspirations. Degree plans leading to the different certificates will include subject area course work and a sequence of four semesters of pedagogy (including the student teaching semester) in the College of Education. A minimum of 133 hours is required.

The following certificates have been approved by the State Board for Educator Certification for Secondary Education (grades 8-12): English Language Arts, Speech, Journalism, Social Studies, History, Science, Life Science, Physical Science, Mathematics, Technology Applications, and Computer Science. In addition, three all-level certificates have been approved: All-Level Physical Education, All-Level Art, and All-Level Music. Secondary and all-level certificates include three semesters of professional education courses (including student teaching) from the College of Education. Students will consult with advisors in their program areas regarding a degree plan. Students must see an advisor in the College of Education to complete a certification plan.

Secondary Science Education—Bachelor of Science in Multidisciplinary Science. The Multidisciplinary Science major is administered in this division. Individuals completing this major, the baccalaureate requirements, and the certification requirements are eligible for certification to teach all sciences grades 8-12 in Texas. This major requires 57-61 semester hours in science. All individuals in this major are required to complete CHEM 1107, 1108, 1307, 1308, PHYS 1103, 1104, 1306, 1307, GEOL 1101, 1102, 1303, 1304, BIOL 1403 1404, ATMO 1300, ASTR 1300, and 1100. In addition, an emphasis in biology (20-22 semester hours), chemistry (18-20 semester hours), geosciences (20-22 semester hours), physics (18-21 semester hours), or life and earth science (29 semester hours) is required. Students seeking certification must minor in secondary education. Students not seeking certification must have a minor in an area other than education. The minimum number of hours required for a major in Multidisciplinary Science is a total of 129. Students should consult advisors so that prerequisites and other requirements may be met in a timely manner. Two semesters of foreign language are considered leveling work for this program, unless waived because of two years of high school foreign language.

Bilingual Education (EDBL)

3205. Bilingual Programs and Language Issues at the Middle Level (2:2:0). Corequisite: EDSP 3205. Overview of bilingual programs, issues, and second

language research related to middle level students.

3332. Foundations of Bilingual Studies (3:3:0). Overview of history, philosophy, assessment processes, research, and legal aspects related to bilingual education.

3334. Dual Language and Cognitive Development in Bilingual Programs (3:3:0). Prerequisite: EDBL 3332. Skills, attitudes, psycholinguistic knowledge related to first and second language acquisition.

3336. Instruction and Management in Bilingual and Multilingual Settings (3:3:0). Developing instruction and management skills in bilingual and multilingual classrooms.

3337. Content Area Development for English as a Second Language Populations (3:3:0). Adapting the school curriculum for English as a second language (ESL) students with emphasis on developing appropriate teaching materials for content areas.

3338. Methods for Teaching English Language Learners (3:3:0). Rationale, theories, and goals of a comprehensive curriculum program for English language learners.

Educational Curriculum and Instruction (EDCI)

3320. Middle Level Curriculum and Philosophy (3:3:0). An overview of sociological, historical, and philosophical foundations of the middle school movement. Focus is on unique characteristics of a middle school interdisciplinary curriculum and instruction.

3361. Teaching Social Studies at the Middle Level (3:3:0). Social studies curriculum principles and development, organization of materials, instructional techniques, and evaluation process unique to middle level social studies.

Elementary Education (EDEL)

2191. Projects in Elementary Education (1:0:2). Exploratory experiences in educational programs through the elementary school level. May be repeated for credit. Must be taken pass-fail.

2300. Schools, Society, and Diversity (3:3:0). Historical, philosophical, sociological, and ideologic foundations of education: Purposes and roles of schools in a pluralistic society. Contemporary issues and reform trends in American public schools.

3099. Independent Study (V1-3). Prerequisite: Junior standing and consent of instructor. Independent study of special aspects or topics of elementary education. May be repeated for up to 3 hours credit.

3191. Correlated Field Experience (1:0:2). Prerequisite: Concurrent enrollment in an appropriate professional education course. Observation and supervised teaching of an elementary subject area at a field site. May be repeated for credit. Must be taken pass-fail.

3320. Managing Learning Environments (3:3:0). This course will focus on the application in the elementary classroom of theories of human development, learning and cognition, and social behavior.

4000. Student Teaching in the Elementary School (V1-12). Prerequisite: Attainment of admission standards to student teaching. Supervised teaching involving a period of major responsibility for instruction and learning in an elementary classroom of an accredited school. Course graded credit (CR) or no credit (NC).

4330. Capstone Course (3:3:0). This course emphasizes diagnostic teaching and learning, philosophies of education, current issues, classroom organization, professional portfolios, and teacher assessment.

4360. Teaching Social Studies (3:3:0). The design and organization of content, materials, and instructional strategies for social studies programs in elementary schools.

4370. Teaching Mathematics (3:3:0). Application of content, materials, and instructional strategies in teaching elementary school mathematics.

4375. Teaching Science (3:3:0). The methodology of teaching appropriate science learning experiences to elementary school children. Also included in this course is a minimum of 15 clock hours of clinical experience of teaching science activities to children.

4393. Internship in Elementary Education (3:1:3). Prerequisite: Admission to teacher education. Directed experiences in various roles at the elementary level.

4394. Internship in Elementary Education (3:1:3). Prerequisite: EDEL 4393 and admission to teacher education. Directed experiences in various roles at the elementary school level.

Multidisciplinary Studies (MD S)

3333. Integrative Multicultural Studies (3:3:0). Prerequisite: Junior standing. An integrative multicultural focus on the impact of the processes of assimilation and cultural pluralism on educational institutions of America.

Language Literacy (EDLL)

3350. Children's Literature (3:3:0). Texts appropriate for children under 15, including standards of evaluation and criteria for selection.

3351. Foundations of Reading Instruction (3:3:0). Prerequisite: Junior standing. Overview of reading development, methods of reading instruction, scope and sequence of programs.

3352. Language Literacy Acquisition (3:3:0). Study of the acquisition and development of language learning; study of curriculum, instruction, and exemplary classroom practices that foster literacy development.

3353. Reading at the Middle Level (3:3:0). Selection of materials and methods for understanding and developing reading requirements, skills, and strategies for middle level students in grades 4-8.

4349. Adolescent Literature (3:3:0). Study of classic and current adolescent literature, selection of materials, and methods for use in middle and secondary level classrooms.

4350. Language Arts at the Middle Level (3:3:0). Study of the attitudes, content knowledge, and pedagogy appropriate to the language arts at the 4-8 grade levels.

4380. Literacy in the Content Areas (3:3:0). Understanding literacy in the content areas and planning instruction to promote content learning.

Secondary Education (EDSE)

Courses are being developed for middle-level certification. Students should see an advisor in the College of Education for more information.

2192. Projects in Secondary Education (1). Arranged experiences as a tutor and/or teacher's aide in a secondary school. May be repeated for credit. Must be taken pass-fail.

2300. Schools, Society, and Diversity (3:3:0). Historical, philosophical, sociological, and ideologic foundations of education; purposes and roles of schools in a pluralistic society. Contemporary issues and reform trends in American public schools.

3192. Advanced Projects in Secondary Education (1). Arranged experiences as a tutor or teacher's aide. May be repeated for credit. Must be taken pass-fail.

4000. Student Teaching in the Secondary School (V1-12). Prerequisite: Meet admission standards to student teaching. Supervised teaching involving a period of major responsibility for instruction in an accredited secondary school. Course graded credit (CR) or no credit (NC).

4310. Learning, Cognition, and Instructional Design (3:3:0). Environmental, social, developmental, and cognitive factors influencing learning in adolescence; application of learning theory to classroom environment and instructional design for adolescent learners.

4311. Curriculum Planning, Development, and Evaluation (3:3:0). Foundations and principles of curriculum planning, development, implementation, and evaluation in secondary schools; issues in curriculum development.

4320. Instructional Methods (3:3:0). Strategies for teaching evaluation and classroom management.

4322. Diversity and the Classroom Learning Environment (3:3:0). Organization of social and academic systems in the classroom that are responsive to student learning styles, students' ethnic and cultural backgrounds, and students with special needs.

4351. Teaching Grammar, Composition, Spelling, and Listening (3:3:0). Preparation for teaching grammar, usage, punctuation, composition, spelling, critical thinking, and listening in secondary schools.

4360. Teaching the Social Studies in the Secondary School (3:3:0). Methods, techniques, and evaluation procedures appropriate to teach various subjects in the area of social studies. Includes supervised practice in the selection of materials, visuals, and microteaching.

4376. Methods in Science Teaching (3:3:0). Focus on the curriculum, methods, and materials related to science instruction in the secondary schools.

4393. Internship in Secondary Education (3:1:3). Prerequisite: Admission to teacher education. Directed experiences in various roles at the secondary level.

4394. Internship in Secondary Education (3:1:3). Prerequisite: EDSE 4393 and admission to teacher education. Directed experiences in various roles at the secondary school level.

4399. Individual Study (3). Prerequisite: 9 hours of education and consent of instructor. Independent study focusing on curriculum development and teaching strategies.

Division of Educational Psychology and Leadership

Chair: Professor Gerald Parr

Professors Bowes, Bradley, and Koenig; ***Associate Professors*** Ahern, Burley, Butner, Cejda, Claudet, Hartmeister, Lan, Murray, Olivarez, Price, Shonrock, and Tallent-Runnels; ***Assistant Professors*** Crooks, Davidson, Duemer, Eckert, Griffin-Shirley, Kelley, Layton, Lock, Marbley, Maushak, and Mendez-Morse.

The Division of Educational Psychology and Leadership offers course work at the undergraduate level in educational psychology and special education.

Early Childhood Education (EDEC)

4000. Student Teaching in the Kindergarten (V1-12). Prerequisite: Attainment of admission standards to student teaching. Supervised teaching involving a period of major responsibility for instruction and learning in an early childhood classroom of an accredited school. Course graded credit (CR) or no credit (NC).

Educational Instructional Technology (EDIT)

2318. Computing and Information Technology (3:3:0). Use of computers as productivity tools, societal and ethical implications, and applications and related technology in society.

3318. Applications of Technology in Elementary Education (3:3:0). Prerequisite: EDIT 2318 or pass computing competence examination. Applications of technology in elementary education.

4099. Individual Study in Educational Technology (V1-3). Prerequisite: EDIT 2318 or consent of instructor. Independent study focusing on educational technology. May involve tutorial work.

Educational Psychology (EPSY)

3190. Special Topics in Educational Psychology (1). Study of specialized topics in educational psychology and foundations of education.

3331. Adolescent Development: Applications for Middle-Level Classrooms (3:3:0). Study of physical, intellectual, social, and emotional development of and environmental influences on the development of young adolescents.

4259. Student Personnel Staff and Resident Student Development (2:2:0). Orientation to the educational processes that occur in the residence halls with emphasis on the role of the student personnel staff in resident student development.

4399. Individual Study (3). Prerequisite: Consent of instructor. Independent study of selected topics in educational psychology and the foundations of education.

Special Education (EDSP)

3205. Learning and Special Populations (2:2:0). Examines the psychological, sociological, and educational implications of both high and low incidence populations of exceptionality for middle level classrooms.

3300. Exceptional Children and Youth (3:3:0). Major categories of exceptionalities; psychological, sociological, and educational implications of exceptionality. Field-based experience required.

3302. Assessment and Program Planning for Exceptional Children (3:3:0). Appraisal instruments and techniques used by relevant disciplines in determining educational placement and programming for exceptional children. Field-based experience required.

3303. Methods for Teaching Students With Mild Disabilities (3:3:0). This course gives preservice teachers a foundation in best practice in methodology for teaching basic academic skills, social skills, and content area subjects to students with mild disabilities including modifications to regular education curricula. Field-based experience required.

4304. Methods for Teaching Students With Severe Disabilities (3:3:0). Curricular adaptions and additions for students with severe and profound disabilities. Emphasis on functional communication, physical management, and training for independent living and employment, stressing community integration. Field-based experience required.

4305. Behavior Management for Students With Disabilities (3:3:0). Behavioral management strategies for addressing the conduct at school, at home, and in the community of infants, toddlers, children, and youth who have disabilities and the conduct of their families. Field-based experience required.

College of Engineering

Professor William M. Marcy, *Dean*

Web Site: www.coe.ttu.edu

Engineering involves applying scientific and mathematical principles and knowledge to solve the technical problems that confront society. Students studying in the College of Engineering must develop an understanding of the forces at work within nature in order to learn to control and direct them. Engineering knowledge assists in achieving human goals, and humanity's advancement is the common objective of each program within the college. Students learn to become professionals and are expected to act responsibly and professionally.

Each academic program includes education in the basic sciences, mathematics, humanities, social sciences, and the technical knowledge needed to solve some of society's problems.

The college's primary goal is to educate students to fill leadership roles as professionals aware of technology and its economical and political role in the world. Therefore, we strive to produce technically competent graduates who solve problems, are able to communicate and work well with others, are sensitive to the needs of society, and are well-educated in the humanities as well as in the engineering disciplines.

The College of Engineering historically produces quality graduates. One quality component is the requirement of a grade of C or better in all courses used in the degree plan. The college also monitors student retention on a regular basis and has developed various programs and tools to help students learn how to learn and to improve student retention.

One tool is the BRIDGE program that provides an analysis on how to learn and a refresher in mathematics. The optional program is designed for students in transition from high school to college. The typical cost is $175. The optional mathematics review is $25. The students are retested for mathematics placement. Many students improve on their placement test by one course, which more than pays for the cost of the BRIDGE.

A Mini-BRIDGE program is provided in January for 2.5 days starting before classes begin. This program is designed to help students focus on achieving academic success. To date, an average increase of 0.65 in GPA has occurred with students in this program. The typical cost is $80. Students who experience a GPA less than 2.5 after the first semester in the college are strongly encouraged to attend the Mini-BRIDGE. All students who are placed on scholastic probation should attend Mini-BRIDGE and enroll in XL 0201 (Strategies for Learning).

The College of Engineering provides an educational system that uses outcomes assessment. Examples of long-term outcomes are job placement and on-the-job success. The college has excellent job placement. Students will also experience other assessment and advisement based on outcomes as they complete their education. As part of assessment, all students in the College of Engineering are required to take the mock FE exam before graduation. The capstone senior design course or sequence of courses offered by each department also is a measure of the integrated knowledge and ability of students. At this point, not only have students developed technical knowledge, but they have also learned to work as a professional team, valuing commitment and ethics, and even advanced to the pattern of life-long learning.

The following Bachelor of Science degree programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc. (ABET): Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Engineering Physics, Industrial Engineering, Mechanical Engineering, and Petroleum Engineering. The three engineering technology programs—Construction, Electrical-Electronics, and Mechanical—lead to a Bachelor of Science in Engineer-

ing Technology degree and are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc.

The Master of Environmental Engineering, a five-year degree program that starts with the freshman year, is also accredited by ABET and is administered in the Department of Civil Engineering. The option of Bachelor of Science in Environmental Engineering is available to Master of Environmental Engineering students.

A degree in Computer Science is offered by the Computer Science Department, a program that supports teaching and learning in the areas of languages, systems, hardware, software, and related studies. Graduates are prepared to continue their formal study or work in a variety of industries.

The program leading to the degree of Bachelor of Science in Engineering Technology is designed for students whose basic aptitude and interests are in the application of established procedures to the solution of technical problems. An engineering technology program leads to a degree preparing students for technical careers in such fields as applied design, construction, operations, maintenance, quality control, or sales. Curriculum outlines and course descriptions are given in this catalog under the Department of Engineering Technology.

For the student wishing to obtain a broad-based general degree, the Bachelor of Arts degree is offered by the College of Engineering. This degree is not intended as preparation for entry into the practice of engineering but offers the student an engineering base along with flexibility to pursue other professional programs, such as medicine and law.

Degree Programs

Undergraduate Degrees. The College of Engineering offers the following professional engineering curriculum, each leading to the degree of Bachelor of Science in the respective engineering fields: chemical, civil, computer, electrical, industrial, mechanical, petroleum, and engineering physics. The computer science curriculum leads to the Bachelor of Science degree with a major in computer science. Engineering technology curriculum with specializations in construction, electrical-electronics, and mechanical technology leads to the degree of Bachelor of Science in Engineering Technology. A cooperative program between the Colleges of Engineering and Architecture leads to a degree from both entities. The Civil Engineering Department coordinates the program for the College of Engineering.

The College of Engineering is divided into instructional departments that offer course work and supervise the degree programs. These departments are presented in special tables on the following pages along with a descriptive list of the courses offered by each department.

The courses listed in individual curriculum tables are prescribed for the various degrees. The course arrangement for the freshman, sophomore, junior, and senior years is the recommended sequence of courses, whether students begin them in the summer or during the long session. Before registration for each semester, a student should check course prerequisites carefully to include courses that are prerequisite to the ones for the following semester.

Dual-Degree Program. The College of Engineering has arranged with several other colleges and universities to provide students with the opportunity to earn dual degrees. The dual-degree program enables a student to study approximately three years at one of several institutions, earning credit for nonengineering courses. Generally, students can complete the course of study at Texas Tech within two full calendar years that leads to two degrees—one in engineering from Texas Tech University and one in a nonengineering major from the second institution. Upon completing specific requirements, degrees are awarded by both institutions. Schools currently participating in the program include Lubbock Christian University, McMurray University, Our Lady of the Lake University, Wayland Baptist University, West Texas A&M University, and Southwest Texas State University. In addition, there are dual degree programs between Architecture (College of Architecture) and Civil Engineering and between

Mathematics (College of Arts and Sciences) and Computer Science.

150-Hour Dual Degree. The College of Engineering also provides a 150-hour dual degree that allows students eligible for graduate school to earn both a B.S. and a M.S. degree with approximately 150 hours. Students are allowed to use graduate work that closely matches the subject requirements of the undergraduate degree to substitute for undergraduate courses. Students should contact their department for details about the curriculum. Students interested in this program must apply to the Graduate School prior to taking graduate courses. Early planning and contact with the department advisors is essential because in some cases students may be able to connect undergraduate research experience to their thesis work in graduate school.

Bachelor of Arts Degree. The college offers a Bachelor of Arts degree for students who are interested in a liberal arts background with strong emphasis in science and technology. This degree can be used as the background for those interested in the professional programs of medicine, dentistry, or law. With one to two additional years of study, the student can also obtain a Bachelor of Science degree in an accredited engineering program. Prospective students should make inquiries in the Dean's Office concerning requirements, opportunities, and limitations of the Bachelor of Arts degree. Each student studying toward the Bachelor of Arts degree offered by the College of Engineering is expected to develop, in consultation with a faculty advisor, a degree program that meets their individual needs. Each program must meet the following minimum requirements for this degree.

	Semester Hours
1. English	**15**
2. Mathematics (beyond college algebra and trigonometry)	**12**
3. Chemistry 1307,1308,1107,1108	**8**
4. Physics 1308,2301,1105,1106	**8**
5. American History 2300, 2301	**6**
6. Political Science 1301,2302	**6**
7. Social or Behavioral Sciences	**6**
8. **Humanities	**3**
9. Oral Communication	**3**
10. **Fine Arts	**6**
11. Visual & Performing Arts	**3**
12. *Engineering (Engineering Technology, and Advanced Science)	**42**
13. Free Electives	**10**
Minimum Total	**128**

*At least 24 hours of engineering courses must be completed.
**Multicultural and performing arts (as required).

The student's program should be developed no later than the first semester of the junior year and must be approved by the Dean of the College of Engineering. At least 27 hours of the engineering, engineering technology, and advanced science courses and 9 hours of the electives must be upper division courses. At least 24 hours of the engineering, engineering technology, and advanced science courses must be engineering courses. This degree program is not accredited by ABET.

Interdepartment Degree Plans. The College of Engineering offers a coordinated curriculum that leads to the awarding of two baccalaureate degrees from the college. At the present time, formal dual-degree plans are available between Electrical Engineering and Computer Science, Mechanical Engineering and Computer Science, and Computer Science and Chemical Engineering. Because of sequencing of courses and prerequisites, the student should enter the program during the freshman year and follow the plan rigorously. Because of the increased number of hours required, a minimum of five years is needed to complete the program. For information on the dual degrees, please contact the departments of interest.

Second Degree. A student who has completed the requirements for a first bachelor's degree from the College of Engineering may acquire a second by completing the degree program for the second degree with the following restriction: at least 27 hours of the second degree requirements must be from courses not counted in attaining the first degree. The student must regain admission to enter the new degree program.

Cooperative Education. A Cooperative Education Program for engineering students is available within the Dean's Office. To participate in this program,

students should contact the Director of Cooperative Education. Three parties are involved in the program: the college, the student, and the employer. These parties work together so that the student can learn and perform real-world engineering functions under the supervision of engineering professionals. This program consists of three work tours in industry alternated with semesters of course work at the university. Work assignments are related to academic and career goals with progressively responsible duties on the second and third tours. Students typically begin their first work tour after completion of their sophomore year and complete the third tour before the beginning of their senior year. Industry supervisors are expected to evaluate each student's work performance and education and share this evaluation information directly with the student. Information from this evaluation will be used confidentially to evaluate the effectiveness of the Texas Tech engineering program and the cooperative education program. Students must be registered for and meet the requirements of a qualifying cooperative education course during the semesters they are on tour in industry.

Minors. Students from other colleges or students outside their major department may elect to minor in an academic program of the College of Engineering. Each department will specify the required courses and number of hours that constitute a minor from their programs. Information on approved minors, if offered, is available from each department chair.

Advanced Degrees in Engineering. Programs are available through the College of Engineering leading to Master of Science and Doctor of Philosophy degrees in the fields of computer science and chemical, civil, electrical, industrial, mechanical, and petroleum engineering. In addition to these programs, the College of Engineering offers a Master of Engineering degree designed especially for practicing engineers desiring to continue their professional education.

Admission to the Graduate School is based upon an above average undergraduate record and satisfactory standing on the Graduate Record Examinations. The regulations and requirements of the Graduate School are given in the *Graduate Catalog.*

Admission and Enrollment

Freshman Programs. The College of Engineering expects entering students to meet certain admission requirements. Students who qualify, as evidenced by their high school records and placement tests, will be assigned to the freshman program shown in the departmental curriculum.

Entering students with inadequate preparation in mathematics or deficiencies in College of Engineering entrance requirements will be required to complete College Algebra, MATH 1320, and/or Trigonometry, MATH 1321, or precalculus MATH 1550, introductory chemistry or physics, in addition to the courses shown in the departmental curriculum. To remove such deficiencies, the student should attend summer school before the first long session. Engineering students who need algebra, trigonometry, or science but who are unable to take advantage of summer school should arrange an appropriate schedule with their faculty advisor. A typical schedule includes the following:

Typical Alternate Freshman Year for Engineering Students

Fall		*Spring*	
MATH 1321, Trigonometry	3	MATH 1350, Anal. Geom.	3
MATH 1320, Coll. Alg.	3	ENGL 1302, Adv. Coll. Rhet	3
E GR 1306, Engr. Graphics	3	ENGR 1305, Engr. Anal. I	3
ENGL 1301, Ess. Coll. Rhet	3	PHYS 1304, Basic Ideas and Meth.	3
CHEM 1301, Intro. Chemistry	3	HIST 2300, Hist. of U.S. to 1877	3
	15		15

SUMMER SESSION

First Term		*Second Term*	
MATH 1351, Calc. I	3	MATH 1352, Calc. II	3

Similar adjustment to compensate for deficiencies in recommended admission requirements can be made in the freshman programs in engineering technology and computer science. Special consideration will be given to applicants with strong high school backgrounds, even though they may not meet some of the specific entrance requirements. It should be noted, however, that most students who are admitted with fewer than the recommended qualifications should anticipate its requiring more than two semesters for completion of the freshman program.

Dynamic Enrollment Management Plan. Each department administers a Dynamic Enrollment Management Plan (DEMP). With minor procedural differences between departments, the DEMP consists of the following phases: general admission, preliminary admission to a degree program, and the degree program. The initial phase consists of approximately the first three full semesters of a degree program. The second phase is different for each department and is usually the fourth semester of the degree program. The final phase consists of the last four semesters of a degree program. The student moves from the initial phase by earning grades of C or better in all courses and successfully petitioning the department of choice. A student enters the third phase by successfully completing the second phase, petitioning for entry into the third phase, and meeting the department's GPA requirements. The minimum cumulative GPA for graduation is 2.0. Detailed guidelines and other limitations related to the Dynamic Enrollment Management Plan are available in each departmental office and from the Dean's Office.

Community College Articulation Agreements. Students from community colleges generally transfer courses in English, history, political science, mathematics, and science to Texas Tech. Community colleges that adequately prepare students to study engineering have designated faculty who function as liaisons between their schools and the College of Engineering. Such cooperative arrangements provide students an opportunity to choose courses at the community college that are required by a specific major in the College of Engineering. Problems in transferring to Texas Tech are minimized by the student's early commitment to transfer to the College of Engineering. Current schools that have signed articulation agreements with the College of Engineering include Amarillo College, Clarendon College, Frank Phillips College, Midland College, and South Plains College.

Foreign Students. Because of the large number of foreign students seeking admission to programs in the College of Engineering, it has become necessary to establish special admission requirements. Foreign students entering the college from their countries' high schools must have grades that are equivalent to an average grade of B on the U.S. scale. High school grades in mathematics and science courses must also average B, and all entering foreign students must achieve scores of 550 or higher on the Test of English as a Foreign Language. Foreign students seeking to transfer to the College of Engineering from other colleges or universities should contact the Director of Foreign Student Admissions for information about specific transfer requirements.

General Standards and Requirements

The requirements for a degree from the College of Engineering include many courses that are common to all degree programs. Most of these courses are taught at the freshman and sophomore level. A specific curriculum has been established for each degree program and is given in detail on the following pages.

Core Curriculum Requirements. The university has established a set of core courses required for all students. These requirements ensure breadth in each academic program. Students should consult their faculty advisors or chairperson regarding specific requirements. Please note that these requirements are incorporated in the curriculum of each major or specialization in the college. Students are urged to seek advisement prior to their first enrollment to avoid losing credit. A listing of Core Curriculum requirements is in the Academic Information section of the catalog.

Computer. All students in the college are expected to have access to a personal computer. Many instructors require students to transfer homework with e-mail. Some instructors also transfer information to students using the Internet. While computer facilities are available on campus, students do best when they have their own personal computer. Students should check with their respective department for hardware and software requirements.

Maximum Course Load. A student must get approval from the Dean's Office to take more than 19 hours during a fall or spring semester or more than 8 hours during a summer term. Students on academic probation are not allowed to take more than 16 hours during a fall or spring semester.

Credit by Examination. Credit for some engineering courses above the freshman level is available through departmentally prepared examinations. The student must present to the Dean a written request to take the examination. The petition must state the extent and manner in which the student obtained competence in the subject. Upon approval by the Dean, the petition should be presented to the chair of the department concerned for arrangements to take the examination.

Correspondence Courses. All correspondence work taken for a degree program requires written approval from the Dean of the College of Engineering prior to registration. Correspondence courses taken from institutions other than Texas Tech must be certified by the Division of Outreach and Extended Studies as being equivalent to correspondence courses offered at Texas Tech.

Transfer Course Evaluation. Courses transferred from another institution will be evaluated for use in a given degree program by the Dean's Office. Engineering, computer science, and engineering technology courses will be evaluated by individual departments for possible credit.

Grades for Transfer Courses. The highest grade for a repeated course, either at Texas Tech or another institution, will be the grade used to determine acceptance of the course for a degree program. Only courses with a grade of C or better will be accepted for use on an engineering degree plan.

Prerequisites. In scheduling courses, prerequisites and corequisites are mandatory.

Engineering Science Courses. All designated engineering science courses in a degree program should be taken as early as possible. The designated engineering science courses are C E 2101, 2301, 3302, 3303, 3305, CH E 3321, 3330, E E 3302, I E 3301, M E 3311, 2322, 3331, and 3370. The designated engineering technology science courses are GTEC 2321, 2351, and 2411.

Basic Science and Mathematics Requirements. If a student receives advanced placement in a mathematics course (on the basis of high school mathematics classes, MAT, or SATM test scores) higher than the first required course in the particular degree program, the department may specify the replacement course. If not specified, the student has the option to take an additional higher level mathematics course or substitute up to 4 hours of basic science for 4 hours of mathematics (some programs may specify the substitute course). The student must take a minimum of 12 hours of mathematics and 12 hours of basic science as required by the degree program. To meet the Engineering Accreditation Commission of ABET requirements, a minimum of 32 hours of approved basic sciences and mathematics must be completed. The Technology Accreditation Commission of ABET requires a minimum of 24 hours of approved basic science and mathematics for students in the Department of Engineering Technology. The basic science and mathematics courses used for the substitution may or may not be required by the degree program. In any case, the student must meet the minimum number of hours required for graduation.

ROTC. Subject to the policies of the department and with the approval of the department chair, 3 hours of advanced ROTC credit may be counted for the general elective courses in engineering, computer science, and engineering technology degree programs.

Substitution of Courses. Any substitution of courses specified in a degree program requires the written approval of the chair of the student's major department and the Dean of the College of Engineering. Degree credit for electives requires written approval by the chair of the department involved. A list of acceptable technical electives for a degree program can be obtained from the department. Courses considered remedial, duplicative, or inferior will not be accepted.

Grades of C. A grade of C or better is required for all courses included in the degree plan.

Pass-Fail. All courses used to satisfy the degree program requirements must be taken for a grade. (The pass-fail option is not allowed.)

Scholarships. A student on departmental or college scholarship must be a full-time student to maintain his or her scholarship.

Engineering Undecided. A student registering as Engineering Undecided (ENUD) must select a major after completing 45 hours of academic credit. Exceptions to this rule will be reviewed on a case by case basis by the Dean's Office. Engineering Undecided is not a major.

Application for Degree. A student must file an "Application for Degree" with the office of the Dean of the College of Engineering at least one year before the anticipated date of graduation. Subsequently, the student will receive a list of courses and the number of credit hours that remain to be taken. Because they must meet all the requirements of a specific year's catalog, students must indicate the year's catalog under which they plan to graduate. This must be a year during which the student is registered in the College of Engineering, with the restriction that all requirements for an undergraduate degree must be completed within seven years of the date of the catalog chosen.

Courses

Engineering (ENGR)

3000. Engineering Cooperative Education (V1-6). Prerequisite: Approval by the Engineering Cooperative Education Director. Field course for supervised preprofessional educational employment experiences in industry and government involving assignments in the student's major.

4092. Professionalism and Ethics in Engineering (V1-3). Prerequisite: Senior standing or approval of instructor. Professional and industrial problems and ethical issues in engineering practice. May be taken by correspondence.

Department of Chemical Engineering

Chair: Professor Gregory B. McKenna

Professors Graham, Mann, Parker, Riggs, and Tock; ***Associate Professors*** Abbott, Hoo, Simon, and Wiesner; ***Assistant Professors*** Leggoe and Vaughn; ***Adjunct Faculty*** Chaffin, Cutler, and Ramkumar; ***Emeritus Faculty*** Bethea, Bradford, and Heichelheim.

This department supervises the following degree programs: CHEMICAL ENGINEERING, *Bachelor of Science in Chemical Engineering, Master of Science in Chemical Engineering,* and *Doctor of Philosophy*. The undergraduate degree requirements appear in the accompanying curriculum table.

Major objectives of the department during the next decade will be: 1) to provide students with a high quality education at both the undergraduate and graduate levels to enable them to adapt to a rapidly changing technical environment, 2) to produce graduates who will be productive throughout their careers in a wide range of industrial and professional environments, and 3) to develop graduates with a strong sense of ethics and professionalism and with the ability to succeed as both individual and team contributors.

Along with the degree of Bachelor of Science in Chemical Engineering, a student may declare a minor in a field of his or her choice. Any required or elective courses in

the chemical engineering curriculum may be applied toward the minor, with the approval of the minor department. While declaration of a minor is not required, it is strongly recommended. A minor in chemistry or mathematics can be earned with very few additional hours. An approved minor in Business Administration with a B.S.Ch.E. permits a student to enter the MBA program at Texas Tech with no additional leveling in B.A. or Economics courses.

An agreement has been reached between the Department of Computer Science and the Department of Chemical Engineering whereby degrees in both fields can be earned. The additional semester hours are specified as follows:

	Semester hours
MATH 2360	**3**
E E 2372	**3**
C S 1411	**4**
C S 1412	**4**
C S 2350	**3**
C S 2365	**3**
C S 2382	**3**
C S 2413	**4**
C S 3352	**3**
C S 3361	**3**
C S 3364	**3**
C S 3372	**3**
C S 3375	**3**
C S 4311	**3**
C S 4312	**3**
Total additional specified hours	**48**

Six of these hours may be used as free electives in the B.S.Ch.E. curriculum, resulting in an additional 41 hours for the B.S.C.S.

Several substitutions are made in the B.S.C.S. curriculum:

	Semester hours
CH E 2306, or PETR 3308 for ENGL 2311	**3**
CH E 4343 for Math. Prob. & Stat. elect.	**3**
CH E 4353, 4153 for Computer sci. elect.	**4**
CH E 4381 for Computer sci. elect.	**3**

Technical or professional development electives required for the B.S.C.S. degree may be selected from required CH E courses. Oral communication is included in CH E 2306, 4121, 4232, 4354, and 4355.

A minor in chemical engineering consists of 18 or more hours in chemical engineering courses, including CH E 2310, 2311, 3315, 2321, 3322, and 3326. Prerequisites for all of these courses will be enforced.

The Department of Chemical Engineering co-administers the minor in Polymer and Materials with the Department of Mechanical Engineering. The minor consists of 18 hours, six of which must be taken outside of the student's major. Two courses are required: CH E 4344 Polymers and Materials Laboratory and a course in materials science and engineering (either CH E 3330, M E 3311, or MTEC 3441). The remaining six courses should be selected from the following list:

CHEM 2306	Organic Chemistry II
CHEM 4310	Polymer Chemistry
CH E 4340	Polymer Processing
CH E 4341	Polymerization Engineering
CH E 4342	Polymer Physics and Engineering
CH E 4345	Dynamics of Polymeric and Nonlinear Fluids
CH E 4346	Polymer Viscoelasticity
E E 4381	VLSI Processing
M E 3328	Materials & Mechanics Laboratory
M E 4341	Materials in Design
M E 4344	Manufacturing Processes for Engineering Materials

The profession of chemical engineering combines the principles of physical and chemical sciences with the discipline of engineering to solve modern technological problems and be of effective service to society. The chemical engineer is largely responsible for the continual development of new processes and new products that have a direct impact on improving the quality of life and the environment. To this end, the Department of Chemical Engineering provides a broad-based program with individual, academic, and professional counseling.

The importance of professionalism in engineering cannot be overemphasized. Chemical engineering students are presented with a code of professional behavior and ethics at each academic level and are required to adhere to it. Copies of these codes are available on request.

The senior-year courses, as indicated in the list of courses in chemical engineering, are taught as a year of professional practice. Professional behavior constitutes a significant portion of grade evaluation in these courses.

The chemical engineering curriculum is sufficiently general that upon completion the student is prepared for a career in any of the process industries that involve chemical transformations. Employment opportunities cover a wide spectrum that includes, among others, petroleum refining, petroleum production, plastics production, basic chemicals, petrochemicals, pharmaceuticals, metal production, textiles, semiconductors, and various biomedical and biological specialties. Many chemical engineers also are directly involved in the design of systems to minimize pollution of our environment or are active with governmental regulatory agencies that set environmental standards.

Continuing advances in the practice of chemical engineering include extensive use of computer simulation and computer control of chemical processes. The Department of Chemical Engineering at Texas Tech has well-established programs in both of these areas. All chemical engineering students must have access to a personal computer running the Windows operating system, including Microsoft Word, Microsoft Excel, and MathCAD software. Many on-campus classes have their own Internet sites, and some classes are available only on the Internet. For this reason, access to an Internet provider is strongly recommended.

To be prepared for professional training as well as to practice chemical engineering professionally, it is essential that the prospective engineer have a good background in the physical sciences, namely mathematics, physics, and chemistry, in addition to the engineering sciences that include basic civil, electrical, and chemical engineering. Summer experience in a chemical processing industry is strongly recommended as part of the preparation for professional practice. To illustrate the application of engineering principles, visits to processing installations may be required as part of academic course work.

In accord with the Dynamic Enrollment Management Plan of the College of Engineering, the progress of each chemical engineering student is carefully monitored to ensure that all prerequisites for upper-level courses are satisfied, and that degree requirements will be met in a timely manner. A grade of C or better is required in any course applied toward the B.S.Ch.E. degree. The department uses outcome assessment to monitor quality. Students should expect periodic assessment of technical competence beyond course grades. All seniors are required to take a mock FE exam prior to graduation.

Students earning a grade lower than a C in any course will be required to meet with their advisor before the start of the next semester. Any course or prerequisite completed with an unsatisfactory grade must be repeated.

Students transferring into this department from other institutions or from another department at Texas Tech must have an overall 2.0 GPA or better, as well as a 2.0 GPA or better in all science, mathematics, and engineering courses. All grades assigned in the matriculation of these courses will be included in the computation of grade point averages.

In addition to scholarships offered through the university Financial Aids Office and the College of Engineering, the Chemical Engineering Department also offers scholarships to qualified students.

Specification of prerequisites implies all prior prerequisites must have been met.

The following table gives an eight-semester sequence of required courses that must be taken in the order shown as partial requirements for the B.S.Ch.E. degree. The remaining requirements can be taken as the student's load permits, provided all prerequisites are met.

Chemical Engineering Curriculum

FIRST YEAR

Fall		*Spring*	
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
*MATH 1351, Calc. I	3	MATH 1352, Calc. II	3
**CHEM 1307 &1107, Prin. of Chem. I	4	CHEM 1308 &1108, Prin. of Chem. II	4
CH E 1121, Freshman Seminar	1	CH E 1305, Engr. Anal. & Des.	3
TOTAL	11	***PHYS 1308 & 1105 Prin. of Phys. I	4
		TOTAL	17

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calc. III	3	MATH 3350, Adv. Math. for Engr. I	3
CHEM 2105 & 2305, Org. Chem. I	4	CH E 2306, Expos. Tech. Info.	3
CH E 2310, Intro. to Chem. Proc.	3	CH E 2311, Process Principles	3
PHYS 2301 & 1106, Prin. of Phys. II	4	CH E 2321, Chem. Eng. Thermo. I	3
TOTAL	14	TOTAL	12

THIRD YEAR

Fall		*Spring*	
CH E 3315 & 3115, Fluid Mechanics	4	CHEM 3308 & 3108, Phys. Chem. II	4
CH E 3326 & 3126, Heat Transfer	4	CH E 3330, Engr. Mat. Sci.	3
CH E 3322, Chem. Eng. Thermo. II	3	CH E 3341&3141, Mass-Trans. Oper.	4
TOTAL	11	CH E 3323, Chem. Reactor Eng.	3
		TOTAL	14

FOURTH YEAR

Fall		*Spring*	
CH E 4232, Unit Oper. Lab.	2	CH E 4153, Process Control Lab.	1
CH E 4353, Process Control	3	CH E 4355, Chem. Proc. Des. & Sim.	3
CH E 4354, Chem. Engr. Plant Des.	3	TOTAL	4
TOTAL	8		

Critical-Path Hours—91

Additional Requirements:

American Government	6
American History	6
†Visual and Performing Arts	3
††Humanities/Multicultural	3
†††Chemistry Electives	8
+Engineering Science Elective	3
Chemical Engineering Elective	3
Group or Individual Behavior	3

Minimum hours required for graduation—126.
*Students who are not adequately prepared for calculus must take appropriate courses (MATH 0301, 0302, 1320, 1321, 1350) before enrolling in MATH 1351.
**Students who are not adequately prepared for chemistry must take CHEM 1301 before enrolling in CHEM 1307.
***Students who are not adequately prepared for physics must take PHYS 1304 before enrolling in PHYS 1308. A high school physics course and a year of calculus are recommended as adequate preparation.
†Choose from Core Curriculum requirements.
††Select a course that is simultaneously listed in the humanities section of the Core Curriculum requirements and the section specifying courses that satisfy the multicultural requirement.
†††Must include two laboratory courses from approved sophomore or higher courses.
+May be any sophomore or higher engineering course not equivalent to a course already taken.

Chemical Engineering (CH E)

1121. Chemical Engineering Seminar (1:1:0). Readings and discussion of the chemical engineering profession; history, ethics, career paths, and research opportunities.

1303. Survey of Chemical Processing Technology (3:3:0). Study of the technology underlying consumer products and utilities such as electricity, water, fuels, paper, plastics, and integrated circuits. Not for major credit.

1305. Engineering Analysis I (3:2:3). Synthesis and analysis of typical engineering problems emphasizing the use of computing tools, spreadsheet and compiler programming.

2306. Exposition of Technical Information (3:1:6). Prerequisite: ENGL 1302. Organization and presentation of experimental data, and research interpretation and conclusions. Computer-aided preparation of engineering reports. (Writing Intensive)

2310. Introduction to Chemical Processing (3:3:0). Prerequisite: CHEM 1307, ENGL 1301, MATH 1351. Dimensions, units and conversions, process variables, material balances, process flow sheet analysis.

2311. Chemical Process Principles (3:3:0). Prerequisite: CH E 1311, PHYS 1308. Coupled material and energy balances, phase equilibrium, elementary transient balances.

2321. Chemical Engineering Thermodynamics I (3:3:0). Prerequisite: MATH 2350 and CH E 2311. Properties of pure substances, ideal gas behavior, first and second law analysis, and applications to energy conversion and power cycles. (Cross-listed with M E 2322.)

3115. Fluid Mechanics Laboratory (1:0:3). Corequisite: CH E 3315. Experiments in laminar and turbulent flow, fluid metering.

3126. Heat Transfer Laboratory (1:0:3). Corequisite: CH E 3326. Experiments in energy transport.

3141. Mass-Transfer Laboratory (1:0:3). Corequisite: CH E 3341. Experiments in separation operations.

3315. Fluid Mechanics (3:3:0). Prerequisite: CH E 2311, MATH 3350; Corequisite: CH E 3115. Principles of momentum transport. Application to laminar and turbulent flow, metering, porous media, and settling.

3322. Chemical Engineering Thermodynamics II (3:3:0). Prerequisite: CH E 2321. Solution thermodynamics, phase and chemical equilibria, analysis of processes.

3323. Chemical Reaction Engineering (3:3:0). Prerequisite: CH E 3322 and 3326. An introduction to the kinetics of chemical conversion processes and the design of chemical reactors.

3325. Intermediate Transport Phenomena (3:3:0). Prerequisite: CH E 3315, CH E 3326. Study of advanced topics in transport phenomena including momentum transport in non-Newtonian coupling of momentum transport with heat and mass transport.

3326. Heat Transfer (3:3:0). Prerequisite: CH E 2321 and MATH 3350. Principles of energy transport. Application to heat conduction, convection, and radiation. Design and performance of heat exchangers and furnaces.

3330. Engineering Materials Science (3:3:0). Prerequisite: CH E 3322 or CHEM 3305 and 3307. Engineering properties of metals, ceramics, and polymers; molecular, crystal, and microstructure configurations; selection of materials for applications.

3341. Mass-Transfer Operations (3:3:3). Prerequisite: CH E 3322; Corequisite: CH E 3141. Theory and practice of mass transfer. Particular emphasis on the operations of distillation, absorption, and extraction.

3343. Engineering Experimentation (3:3:0). Prerequisite: Junior standing in physical science or engineering. Strategy in experimentation; planning efficient experiments; analysis of data and interpretation and presentation of results.

4000. Special Problems in Chemical Engineering (V1-6). Prerequisite: Departmental approval. Individual studies in chemical engineering areas of special interest. May be repeated for credit.

4121. Chemical Engineering Research Seminar (1:1:0). Prerequisite: Senior standing in chemical engineering. External speakers focus on their current research in chemical engineering and related fields.

4153. Process Control Laboratory (1:0:3). Prerequisite: CH E 4353. Experiments with control equipment and the minicomputer. Professional practice course.

4232. Unit Operations Laboratory (2:0:6). Prerequisite: Senior standing or consent of instructor. Laboratory experiments illustrating the basic principles of unit operations. Includes instruction on experimental methods, equipment scale up, and technical communication. Professional practice course.

4331. Corrosion Science and Engineering (3:3:0). Prerequisite: Senior standing in engineering or consent of instructor. Study of corrosion management technologies.

4340. Polymer Processing (3:3:0). Prerequisite: CH E 3315, MATH 2350. Polymer processing and fabrication technology for thermoplastic and thermoset polymers: The science and art of manufacturing with plastic materials.

4341 Polymerization Engineering (3:3:0). Prerequisite: CHEM 2305 and MATH 2350. Polymerization reactions, mechanisms and kinetics, control of properties through reaction and processing, polymerization reactor and process design, degradation reactions.

4342. Polymer Physics and Engineering (3:3:0). Fundamentals of polymer science and engineering. Solution properties, chain conformation and molecular mass characterization. Rubber elasticity and vicoelastic behavior. Crystalline polymers and morphology.

4344. Polymers and Materials Laboratory (3:1:6). Corequisite: CH E 3330, M E 3311, or MTEC 3441. Synthesis and properties of materials including polymers, polymerization, transitions, phase separation, mechanical properties, and processing.

4345. Dynamics of Polymeric and Nonlinear Fluids (3:3:0). Prerequisite: CH E 3315. Observed phenomena in polymeric and multicomponent flow systems; viscometry and viscoelastic measurements for nonlinear fluids; rheological models; analytical solutions to flow problems; dimensional analysis.

4346. Polymer Viscoelasticity (3:3:0). Prerequisite: MATH 3350 and CH E 3330 or consent of instructor. Linear viscoelasticity, Boltzmann superposition, experimental methods, molecular theory, and mechanical properties of solid polymers.

4353. Process Control (3:3:0). Prerequisite: CH E 3323, 3341. Study of the principles of process dynamics and control and their applications to feedback control. Professional practice course.

4354. Chemical Engineering Plant Design (3:2:3). Prerequisite: CH E 3323, 3341. Development of process and equipment designs for integral manufacturing plants. Professional practice course.

4355. Chemical Process Design and Simulation (3:2:3). Prerequisite: CH E 4354 or consent of instructor. Application of computer simulation and flow sheeting, optimization, and process synthesis techniques to the design of chemical processes and equipment. Professional practice course.

4360. Advanced Industrial Waste Treatment (3:3:0). Prerequisite: Senior standing in chemical engineering or consent of instructor. Advanced methods for treating industrial wastes and remediating contaminated sites of increasing importance to industry and society.

4363. Biochemical Engineering (3:3:0). Prerequisite: CH E 3323. Introduction to biochemical reaction engineering and separations. Kinetics of biomass and product information, and substrate utilization. Biotransport phenomena, bioenergetics, downstream separation and purification processes.

4375. Chemical Process Safety (3:3:0). Prerequisite: CH E 2321 and 3226. Case studies in emergency response, hazard evaluation, accident investigation, toxic releases, atmospheric dispersion, fires and explosion types.

4371. Energy Resources, Processing, and Utilization (3:3:0). Prerequisite: Senior standing in science or engineering or consent of instructor. The cost, availability, and processing requirements of energy resources used by individuals and society.

4381. Numerical Techniques for Chemical Engineering Problems (3:3:0). Prerequisite: MATH 3350. Numerical methods for integration, solution of systems of algebraic equations, initial- and boundary-value problems, and optimization.

Department of Civil Engineering

Chair: Professor James R. McDonald

Horn Professor Mehta; ***Professors*** Borrelli, Fedler, Gregory, Kiesling, Letchford, Norville, Rainwater, J. Smith, Sweazy, Thompson, Urban, and Vallabhan; ***Associate Professors*** Jayawickrama, Mollhagen, Ramsey, D. Smith, and Vann; ***Assistant Professors*** Jackson, Phelan, and Senadheera; ***Research Assistant Professor*** Gill; ***Lecturer*** Lawson; ***Emeritus Faculty*** Dvoracek and Keho.

This department supervises the following degree programs: CIVIL ENGINEERING, *Bachelor of Science in Civil Engineering, Master of Science in Civil Engineering, and Doctor of Philosophy;* ENVIRONMENTAL ENGINEERING, *Bachelor of Science in Environmental Engineering* and *Master of Environmental Engineering;* and ENVIRONMENTAL TECHNOLOGY MANAGEMENT, *Master of Science in Environmental Technology Management.* The undergraduate requirements for the B.S. in Civil Engineering degree and the requirements for the Master of Environmental Engineering degree are given in the accompanying curriculum tables.

The mission of the department has three elements:

- To provide excellent instruction and design experiences essential for graduates to enter the practice of civil engineering and pursue lifelong professional development;
- To provide research opportunities for students that generate, communicate, and apply new knowledge for the betterment of society; and
- To foster a spirit of service and leadership among students and faculty and assist the public in addressing issues concerning using our resources, protecting our environment, and developing our infrastructure.

To accomplish the goals of the mission, faculty members established the following objectives based on input from our constituencies:

- To identify, reassess, and impart essential knowledge elements, tools, and skills necessary for civil engineering graduates to become successful engineers and lifelong learners;
- To continually strive to improve student performance and graduation rates;
- To encourage students to become licensed professional engineers;
- To provide a meaningful research experience for our students;
- To promote active and effective participation of students and faculty in service activities on campus and local, regional, and national levels;
- To balance faculty efforts among teaching, research, and service; and
- To instill pride and loyalty in our graduates that will result in a natural desire to support the department through service and monetary gifts.

As the desired outcomes of the program, the students will have:

- Ability to understand and apply mathematics, science, and engineering science to solve engineering problems;
- Ability to design modern engineering systems;
- Experience in working on multidisciplinary teams;
- Understanding of the importance of lifelong learning in professional practice;
- Ability to communicate by written, oral, and graphical means;
- Opportunities for undergraduate research experiences for as many students as possible within funding limitations;
- Leadership skills needed for professional practice and community service;
- Awareness of professional ethics expected in professional practice;
- A balanced view of the importance of academic endeavors, research, and professional and public service; and
- Membership and active participation in professional and honor societies such as ASCE, TSPE, Chi Epsilon, and Tau Beta Pi.

The Civil Engineering Department supports the concept of the Dynamic Enrollment Management Plan and has adopted the following version of it. Prior to the third year of the curriculum shown below and before enrolling in subsequent civil engineering courses, each student must file an application for admission to the civil engineering degree program by submitting a degree plan. To obtain approval of the degree plan, students must acquire a C or better in all courses. To graduate, the student must maintain the above standards in subsequent courses, complete the specified minimum number of hours in each of these subject areas, and have a C or better in all degree program courses. Changes in the degree plan or exceptions to the above conditions require written approval of the chairperson of the Department of Civil Engineering. Forms and information pertaining to departmental regulations are available in the Department of Civil Engineering office.

Students interested in obtaining both the Bachelor of Science in Civil Engineering and the Master of Architecture degrees should refer to the dual-degree curriculum listed in the College of Architecture section of this catalog.

Bachelor of Science in Civil Engineering Curriculum

FIRST YEAR*

Fall		*Spring*	
MATH 1351, Calc. I	3	MATH 1352, Calc. II	3
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
†U.S. History	3	C E 1305, Engr. Anal. I	3
C E 1130, Civil Engr. Seminar I	1	PHYS 1308, Prin. of Phys. I	3
E GR 1306, Engr. Graphics	3	PHYS 1105, Prin. of Phys. I (Lab.)	1
CHEM 1307, Prin. of Chem. I	3	CHEM 1308, Prin. of Chem. II	3
CHEM 1107, Prin. of Chem. I (Lab.)	1	CHEM 1108, Prin. of Chem. II (Lab.)	1
TOTAL	17	TOTAL	17

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calc. III	3	MATH 3350, Math. for Engrs. I	3
PHYS 2301, Prin. of Phys. II	3	M E 2322, Eng. Thermo. I	3
PHYS 1106, Prin. of Phys. II (Lab.)	1	C E 3303, Mech. of Solids	3
C E 2301, Statics	3	C E 3305, Mech. of Fluids	3
CTEC 2301, Surveying	3	**Statistics	3
†POLS 1301, Amer. Govt., Org.	3	++Technical Writing	3
C E 2101, Construction Matls.	1	TOTAL	18
TOTAL	17		

THIRD YEAR

Fall		*Spring*	
C E 3440, Struc. Anal. I	4	C E 3372, Water Sys. Des.	3
C E 3354, Intro. to Hydrology	3	C E 3341, Prin. of Struc. Des.	3
C E 3309, Envir. Engr. I	3	C E 3302, Dynamics	3
C E 3171, Envir. Engr. Lab.	1	C E 3130, Civil Engr. Seminar II	1
C E 3105, Mech. of Fluids Lab.	1	E E 2304, Elec. Sys. Anal.	3
C E 3103, Mech. of Solids Lab.	1	†POLS 2302, Amer. Pub. Pol.	3
C E 3321, Intro. to Geotech. Engr.	3	TOTAL	16
C E 3121, Geotech. Engr. Lab.	1		
TOTAL	17		

FOURTH YEAR

Fall		*Spring*	
C E 4343, Des. Concr. Struct.	3	C E 4330, Des. Engr. Sys.	3
C E 4292, Engr. Ethics & Prof.	2	C E 4293, Engr. Law	2
I E 3301, Engr. Eco. Anal.	3	+Elective (Oral Comm.)	3
†U.S. History	3	†Elective (Humanities)	3
C E 4361, Transport. Engr.	3	†Elective (Humanities)	3
+Elective (design)	3	+Elective (Design)	3
TOTAL	17	TOTAL	17

Minimum hours required for graduation—136.
*See Alternate Freshman Year.
**Select from I E 3341 or MATH 3342.
†Humanities electives should satisfy multicultural and visual and performing arts requirements of the Core Curriculum. Obtain departmental approval before enrolling in courses to satisfy humanities electives.
+Electives shall be selected as follows:
Design—choose from C E 4321, 4342, 4353, ENVE 4391, 4399.
Oral Communications—choose from Core Curriculum requirements or others approved by the department.
++Select from ENGL 2311 or 3365.

Master of Environmental Engineering

The traditional path to becoming an environmental engineer involves completing the B.S.C.E. and M.S.C.E. (with environmental engineering specialization) degrees or B.S.Ch.E. and M.S.Ch.E. degrees. Although the traditional path produces graduates in high demand by employers, certain parts of the environmental engineering spectrum demand graduates with a more specialized degree program. The M.Env.E. program is a 5-year "freshman-to-master's degree" program. The M.Env.E. program provides graduates with strong preparation in biology, chemistry, and environmental engineering. Students choosing the M.Env.E. degree are B.S.C.E. majors until formally admitted to the M.Env.E. program at the end of the second curriculum year. Students must pass the Graduate Record Examination and meet the university's graduate school admission requirements before enrolling in graduate level courses.

The specific educational objectives were established during the original development of the curriculum and program standards and may be stated as follows:

- The graduates of the M.Env.E. program will be prepared for environmental engineering practice through a curriculum that stresses design and application of engineering principles, rather than research.
- The inclusion of a broad background in biology, chemistry, and geology will make M.Env.E. graduates able to interact directly with environmental scientists in regulatory agencies, consulting firms, and industrial organizations.
- The M.Env.E. graduates will be attractive employees for petrochemical industries, as well as more traditional consulting and regulatory positions, through combining basic engineering principles with a strong environmental engineering foundation.

The Engineering Criteria 2000 established requirements for major focus areas and proficiencies to be included in an accredited program in environmental engineering. The major focus areas of water supply and resources, environmental systems modeling, environmental chemistry, wastewater management, solid waste management, hazardous waste management, air pollution control, and environmental health are included in specific advanced and graduate level courses within the curriculum. Further information about the curriculum and assessment procedures can be found at the departmental Web site (www.ce.ttu.edu).

Master of Environmental Engineering Curriculum

FIRST YEAR

Fall		*Spring*	
MATH 1351, Calc. I	3	MATH 1352, Calc. II	3
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Ess. of Coll. Rhet.	3
E GR 1307, Engr. Graphics	3	C E 1305, Engr. Anal. I	3
CHEM 1307, Prin. of Chem. I	3	CHEM 1308, Prin. of Chem. II	3
CHEM 1107, Prin. of Chem. I (Lab.)	1	CHEM 1108, Prin. of Chem. II (Lab.)	1
POLS 1301, Amer. Govt. Org.	3	HIST 2300, U.S. Hist. to 1877	3
ENVE 1100, Env. Eng. Seminar	1	TOTAL	16
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calc. III	3	PHYS 2301, Prin. of Phys. II	3
PHYS 1308, Prin. of Phys. I	3	PHYS 1106, Prin. of Phys. II (Lab.)	1
PHYS 1105, Prin. of Phys. I (Lab.)	1	CHEM 2306, Org. Chem. II	3
CHEM 2305, Org. Chemistry I	3	C E 3305, Mech. of Fluids	3
C E 2301, Statics	3	BIOL 1404, Biology II	4
BIOL 1403, Biology I	4	HIST 2301, U.S. Hist. Since 1877	3
TOTAL	17	TOTAL	17

THIRD YEAR

Fall		*Spring*	
*Statistics	3	MATH 3350, Differential Equations.	3
ENVE 3314, Chemodynamics I	3	ENVE 3315, Chemodynamics II	3
C E 3303, Mech. of Solids	3	C E 3372, Water Systems Design	3
C E 3354, Engr. Hydrology	3	**Indiv.-Group Behavior Elective	3
PETR 3308, Engr. Communication	3	***Engineering Elective	3
C E 3105, Mech. of Fluids Lab.	1	TOTAL	15
TOTAL	16		

FOURTH YEAR

Fall		*Spring*	
†Visual-Perf. Art Elective	3	†† Env. Science Elective	3
POLS 2302, Amer. Pub. Policy	3	†††Humanities Elective	3
ENVE 4390, Water-Wastewater Anal.	3	ENVE 4399, Mun. Wastewater Treat.	3
ENVE 4391, Adv. Water Treatment	3	##Technical Elective	3
C E 4363, Groundwater Hydrology	3	#C E 5393, Unit Processes Lab	3
C E 4292, Eng. Ethics and Prof.	2	TOTAL	15
TOTAL	17		

FIFTH YEAR

Fall		*Spring*	
#ENVE 5303, Des. of Air Poll. Ctr. Sys.	3	#ENVE 5304, Envir. Law and Pol.	3
#ENVE 5305, Env. Sys. Design I	3	#ENVE 5306, Env. Sys. Des. II	3
#I E 5306, Safety Engineering	3	#C E 5364, Groundwater Transp.	3
#C E 5396, Env. Impact Anal.	3	#C E 5395, Solid and Haz. Waste	3
##Technical Elective	3	##Technical Elective	3
TOTAL	15	TOTAL	15

Minimum hours required for graduation—160.
*Select I E 3341 or MATH 3342.
**I E 3301 strongly recommended, other courses from Core Curriculum with advisor approval.
***Select upper level engineering course, such as C E 3321, 4385, ENVE 4311, or others with advisor approval.
†Core Curriculum F could be used to meet the multicultural requirement.
††Select environmental science course such as GEOL 1303 an 1101, MBIO 3400, or others with advisor approval.
†††Core Curriculum E should be used to meet multicultural requirement if F (above) was not.
#Graduate course (course descriptions listed in *Graduate Catalog*).
##Choose graduate technical electives from the following: CE 5327, 5360, 5361, 5362, 5383, 5397, 5398, or others with advisor approval.

Civil Engineering (C E)

1130. Civil Engineering Seminar I (1:0:2). Introduction to the practice of civil engineering.

1305. Engineering Analysis I (3:3:0). Corequisite: MATH 1351. Formulation development and presentation of solutions to typical engineering problems. An introduction to numerical analysis and various computer techniques.

2101. Construction Materials Laboratory (1:0:3). Corequisite: C E 1305. Laboratory determination and interpretation of engineering properties of construction materials including steel, concrete, aluminum, wood, and masonry.

2301. Statics (3:3:0). Corequisite: MATH 1352, PHYS 1308, 1105. Equilibrium of particles and rigid bodies, friction, centroids, and moments of inertia.

3103. Mechanics of Solids Laboratory (1:0:3). Prerequisite: C E 3303. Laboratory measurements and observation of behavior of solid materials.

3105. Mechanics of Fluids Laboratory (1:0:3). Prerequisite: C E 3305. Experimental studies of fluid behavior.

3121. Geotechnical Engineering Laboratory (1:0:3). Corequisite: C E 3321. Laboratory determination and engineering evaluation of the physical properties of soils.

3130. Civil Engineering Seminar II (1:0:2). Prerequisite: Junior standing. Study of concepts of professionalism, engineering practice, leadership, and effectiveness of oral and written communications.

3171. Environmental Engineering Laboratory I (1:0:3). Corequisite: C E 3309. Performance of standard analytical methods used to measure water and

wastewater quality. Evaluation of limits to data produced by standard methods.

3302. Dynamics (3:3:0). Prerequisite: C E 2301; corequisite: MATH 2350. A study of motions of particles and rigid bodies. [ENGR 2302]

3303. Mechanics of Solids (3:3:0). Prerequisite: C E 2301. Theory of stress and strain in elastic and inelastic bodies subject to various conditions of loading.

3305. Mechanics of Fluids (3:3:0). Prerequisite: C E 2301. Hydrostatics; dynamics of viscous and nonviscous fluids; resistance to flow; flow in pipes and open channels.

3309. Environmental Engineering (3:3:0). Prerequisite: CHEM 1308 and C E 3305. Corequisite: C E 3171. Water and wastewater characteristics and system design for water and wastewater treatment. Introduction of techniques of solid hazardous waste management and air pollution control.

3321. Introduction to Geotechnical Engineering (3:3:0). Prerequisite: C E 3303. Physical properties of soils; theories of soil strength, consolidation, and settlement; soil stabilization; slope stability analysis; selected design topics.

3341. Principles of Structural Design (3:3:0). Prerequisite: C E 3440. Fundamental principles of structural design with consideration for the selection of materials and systems. Team approach to design; oral and written presentations.

3354. Engineering Hydrology (3:3:0). Prerequisite: C E 3305. Analysis and design methods related to the occurrence and distribution of surface and groundwater; precipitation, infiltration, runoff, and frequency analysis.

3372. Water Systems Design (3:3:0). Prerequisite: C E 3305, 3354; corequisite: C E 3105. Hydraulic analysis and design of municipal water distribution, stormwater collection, and wastewater collection systems. Oral and written presentations.

3385. Structural Mechanics (3:3:0). Statics and mechanics of solids for students of architecture: history, urban, or design option.

3440. Structural Analysis I (4:3:3). Prerequisite: C E 3303. Introduction to the analysis of statically determinate and indeterminate structures.

4000. Special Studies in Civil Engineering (V1-6). Individual studies in civil engineering areas of special interest. May be repeated for credit.

4292. Engineering Ethics and Professionalism (2:2:0). Prerequisite: Senior standing or consent of department chairperson. Principles and practice of engineering ethics and professionalism. [ENGR 4092]

4293. Engineering Law (2:2:0). Prerequisite: Senior standing in engineering or consent of department chairperson. Engineering law as it relates to professional and industrial problems; legal aspects of contracts, specifications, and liabilities.

4321. Geotechnical Engineering Design (3:3:0). Prerequisite: C E 3321. Design principles and applications involving site investigation, soil improvement, bearing capacity, settlement analysis, lateral earth pressure, spread footings, pier and pile foundations, retaining walls.

4330. Design of Engineering Systems (3:2:3). Prerequisite: Senior standing, and either C E 4342 or C E 4343 or corequisite C E 4353 or 4309 and consent of instructor. Interdisciplinary team approach to the design of complex engineering systems; should be taken during last semester of undergraduate program. Oral and written presentations.

4331. Special Problems in Civil Engineering (3). Individual studies in civil engineering. May be repeated for credit.

4333. Special Problems in Water Resources (3). Individual studies in water resources. May be repeated for credit.

4340. Structural Analysis II (3:3:0). Prerequisite: C E 3440 or consent of instructor. Analysis of structures by matrix methods.

4342. Design of Steel Structures (3:3:0). Prerequisite: C E 2101 and 3341. A course in design of structural steel systems by the LFRD method.

4343. Design of Concrete Structures (3:3:0). Prerequisite: C E 2101 and 3341. A course in design of reinforced concrete systems by strength design methods.

4353. Design of Hydraulic Systems (3:3:0). Prerequisite: C E 3305. Design of open channel and pressure conveyance systems for water; includes introduction to use of HEC-2.

4361. Transportation Engineering (3:3:0). Prerequisite: CTEC 2301; corequisite: C E 3321, and senior standing or approval of instructor. Basic design and analysis concepts of highway systems; geometrics; intersection design; pavement design.

4363. Groundwater Hydrology (3:3:0). Prerequisite: C E 3354 or consent of instructor. Groundwater flow; well hydraulics, development, and management of groundwater resources; water quality; mathematical modeling with available software. Introduction to design of wells and well fields.

4385. Structures (3:3:0). Prerequisite: C E 3385. Studies of steel, reinforced concrete, and timber structures for students of architecture in the history, urban, or design options.

Environmental Engineering (ENVE)

1100. Environmental Engineering Seminar (1:0:2). Introduction of first year and transfer students to the practice of environmental engineering.

3203. Environmental Measurements (2:1:3). Prerequisite: CHEM 1308 and 1108. Laboratory methods using appropriate quality assurance procedures to characterize environmental parameters important in air pollution control, water and waste water quality, and solid and hazardous waste management.

3309. Environmental Engineering (3:3:0). Prerequisite: CHEM 1309 and CE 3305. Corequisite: ENVE 3203. Water and wastewater characteristics and system design for water and wastewater treatment. Introduction of techniques of solid hazardous waste management and air pollution control.

3314. Chemodynamics I (3:3:0). Prerequisite: CHEM 1308 and MATH 1352. Thermodynamics and kinetic principles underlying environmental engineering designs. Topics include Gibbs free energy, chemical potential, fugacity, vapor pressures, non-ideal solutions, and phase equilibrium.

3315. Chemodynamics II (3:3:0). Prerequisite: ENVE 3314. Course is a continuation of ENVE 3314 with application and modeling of the processes presented in the first semester to real environmental engineering problems.

4311. Environmental Systems Models (3:2:3). Prerequisite: MATH 3350. Application of various computer models used in the analysis and solution of environmental engineering problems involving air, water, and solid and hazardous wastes.

4390. Water and Wastewater Analysis (3:1:6). Prerequisite: ENVE 3315 and consent of instructor. Laboratory procedures for the physical, chemical, and biological examination of water, wastewater, and hazardous wastes. Interpretation of water quality data.

4391. Advanced Water Treatment (3:3:0). Prerequisite: Consent of instructor. Water chemistry and microbiology; design procedures for municipal water treatment; advanced methods of quality control, renovation, and reuse.

4399. Municipal Wastewater Treatment (3:3:0). Prerequisite: Consent of instructor. Characterization of municipal wastewaters and application of design procedures used to remove and dispose of criteria pollutants in wastewater.

Department of Computer Science

Chair: Professor Daniel E. Cooke

Professors Bagert, Gelfond, Marcy, and Oldham; ***Associate Professors*** Desrosiers, Hernandez, Lopez-Benitez, Lakhani, Mengel, and Temkin; ***Assistant Professors*** Pyeatt, Sinzinger, Watson, and Zhuang; ***Lecturers*** Moore and Scott-Fleming.

This department supervises the following degree programs: COMPUTER SCIENCE, *Bachelor of Science, Master of Science,* and *Doctor of Philosophy;* SOFTWARE ENGINEERING, *Master of Science.*

Computer science is the theory, design, and analysis of algorithms for processing information and the implementations of these algorithms in hardware and software. There is an implied overall balance of emphasis between the hardware and software aspects of computer science. The analysis of trade-offs between hardware and software is a salient characteristic with an emphasis on efficiency and effectiveness. The result is the knowledge and skills necessary to analyze, design, implement, test, and maintain high quality, computer-based solutions to human problem-solving needs. The computer science curriculum also places a strong emphasis on writing, communication, professional skills, and ethical concerns. The objective is to prepare a graduate for a productive professional career with a broad-based understanding of the computing discipline.

The principles and foundations of computer science are learned through a synthesis of studies involving both course work and laboratories in areas such as problem solving, software development paradigms, data structures, digital systems, algorithm analysis and design, discrete structures, programming languages, computer organization and architecture, software engineering, operating systems, artificial intelligence, networks, computer graphics, microprocessors, computer theory, and

information retrieval. Additional supporting studies involve both course work and laboratories in mathematics, physics, electrical engineering, and technical writing. Computer ethics is an essential part of several courses.

All students entering the computer science degree program are expected to follow the sequence of courses shown in the curriculum table below and must satisfy the requirements of the Dynamic Enrollment Management Plan (DEMP) for computer science and the College of Engineering. DEMP details are available from the department. Students demonstrating satisfactory performance may deviate from the specified sequence of courses only with the express approval of a computer science undergraduate advisor and only when such deviation is required to obtain a normal load of course work for the student. Students may take a course no more than three times unless they have written permission from the computer science chairperson.

Computer science majors are not required to have a minor field. However, many students choose to pursue a minor. Minors can be pursued in virtually any field of study offered at Texas Tech. The minor must consist of a minimum of 18 hours, with at least six of those hours at the 3000 or 4000 level. A minor may require additional hours of study, depending on the particular minor field.

Minors in Computer Science. A minor in computer science includes 18 or more hours in computer science with at least 6 of those hours at the 3000 or 4000 level. For more information on minors, please contact a computer science undergraduate advisor.

Dual Degrees. Computer science is part of three dual-degree programs in which Bachelor of Science degrees can be earned in both computer science and another field. The electrical engineering and computer science (EECS) and chemical engineering and computer science dual-degree (CHCS) curriculum tables can be found under the listings for electrical engineering and chemical engineering, respectively. The mathematics and computer science (MACS) dual-degree curriculum table is listed below; this degree is administered through the College of Arts and Sciences and follows all requirements mandated for the Bachelor of Science degrees for both the College of Engineering and the College of Arts and Sciences. EECS and CHCS students are advised through the Departments of Electrical Engineering and Chemical Engineering, respectively; MACS students can choose to be advised in either the Department of Mathematics or Computer Science.

Combined Bachelor's and Master's Programs. The department offers two combined Bachelor of Science and Master of Science curricula. In both cases completion of the degree requirements leads to the awarding of two degrees. In one curriculum, the degrees awarded are the Bachelor of Science in Computer Science and the Master of Science in Computer Science; in the other, the degrees are the Bachelor of Science in Computer Science and the Master of Science in Software Engineering.

Students choosing one of the combined degree programs would be initially admitted as pursuing a Bachelor of Science in Computer Science. The graduate component of the program would be added upon admission to the appropriate Master's degree by the Graduate School during the student's third year of study. Students must meet the university requirement to take the Graduate Record Examination as well as other graduate admission requirements of the department before enrolling in graduate-level courses.

Computer Science Curriculum

FIRST YEAR

Fall		*Spring*	
C S 1110, Comp. Sci. Seminar	1	C S 1412, Programming Princ. II	4
C S 1411, Programming Princ. I	4	ENGL 1302, Adv. Coll. Rhetoric	3
ENGL 1301, Ess. Coll. Rhetoric	3	MATH 1352, Calculus II	3
MATH 1351, Calculus I	3	PHYS 1105, Princ. of Physics Lab.	1
POLS 1301, Amer. Gov. Org.	3	PHYS 1308, Princ. of Physics I	3
*Core Curr. Elective	3	*Core Curr. Elective	3
TOTAL	17	TOTAL	17

SECOND YEAR

Fall		*Spring*	
C S 2413, Data Structures	4	C S 2350, Comp. Org. & Assy. L. or	3
C S 2382, Disc. Struct.	3	E E 3362, Digital Design	
MATH 2350, Calculus III	3	C S 2371, Intro. Dig. Des. or	3
PHYS 1106, Princ. Phys. Lab. II	1	E E 2372, Mod. Digital Sys. Des.	
PHYS 2301, Princ. Phys. II	3	MATH 2360, Linear Algebra	3
*Core Curr. Elective	3	ENGL 2311, Technical Writing	3
TOTAL	17	CHEM 1307 & 1107, Princ. Chem. I or	4
		BIOL 1403, Biology I	
		TOTAL	16

THIRD YEAR

Fall		*Spring*	
C S 3365, Software Engineering	3	C S 3352, Intro. Sys. Prog.	3
C S 3361, Concepts. Prog. Lang.	3	C S 3364, Des. & Anal. Alg.	3
C S 3372, Adv. Digit. Proj.	3	C S 3375, Comp. Arch.	3
C S 3383, Theory of Automata	3	**Math. Prob. and Stat. Elective	3
COMS 3358, Bus. & Prof. Comm.	3	*Core Curr. Elective	3
or PETR 3308, Engr. Comm.		TOTAL	15
TOTAL	15		

FOURTH YEAR

Fall		*Spring*	
C S 4311, Sr. Proj. Des.	3	C S 4312, Sr. Proj. Impl. Lab.	3
C S 4352, Oper. Sys.	3	***Computer Sci. Elective	3
***Computer sci. Elective	3	†Tech. or Prof. Dev. Elective	3
†Tech. or Prof. Dev. Elective	3	*Core Curr. Elective	6
*Core Curr. Elective	3	TOTAL	15
TOTAL	15		

Minimum hours for graduation–127.

*Courses needed to fulfill the university Core Curriculum requirements, including 3 additional hours of political science, 6 hours of U.S. History, 3 hours of humanities, 3 hours of visual and performing arts, and 3 hours of individual or group behavior electives. The 3-hour multicultural requirement must also be satisfied. For details, consult the Core Curriculum requirements.

**Mathematics Probability and Statistics electives: Choose from MATH 3342, I E 3341, or Ch E 4343.

***Computer Science electives: choose from any 3000 or 4000 level computer science courses that are not required for the C S major.

†Technical or Professional Development electives: Choose from AERS 3305, BLAW 3391, E E 3303, 3311 or 3388, ENGL 3365 or 4366, HONS 3302, I E 3301, MGT 3370 or 3376, MILS 3301, MKT 3350, MATH 3350, 3354, or 4310. Also, other 3000-4000 level courses in mathematics, science, engineering, technical writing, business administration, or an approved minor may be used with permission of the department.

Math-Computer Science Dual Degree Curriculum

FIRST YEAR

Fall		*Spring*	
C S 1411, Programming Princ. I	4	C S 1412, Programming Princ. II	4
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
POLS 1301, Amer. Govt. Org.	3	PHYS 1105, Princ. Physics Lab. I	1
TOTAL	13	PHYS 1308, Princ. Physics I	3
		*Personal Fitness and Wellness	2
		TOTAL	16

SECOND YEAR

Fall		*Spring*	
C S 2413, Data Structures	3	C S 2350, Comp. Org. Assy. L.	3
C S 2382, Disc. Struct.	3	or E E 3362, Digital Design	
MATH 2350, Calculus III	3	C S 2371, Intro. Dig. Des.	3
PHYS 1106, Princ. of Phys. Lab II	1	E E 2372, Mod. Dig. Sys. Des.	
PHYS 2301, Princ. of Phys. II	3	MATH 2360, Linear Algebra	3
ENGL 2311, Technical Writing	3	CHEM 1307 & 1107, Princ. Chem. I	4
TOTAL	16	or BIOL 1403, Biology I	
		**Core Curr. Elective	3
		TOTAL	16

THIRD YEAR

Fall		*Spring*	
C S 3365, Software Engineering	3	C S 3364, Des. & Anal. Alg.	3
C S 3361, Concepts. Prog. Lang.	3	C S 3372, Adv. Digital Des.	3
MATH 3354. Diff. Equations I	3	MATH 3360, Found. of Algebra I	3
***Foreign Language Elective	5	***Foreign Language Elective	5
**Core Curr. Elective	3	††Core Curr. Elective	3
TOTAL	17	TOTAL	17

FOURTH YEAR

Fall		*Spring*	
C S 3375, Computer Architecture	3	C S 3352, Intro. Sys. Prog.	3
MATH 3430, Comp. Tech. Sci. Math.	4	C S 3383, Theory of Automata	3
MATH 4342, Math. Stat.	3	MATH 4310, Intro. Num. Anal I	3
COMS 3358, Bus. & Prof. Comm. or PETR 3308, Engr. Comm.	3	†MATH 4343, Math. Stat.	3
		***Foreign Language Elective	3
***Foreign Language Elective	3	TOTAL	15
TOTAL	16		

FIFTH YEAR

Fall		*Spring*	
C S 4311, Sr. Proj. Des.	3	C S 4312, Sr. Proj. Impl. Lab.	3
C S 4352, Operating Systems	3	††Comp. Sci. Elective	3
MATH 4350, Adv. Calculus	3	†MATH 4312, Intro. Num. Anal. II	3
MATH 4354, Diff. Equations II	3	**Core Curr. Elective	6
**Core Curr. Elective	3	TOTAL	15
TOTAL	15		

Minimum hours for graduation–156.
*Choose from Personal Fitness and Wellness requirements for the College of Arts and Sciences.
**Courses needed to fulfill the College of Arts and Sciences and the university Core Curriculum requirements, including 3 hours of political science, 6 hours of U.S. History, 3 hours of English literature, 3 hours of visual and performing arts, and 3 hours of individual or group behavior electives. The 3-hour multicultural requirement must also be satisfied. For details consult the Core Curriculum requirements and the College of Arts and Sciences General Degree requirements for a Bachelor of Science.
***Refer to the General Degree requirements for the College of Arts and Sciences. A student who only takes the 6-hour second-year requirement will need to take 1 additional hour of electives, to be approved by the student's academic advisor.
†MATH 4312 and 4343 are both recommended but a mathematics elective course can be substituted with approval of an advisor in the Department of Mathematics.
††Computer Science electives: choose from any 3000 or 4000 level computer science courses that are not required for the MACS major.

Combined B.S. and M.S. in Computer Science Curriculum

FIRST YEAR

Fall		*Spring*	
C S 1110, Comp. Sci. Seminar	1	C S 1412, Programming Princ. II	4
C S 1411, Programming Princ. I	4	ENGL 1302, Adv. Coll. Rhetoric	3
ENGL 1301, Ess. Coll. Rhetoric	3	MATH 1352, Calculus II	3
MATH 1351, Calculus I	3	PHYS 1105, Princ. of Physics Lab.	1
POLS 1301, Amer. Gov. Org.	3	PHYS 1308, Princ. of Physics I	3
*Core Curr. Elective	3	*Core Curr. Elective	3
TOTAL	17	TOTAL	17

SECOND YEAR

Fall		*Spring*	
C S 2413, Data Structures	4	C S 2350, Comp. Org. & Assy. L. or E E 3362, Digital Design	3
C S 2382, Disc. Struct.	3		
MATH 2350, Calculus III	3	C S 2371, Intro. Dig. Des. or E E 2372, Mod. Digital Sys. Des.	3
PHYS 1106, Princ. Phys. Lab. II	1		
PHYS 2301, Princ. Phys. II	3	MATH 2360, Linear Algebra	3
*Core Curr. Elective	3	ENGL 2311, Technical Writing	3
TOTAL	17	CHEM 1307 & 1107, Princ. Chem. I or BIOL 1403, Biology I	4
		TOTAL	16

THIRD YEAR

Fall		*Spring*	
C S 3365, Software Engineering	3	C S 3352, Intro. Sys. Prog.	3
C S 3361, Concepts. Prog. Lang.	3	C S 3364, Des. & Anal. Alg.	3
C S 3372, Adv. Digit. Proj.	3	C S 3375, Comp. Arch.	3
C S 3383, Theory of Automata	3	**Math. Prob. and Stat. Elective	3
COMS 3358, Bus. & Prof. Comm. or PETR 3308, Engr. Comm.	3	*Core Curr. Elective	3
		TOTAL	15
TOTAL	15		

FOURTH YEAR

Fall		*Spring*	
C S 4311, Sr. Proj. Des.	3	C S 4312, Sr. Proj. Impl. Lab.	3
C S 4352, Oper. Sys.	3	***Computer sci. Elective	3
†Tech. or Prof. Dev. Elective	3	†Tech. or Prof. Dev. Elective	3
††Graduate Core Course	3	††Graduate Core Course	3
*Core Curr. Elective	3	*Core Curr. Elective	3
TOTAL	15	TOTAL	15

FIFTH YEAR

Fall		*Spring*	
††Graduate Core Course	6	††Graduate Core Course	9
†††Graduate Elective Course	3	+C S 6000, Master's Thesis	3
+C S 6000, Master's Thesis	3	TOTAL	12
TOTAL	12		

Minimum hours for graduation–151.
*Courses needed to fulfill the university Core Curriculum requirements, including 3 additional hours of political science, 6 hours of U.S. History, 3 hours of humanities, 3 hours of visual and performing arts, and 3 hours of individual or group behavior electives. The 3-hour multicultural requirement must also be satisfied. For details consult the Core Curriculum requirements.
**Mathematics Probability and Statistics electives: Choose from MATH 3342, I E 3341, or Ch E 4343.
***Computer Science electives: Choose from any 3000 or 4000 level computer science courses that are not required for the C S major.
†Technical or Professional Development electives: Choose from AERS 3305, BLAW 3391, E E 3303, 3311 or 3388, ENGL 3365 or 4366, HONS 3302, I E 3301, MGT 3370 or 3376, MILS 3301, MKT 3350, MATH 3350, 3354, or 4310. Also, other 3000-4000 level courses in mathematics, science, engineering, technical writing, business administration, or an approved minor may be used with permission of the department.
††Graduate Core Courses: Select two from C S 5381, 5383, 5384, and two from C S 5352, 5375, 5368.
†††Graduate Elective Courses: To be determined in consultation with a thesis or departmental graduate advisor.
+Master's Thesis: The 6 hours for C S 6000 shown here are only a minimum number; some thesis projects due to their nature may require an earlier start and/or take longer to complete. Also, if pursuing a nonthesis option, substitute 12 additional hours of graduate elective courses to be determined in consultation with a computer science graduate advisor for the 6 hours of C S 6000. Nonthesis students must also pass the departmental Master's Comprehensive Examination.

Combined B.S. in Computer Science and M.S. in Software Engineering Curriculum

FIRST YEAR

Fall		*Spring*	
C S 1110, Comp. Sci. Seminar	1	C S 1412, Programming Princ. II	4
C S 1411, Programming Princ. I	4	ENGL 1302, Adv. Coll. Rhetoric	3
ENGL 1301, Ess. Coll. Rhetoric	3	MATH 1352, Calculus II	3
MATH 1351, Calculus I	3	PHYS 1105, Princ. of Physics Lab.	1
POLS 1301, Amer. Gov. Org.	3	PHYS 1308, Princ. of Physics I	3
*Core Curr. Elective	3	*Core Curr. Elective	3
TOTAL	17	TOTAL	17

SECOND YEAR

Fall		*Spring*	
C S 2413, Data Structures	4	C S 2350, Comp. Org. & Assy. L. or	3
C S 2382, Disc. Struct.	3	E E 3362, Digital Design	
MATH 2350, Calculus III	3	C S 2371, Intro. Dig. Des. or	3
PHYS 1106, Princ. Phys. Lab. II	1	E E 2372, Mod. Digital Sys. Des.	
PHYS 2301, Princ. Phys. II	3	MATH 2360, Linear Algebra	3
*Core Curr. Elective	3	ENGL 2311, Technical Writing	3
TOTAL	17	CHEM 1307 & 1107, Princ. Chem. I or	4
		BIOL 1403, Biology I	
		TOTAL	16

THIRD YEAR

Fall		*Spring*	
C S 3365, Software Engineering	3	C S 3352, Intro. Sys. Prog.	3
C S 3361, Concepts. Prog. Lang.	3	C S 3364, Des. & Anal. Alg.	3
C S 3372, Adv. Digit. Proj.	3	C S 3375, Comp. Arch.	3
C S 3383, Theory of Automata	3	**Math. Prob. and Stat. Elective	3
COMS 3358, Bus. & Prof. Comm.	3	*Core Curr. Elective	3
or PETR 3308, Engr. Comm.		TOTAL	15
TOTAL	15		

FOURTH YEAR

Fall		*Spring*	
C S 5363, Soft. Specs. & Des.	3	C S 5363, Soft. Proj. Mgt.	3
C S 4352, Oper. Sys.	3	***Computer Sci. Elective	6
†Tech. or Prof. Dev. Elective	3	†Tech. or Prof. Dev. Elective	3
***Computer Science Elective	3	*Core Curr. Elective	3
*Core Curr. Elective	3	TOTAL	15
TOTAL	15		

FIFTH YEAR

Fall		*Spring*	
C S 5358, Software Studio I	3	C S 5359, Software Studio II	3
CS 5366, Soft. Process Improvement	3	C S, Soft. Constr. & Evolution	3
††Soft. Engr. Grad. Elective	3	††Soft. Engr. Grad. Elective	3
+C S 6000, Master's Thesis	3	+C S 6000, Master's Thesis	3
TOTAL	12	TOTAL	12

Minimum hours for graduation–151.
*Courses needed to fulfill the university Core Curriculum requirements, including 3 additional hours of political science, 6 hours of U.S. History, 3 hours of humanities, 3 hours of visual and performing arts, and 3 hours of individual or group behavior electives. The 3-hour multicultural requirement must also be satisfied. For details consult the Core Curriculum requirements.
**Mathematics Probability and Statistics electives: Choose from MATH 3342, I E 3341, or Ch E 4343.
***Computer Science electives: Choose from any 3000 or 4000 level computer science courses that are not required for the C S major.
†Technical or Professional Development electives: Choose from AERS 3305, BLAW 3391, E E 3303, 3311 or 3388, ENGL 3365 or 4366, HONS 3302, I E 3301, MGT 3370 or 3376, MILS 3301, MKT 3350, MATH 3350, 3354, or 4310. Also, other 3000-4000 level courses in mathematics, science, engineering, technical writing, business administration, or an approved minor may be used with permission of the department.
††Software Engineering Graduate Elective Courses: To be determined in consultation with a thesis or departmental graduate advisor.
+Master's Thesis: The 6 hours for C S 6000 shown here are only a minimum number; some thesis projects due to their nature may require an earlier start and/or take longer to complete. Also, if pursuing a nonthesis option, substitute 12 additional hours of graduate elective courses to be determined in consultation with a computer science graduate advisor for the 6 hours of C S 6000. Nonthesis students must also pass the departmental Master's Comprehensive Examination.

Computer Science (C S)

1110. Computer Science Seminar (1:1:0). For majors and minors only. Introduction to the profession and practice of computer science for first-year and transfer students.

1300. Computers and Modern Society (3:2:2). Survey of computers, their uses, and their impact on society. Brief introduction to computer programming and the use of word processor, spreadsheet, and data base application software. Credit may not be applied toward a computer science major or minor. [COSC 1301]

1303. Programming Language Proficiency in C/C++ (3:2:2). Prerequisite: MATH 1320 and computer literacy. The course will focus on basic programming skills in the C/C++ language. This course cannot be used for a C S major or minor.

1405. Introduction to Computer Science (4:3:3). Prerequisite; MATH 1350 or 1550 or equivalent. Procedural programming in C++. Discipline of computer science; analysis, design, implementation, debugging, and testing of software; computer ethics. Introduction to field for majors. [COSC 1305]

1411. Programming Principles I (4:3:3). Prerequisite; MATH 1350 or 1550 or equivalent. Procedural programming in C++. Discipline of computer science; analysis, design, implementation, debugging, and testing of software; computer ethics. Introduction to field for majors.

1412. Programming Principles II (4:3:3). Prerequisite: C S 1411. Object-oriented programming in C++ with emphasis on evaluation of alternative program design strategies. Class design, recursion, linked and dynamically allocated structures, introduction to web programming. (Honors section offered.) [COSC 1420]

2350. Computer Organization and Assembly Language Programming (3:3:0). Prerequisite: C S 1412; corequisite: C S 2371 or E E 2372. Computer organization and assembly language programming, system and data management macros. [COSC 2425]

2371. Introduction to Digital Design (3:3:0). Prerequisite: PHYS 2301. Logic and computer design fundamentals, including design of combinational and sequential logic circuits, memory systems, I/O devices, and register transfer logic.

2382. Discrete Computational Structures (3:3:0). Prerequisite: C S 1412 and MATH 1352. Sets, functions, algorithms, counting principles, logic foundations, graphs, Boolean algebra, and the foundations of the theory of computation.

2413. Data Structures (4:3:3). Prerequisite: C S 1412. Comparative study of the interaction of data and procedural abstractions. Data structures, lists, stacks, queues, trees, graphs. Algorithms: searching, sorting, parsing, hashing, graph transversals. (Honors section offered.)

3352. Introduction to Systems Programming (3:3:0). Prerequisite: C S 2350 or E E 3362. Design of various types of computer system software, including assemblers, loaders and monitors. Introduction to macro processors, compilers, and operating system features. Emphasis on relationships between machine architecture and software.

3361. Concepts of Programming Languages (3:3:0). Prerequisite: C S 2413. Study of programming language design. The investigation and comparison of different programming language paradigms. Languages include Ada, Smalltalk, and Prolog.

3364. Design and Analysis of Algorithms (3:3:0). Prerequisite: C S 2413, 2382 and MATH 2360. A theoretical course focusing on the design and analysis of computer algorithms.

3365. Software Engineering (3:3:0). Prerequisite: C S 2413. Software engineering theory and practice. A semester-long software engineering project is designed and implemented by the class, acting as a large team. Software engineering ethics. (Writing intensive)

3368. Introduction to Artificial Intelligence (3:3:0). Prerequisite: C S 2382. Broad treatment of the field. Algorithms and knowledge structures for varied application areas such as natural language processing, expert systems, game playing, machine vision, and automatic programming. Developments of programs and systems will use standard languages in artificial intelligence.

3372. Advanced Digital Projects (3:3:0). Prerequisite: C S 2371 or E E 2372. Advanced digital systems design and implementation. Use of software design tools and test instrument verification of the hardware implementation.

3375. Computer Architecture (3:3:0). Prerequisite**:** C S 3372. Hardware design alternatives for a computer system to satisfy market requirements. Analysis of current systems.

3383. Theory of Automata (3:3:0). Prerequisite: C S 2382. The relationship between language, grammars, and automata. Deterministic and nondeterministic machines. Pushdown automata and turing machines. The limits of computability.

3392. Computer Networks (3:3:0). Prerequisite: C S 3352. Digital transmission fundamentals, local area networks, network protocols, and common Internet applications.

4000. Special Topics in Computer Science (V1-6). Prerequisite: Advanced standing and departmental approval. Individual studies in computer science areas of special areas. May be repeated for credit.

4311. Senior Project Design (3:3:0). Prerequisite: C S 2365, 3364, COMS 3358 or PETR 3308, and 12 additional hours of upper-division computer science course work and senior standing. For majors only. Further study of software engineering theory and practice. Projects are formulated and formally proposed; project completion will occur in C S 4312. (Writing Intensive)

4312. Senior Project Implementation Laboratory (3:0:9). Prerequisite: C S 4311. Students will complete the projects begun in C S 4311. Acceptance testing of projects will be performed by the customer. Formal project presentations will be made upon completion. (Writing Intensive)

4352. Operating Systems (3:3:0). Prerequisite: C S 3352 and 3364. Survey of computer resource allocation and management techniques; multiprogramming, multiprocessing, and paging systems. The UNIX operating system will be studied in detail.

4354. Concepts of Database Systems (3:3:0). Prerequisite: C S 3364. Overview of a database system and its components; physical organization of data; data models; relational databases; and query processing.

4395. Introduction to Computer Graphics (3:3:0). Prerequisite: C S 3364. Focus on basic principles and methods for designing, implementing, and applying graphics packages. Methods for manipulating and displaying two- and three-dimensional objects. Selected readings in current graphics literature and a major project are required.

4397. Computer Game Design and Development (3:3;0). Prerequisite; C S 3364. Underlying science, technology, and art or computer games. Specific topics include design planning, interactive graphics, autonomous agents, multi-user interaction, and game engine construction.

Department of Electrical and Computer Engineering

Chair: Professor Jon G. Bredeson

Horn Professor Kristiansen; ***Horn and Maddox Professor*** Temkin; ***Professors*** Chao, Giesselmann, Krile, Krompholz, Mitra, Parten, and Trost; ***Associate Professors*** Baker, Dickens, Nikishin, Saed, and Zieher; ***Assistant Professors*** Dallas, Karp, Neuber, and Sari-Sarraf; ***Adjunct Faculty*** Cox, Ishihara, Kachru, Lu, Petrosian, Rowe, Shieh, Shkuratov, Shurmer, Storrs, and Wolverton.

This department supervises the following degree programs: ELECTRICAL ENGINEERING, *Bachelor of Science in Electrical Engineering, Master of Science in Electrical Engineering, Doctor of Philosophy;* COMPUTER ENGINEERING, *Bachelor of Science.*

Educational Objectives. The mission of Texas Tech University is to provide the highest standard of excellence in higher education while pursuing continuous quality improvement, stimulating the greatest degree of meaningful research, and supporting faculty and staff in satisfying those we serve. The Department of Electrical and Computer Engineering supports the mission of the university through its undergraduate programs by providing students with appropriate curricula and educational experiences. The curricula remain current through continuing assessment by employers, alumni, faculty, and students. Students obtain a broad education necessary to understand the impact of electrical and computer engineering solutions in a global, societal, and environmental context. To accomplish the mission, the electrical and computer engineering faculty, with advice from students, alumni, and employers, endorse the following objectives:

A. Students will obtain an ability to analyze and solve electrical engineering problems by applying fundamental knowledge of mathematics, science, and engineering. Modern engineering techniques, skills, and tools will be used, particularly recognizing the role that computers play in engineering.
B. Students will obtain an ability to identify, formulate, and solve practical electrical engineering and computer engineering problems. The current electrical engineering curriculum includes circuits and systems, electronics, electromagnetics, communications, digital systems, microcontrollers, programming, control systems, a number of electrical engineering specialty areas, and a number of technical and nontechnical support courses. The curriculum specific to the computer engineering program includes the areas of circuits and systems, electronics, software engineering, communications, digital systems, microcontrollers, programming, systems programming, operating systems, and computer architecture. Most of this is accomplished through the required lecture courses indicated in the curriculum.
C. Students will obtain an ability to identify, formulate, and solve practical electrical and computer engineering problems, including the planning, specification, design, implementation, and operation of systems, components, and/or processes that meet performance, cost, time, safety, and quality requirements.
D. Students will obtain an ability to design and conduct scientific and engineering experiments and to analyze and interpret the resulting data. All undergraduate engineering programs provide for design experience, as described in objectives C and D. However, the approach used to provide the experience varies considerably at different institutions. The electrical and computer engineering programs at Texas Tech utilize five 3-hour credit, stand-alone project design laboratories to achieve this objective. The projects are long-term (no more than two per semester), open-ended, and team-oriented.
E. Students will recognize the need for and the ability to engage in perpetual learning by working on projects for which they have no prior experience. They will develop their ability to learn by working both individually and within multidisciplinary teams. One of the objectives of the laboratory program at Texas Tech is to expose students to areas they have not seen before. It is important for students to develop confidence in their basic knowledge and to realize that they can extend that knowledge to new and exciting areas. In addition, it is important for students to begin the transition to lifelong learning and not be afraid of something they have not seen in a class. Engineers are seldom asked to solve problems that have already been solved. In industry, engineers are constantly asked to learn and develop new techniques and systems for which they may have little prior experience.
F. Students will obtain an ability to function and communicate effectively, both individually and

within multidisciplinary teams. Another major objective of the electrical and computer engineering laboratory programs is to develop in each student a strong, fundamental capability in oral and written communication. In line with this, the majority of time spent in weekly meetings is devoted to student presentations.

A number of other areas are very important for practicing, professional engineers. Specific objectives for these areas are as follows:

G. Students will experience professional and ethical responsibility through interaction with other students, faculty, and practicing professionals.
H. The programs will promote cultural diversity within the ranks of the profession by encouraging minority and women students and faculty.

The fields of electrical and computer engineering are very broad and include a number of specialty areas. To allow students to become more familiar with these areas:

I. The programs will offer a wide range of technical specialties consistent with the breadth of electrical and computer engineering and inclusive of recent developments in the field.

An important contribution to accomplish these objectives is our five-course sequence of stand-alone project laboratory courses.

In each of the project laboratory courses, students are given a brief description of a complex, open-ended project. The students, usually working in teams, are required to design, develop, construct, and evaluate a system to satisfy the requirements for the project. Faculty advisors evaluate the project on the basis of finished products, required written reports, and oral presentations. By its very structure the project laboratory sequence gives our students considerable experience in dealing with open-ended design problems. They also gain experience in working closely with others and in written and oral communication.

The material presented in the electrical and computer engineering lecture courses is incorporated in the project laboratory course sequence. The projects, however, are real-world problems that require students to go beyond the basic knowledge learned in the classroom. Through these experiences, students gain the technical maturity necessary to succeed in their chosen careers. In addition, the project laboratory courses address topics in engineering ethics and professionalism and help students develop the skills needed for lifelong learning.

The result of the overall curriculum is to prepare a graduate who is sensitive to the consequences of his or her work, both ethically and professionally, for a productive professional career. A broad educational background has been incorporated into this curriculum and personalized advising plays an important role in its implementation. The required undergraduate program is contained in the curriculum tables shown on the following pages.

The undergraduate curriculum gives students a broad education in electrical and computer engineering and enables them to pursue all career options in a fast-changing technical environment. In addition, students may select from a wide variety of elective courses in electrical engineering and other related disciplines allowing them to specialize at the senior level. If a student wishes, specific specialization options are available, including electronics, power, signals and systems, communications, optoelectronics, and electro-mechanical systems.

Students will be responsible for arranging a course of study with an advisor's counsel and approval. Students whose high school courses include physics, chemistry, mathematics through analytical geometry, and at least two credits for a single foreign language are expected to follow the sequence of courses shown in the curriculum. However, students who lack credits in any of these areas of study in high school should consult with departmental advisors to determine a suitably adjusted first-year schedule. The exceptionally well-prepared student should consult the section of this catalog on credit by examination. All students must satisfy the academic performance requirements of the Dynamic Enrollment Management Plan (DEMP), copies of which are available from the Department of Electrical and Computer Engineering. Any exception requires written approval by the chairperson of the department. Successful students in the department will meet all degree and prerequisite requirements with grades of C or better.

After grades are posted for the current semester, students who have not met prerequisite requirements for any course will be dropped from that course by the department. It will be the responsibility of the student to add additional courses to maintain a full load. Students who have not achieved a C or better after a maximum of two attempts (including withdrawals) in a course must reapply for admission to the program. A faculty committee determined by the department will review individual cases of students requesting readmission to the department. Required courses taken more than twice will not apply toward the degree without PRIOR written approval by the department. It is the responsibility of the student to seek written permission. Any student within nine semester hours of graduation may take courses for graduate credit. Students interested in a dual degree program or a minor should consult a faculty advisor.

A minor in electrical engineering consists of E E 2331, 2372, 3302, 3303, 3311, and 3362. A joint M.S.–B.S.E.E. 150-hour program is also available. Students interested in pursuing this degree should inform the academic advisor during the first semester of their junior year.

Electrical Engineering Curriculum

FIRST YEAR

Fall		*Spring*	
MATH 1351, Cal. I	3	MATH 1352, Cal. II	3
*CHEM 1307, Prin. of Chem. I	3	C S 1412, Programming Princ. II	4
CHEM 1107, Prin. of Chem. I (Lab.)	1	E E 2372, Mod. Dig. Syst. Des.	3
E E 1305, Intro. Engr. & Comp. Prog.	3	ENGL 1302, Adv. Coll. Rhetoric	3
POLS 1301, Amer. Govt., Org.	3	**Elective	3
ENGL 1301, Ess. Coll. Rhetoric	3	TOTAL	16
TOTAL	16		

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calculus III	3	MATH 3350, Math for Engr. I	3
E E 3302, Fund. of Elect. Engr.	3	E E 3311, Electronics I	3
PHYS 1308, Prin. of Phys. I	3	E E 2331, Proj. Lab. I	3
PHYS 1105, Prin. of Phys. I (Lab.)	1	PHYS 2301, Prin. of Phys. II	3
E E 3362, Engr. Appr. to Dig. Des.	3	PHYS 1106, Prin. of Phys. II (Lab.)	1
**Elective	3	E E 3303, Linear System Analysis	3
TOTAL	16	TOTAL	16

THIRD YEAR

Fall		*Spring*	
E E 3332, Proj. Lab. II	3	E E 3333, Proj. Lab. III	3
E E 3323, Prin. Comm. Sys.	3	E E 3342, Electromag. Theory II	3
E E 3341, Electromag. Theory I	3	E E 3353, Feedback Contr. Sys.	3
E E 3312, Electronics II	3	**Electives	6
**Elective	3	TOTAL	15
TOTAL	15		

FOURTH YEAR

Fall		*Spring*	
E E 4333, Senior Proj. Lab. IV	3	E E 4334, Proj. Lab. V	3
Elective (Mathematics)	3	**Electives	15
**Electives	12	TOTAL	18
TOTAL	18		

Minimum hours required for graduation—130.
*Students who do not have high school credit for chemistry or physics must take CHEM 1301 and/or PHYS 1304 before those listed.
Choose from Core Curriculum requirements,** plus 4 electrical engineering, and 2 other engineering.
Option courses include: (Choose three) Electronics—E E 4314, 4321, 4324, 4382; power—E E 4316, 4343, 4345, 4391; signals and systems—E E 4364, 4367, 4368; communications—E E 4323, 4325, 4342, 4360, 4361, 4364, optoelectronics—E E 4314, 4360, 4362, 4367; electromechanical—E E 4316, 4368, 4391, 4376, and a mechanical engineering elective.

Electrical Engineering-Computer Science Dual-Degree Curriculum

FIRST YEAR

Fall		*Spring*	
MATH 1351, Cal. I	3	MATH 1352, Cal. II	3
*CHEM 1307, Prin. of Chem. I	3	C S 1412, Programming Princ. II	4
CHEM 1107, Prin. of Chem. I (Lab.)	1	E E 2372, Mod. Dig. Syst. Des.	3
E E 1305, Intro. Engr. & Comp. Prog.	3	ENGL 1302, Adv. Coll. Rhetoric	3
POLS 1301, Amer. Govt., Org.	3	**Elective	3
ENGL 1301, Ess. Coll. Rhetoric	3	TOTAL	16
TOTAL	16		

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calculus III	3	MATH 3350, Math for Engr. I	3
C S 2413, Data Structures	4	C S 2382, Disc. Struc.	3
E E 3302, Fund. of Elec. Engr.	3	E E 3303, Linear Syst. Analysis	3
E E 3362, Engr. Appr. to Dig. Des.	3	MATH 2360, Linear Algebra	3
TOTAL	13	PHYS 1308, Prin. of Phys. I	3
		PHYS 1105, Prin. of Phys. I (Lab)	1
		TOTAL	16

THIRD YEAR

Fall		*Spring*	
E E 2331, Proj. Lab. I	3	E E 3341, Electromag. Theory I	3
E E 3311, Electronics	3	E E 3323, Prin. Comm. Sys.	3
PHYS 2301, Prin. of Phys. II	3	E E 3312, Electronics II	3
PHYS 1106, Prin. of Phys. II (Lab)	1	C S 3361, Concepts Prog. Lang.	3
C S 3365, Software Eng.	3	**Elective	3
**Elective	3	TOTAL	15
TOTAL	16		

FOURTH YEAR

Fall		*Spring*	
Elective	3	E E 3353, Feedback Contr. Sys.	3
E E 3342, Electromag. Theory II	3	E E 3333, Proj. Lab. III	3
E E 3332, Proj. Lab. II	3	C S 3364, Des. & Anal. of Alg.	3
C S 3375, Machine Struc. & Org.	3	Electives	6
TOTAL	12	TOTAL	15

FIFTH YEAR

Fall		*Spring*	
E E 4333 Senior Proj. Lab. IV	3	E E 4334, Proj. Lab. V	3
C S 3352, Intro. Sys. Prog.	3	C S 4352, Operating Systems	3
**Electives	9	C S 3383, Theory of Automata	3
TOTAL	15	**Electives	6
		TOTAL	15

Minimum hours required for graduation—149.
*Students who do not have high school credit for chemistry or physics must take CHEM 1301 and/or PHYS 1304 before those listed.
**Choose from Core Curriculum requirements, plus 1 electrical engineering and 1 technical elective.

Computer Engineering Curriculum

FIRST YEAR

Fall		*Spring*	
MATH 1351, Cal. I	3	MATH 1352, Cal. II	3
*CHEM 1307, Prin. of Chem. I	3	C S 1412, Programming Princ. II	4
CHEM 1107, Prin. of Chem. I (Lab.)	1	E E 2372, Mod. Dig. Syst. Des.	3
E E 1305, Intro. Engr. & Comp. Prog.	3	ENGL 1302, Adv. Coll. Rhetoric	3
POLS 1301, Amer. Govt., Org.	3	**Elective	3
ENGL 1301, Ess. Coll. Rhetoric	3	TOTAL	16
TOTAL	16		

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calculus III	3	MATH 3350, Math for Engr. I	3
E E 2304, Fund. of Elect. Engr.	3	E E 3311, Electronics I	3
PHYS 1308, Prin. of Phys. I	3	E E 2331, Proj. Lab. I	3
PHYS 1105, Prin. of Phys. I (Lab.)	1	PHYS 2301, Prin. of Phys. II	3
E E 3362, Engr. Appr. to Dig. Des.	3	PHYS 1106, Prin. of Phys. II (Lab.)	1
C S 2413, Data Structures	4	E E 3303, Linear System Analysis	3
TOTAL	17	TOTAL	16

THIRD YEAR

Fall		*Spring*	
E E 3332, Proj. Lab. II	3	E E 3334, Comp. Eng. Proj. Lab.	3
E E 3323, Prin. Comm. Sys.	3	E E 3341, Electromag. Theory I	3
E E 3312, Electronics II	3	C S 2382, Disc. Struct.	3
C S 3365, Software Engineering	3	C S 3352, Intr. Sys. Prog.	3
MATH 2360, Linear Algebra	3	**Electives	6
**Elective	3	TOTAL	18
TOTAL	18		

FOURTH YEAR

Fall		*Spring*	
E E 4333, Senior Proj. Lab. IV	3	E E 4334, Proj. Lab. V	3
C S 3364, Des. & Anal. of Algor.	3	C S 4352, Operating Systems	3
**Electives	12	**Electives	9
TOTAL	18	TOTAL	15

Minimum hours required for graduation—134.
*Students who do not have high school credit for chemistry or physics must take CHEM 1301 and/or PHYS 1304 before those listed.
**Choose from Core Curriculum requirements, plus 1 computer science elective from C S 3368, 3461, 3383, 4354, or 4395 and 2 electrical engineering courses from E E 4364, 4367, 4375, or 4382.

Electrical Engineering (E E)

All prerequisite courses must be completed with a C or better. Phase III requires equivalent completion of first 2 years of E E curriculum.

1305. Introduction to Engineering and Computer Programming (3:3:0). Corequisite: MATH 1351. An introduction to the fundamentals of electrical and computer engineering and its relation to science, mathematics, management, ethics, and society. Computing and structured programming.

2331. Project Laboratory I (3:1:6). Prerequisite: ENGL 1302. Corequisite: E E 3362,3303, and 3311. A laboratory course to accompany second-year basic courses in electrical or computer engineering.

2372. Modern Digital System Design (3:3:0). Corequisite: MATH 1352. An introduction to combinational and sequential digital systems.

3302. Fundamentals of Electrical Engineering (3:3:0). Corequisite: MATH 2350. Principles of electrical circuits and systems. DC, transient, and sinusoidal steady-state analysis. [ENGR 2305]

3303. Linear System Analysis (3:3:0). Prerequisite: E E 2304. Corequisite: MATH 3350. Concepts of signal and system analysis in time and frequency domains as applied to electric circuits. LaPlace transform, Fourier series, and Fourier techniques are stressed.

3311. Electronics I (3:3:0). Prerequisite: E E 2304. Introduction to electronic devices, amplifiers, and electronic systems. Principles of electronic circuit design and analysis.

3312. Electronics II (3:3:0). Prerequisite: E E 3311 and 3303, Phase III standing in electrical or computer engineering. Integrated circuit amplifier design. Power and other special purpose amplifiers.

3323. Principles of Communication Systems (3:3:0). Prerequisite: E E 3303, Phase III standing in electrical or computer engineering. Probability and random variables. Fourier transforms and linear systems concepts. Amplitude, phase angle, and pulse modulation communication systems.

3332. Project Laboratory II (3:1:6). Prerequisite: E E 2331, Phase III standing in electrical or computer engineering; corequisite: E E 3312 and 3323. A laboratory course to accompany third-year basic courses in computer engineering.

3333. Project Laboratory III (3:1:6). Prerequisite: E E 3332, Phase III standing in electrical engineering; corequisite: E E 3353. A laboratory course to accompany third-year basic courses in electrical engineering.

3334. Computer Engineering Project Laboratory (3:1:6). Prerequisite: E E 3332, C S 2365, and Phase III standing in electrical or computer engineering. A laboratory course to accompany third-year basic courses in computer engineering.

3341. Electromagnetic Theory I (3:3:0). Prerequisite: E E 3303 and PHYS 2301, Phase III standing in electrical or computer engineering. Vector analysis. Partial differential equations. General treatment of static, electric, and magnetic fields from the vector viewpoint.

3342. Electromagnetic Theory II (3:3:0). Prerequisite: E E 3341, Phase III standing in electrical engineering. General solutions for Maxwell's equations. Traveling waves in scalar media. Boundary conditions and constraints imposed by bounding surfaces.

3351. Energy Conversion I (3:3:0). Prerequisite: E E 3323, and Phase III standing in electrical engineering. Principles of information theory, quantum mechanics, and statistics applied to thermal physics with applications to electrical engineering.

3353. Feedback Control Systems (3:3:0). Prerequisite: E E 3312 and Phase III standing in electrical engineering. An introduction to the analysis and design of automatic control systems. Control system concepts. Controller design and digital control.

3360. Engineering Technical Communications (3:3:0). Prerequisite: ENGL 1302, junior standing, and consent of instructor. Written and oral communication techniques for professional engineers. Presentation of engineering projects, experimental data, and interpretation of results.

3362. Digital Design Using Microcontrollers (3:3:0). Prerequisite: E E 2372. Advanced digital systems design. Assembly language programming, interfacing, and applications of microcontrollers.

3388. Robotic Systems (3:3:0). Prerequisite: MATH 3350, PHYS 2301, and MATH 2360 or E E 3303. Base analytical techniques and fundamental principles of robotics. Including kinematics, dynamics, sensing, and control.

4314. Solid State Devices (3:3:0). Prerequisite: E E 3312 and 3341. Principles and properties of semiconductor devices and optical devices. Thyristors and other switches. Integrated circuit devices. Device modeling.

4316. Power Electronics (3:3:0). Prerequisite: E E 3353. Switch mode power conversion, power supplies, inverters, motor drives, power semiconductor devices, and magnetics. System analysis, design, and modeling.

4321. Applications of Analog Integrated Circuits (3:3:0). Prerequisite: E E 3312, 3323. Principles involved in designing analog integrated circuits. Device physics, small signal, and large signal models. Biasing and basic circuit building blocks. Applications.

4323. Modern Communication Circuits (3:3:0). Prerequisite: E E 3312, 3323. Analysis and design techniques for modern communication circuits.

4324. Computer-Aided Circuit Analysis (3:3:0). Prerequisite: E E 3353. Development, implementation, and application of advanced circuit and system models for the design of integrated circuits. Designed to enhanced design skills through direct application of computer-aided analysis tools.

4325. Telecommunication Networks (3:3:0). Prerequisite: E E 3323. Networking and standards. Data and voice network architectures, cellular, satellite and telephone networks. Open network architecture, ISDN, transport and network layer protocols. Network modeling and optimization. Queuing theory.

4331. Special Problems in Electrical Engineering (3). Prerequisite: Approval of department chairperson. Individual studies in advanced engineering areas of special interest. May be repeated for credit.

4333. Project Laboratory IV (3:0:9). Prerequisite: E E 3333. A laboratory course to accompany fourth-year courses in electrical or computer engineering.

4334. Project Laboratory V (3:0:9). Prerequisite: E E 4333. A laboratory course to accompany fourth-year courses in electrical or computer engineering.

4342. Microwave Solid-State Circuits (3:3:0). Prerequisite: E E 3312 and 3342. Study of microwave electronics and design at the device and solid-state circuit level. Circuit design issues such as transistor-based amplifier design, noise, broadband, and high-power considerations, and microwave oscillators. Device topics to be included are special diodes, avalanche devices, and other active devices.

4343. Introduction to Power Systems (3:3:0). Prerequisite: E E 3341. Electrical power transmission and distribution systems; power generation systems; system modeling, planning, management and protection.

4345. Pulsed Power (3:3:0). Prerequisite: E E 3342. Fundamentals of pulsed power circuits, components, and systems. Pulse forming lines, energy storage, voltage multipliers, switching, materials, grounding and shielding, measurements, and applications.

4353. Gaseous Electronics (3:3:0). Prerequisite: E E 3342. Kinetic theory of gases, collisions, emission processes, self-sustained discharge, Paschen law, glow discharge, arc discharge, streamers, spark discharge, corona discharge, and gas lasers.

4360. Fiber Optic Systems (3:3:0). Prerequisite: E E 3312 and 3323. Optical fibers, couplers, sources, and detectors; applications to communications and sensing.

4361. Advanced Communication Systems (3:3:0). Prerequisite: E E 3323. Information transmission in electronic systems. Random variables and stochastic processes, noise in analog and digital modulation systems, optimal receivers.

4362. Modern Optics for Engineers (3:3:0). Prerequisite: E E 3323, 3342. Modern

concepts in optics related to engineering applications. Geometrical, physical, and quantum optics; Fourier optics, holography, and image processing.

4364. Digital Signal Processing (3:3:0). Prerequisite: E E 3323. An introduction to digital signal processing. Sampling, z-transform, discrete and fast Fourier transforms, flowgraphs, design techniques for digital filters, effects of finite word length, and applications.

4367. Image Processing (3:3:0). Prerequisite: E E 3323. Imaging fundamentals. Linear operators in both spatial-frequency domains. Image enhancement and restoration techniques. Analysis and coding of images.

4368. Advanced Control Systems (3:3:0). Prerequisite: E E 3353. Analysis and design of advanced control systems including optimal, nonlinear, multiple-input multiple-output, digital, fuzzy logic, and neural network control.

4375. Computer Architecture (3:3:0). Prerequisite: E E 3362 and Phase III standing in electrical or computer engineering. An introduction to the architecture, organization, and design of microprocessors. Hardware design related to various microprocessors. Analysis of current microprocessors and applications.

4381. VLSI Processing (3:3:0). Prerequisite: PHYS 2301 and MATH 3350. Introduction to the physical principles, techniques, and technologies involved with the fabrication of very large scale integrated circuits (VLSI).

4382. Digital IC Analysis and Design (3:3:0). Prerequisite: E E 3312, 3362. Design of VLSI digital integrated circuits including basic device theory and processing technologies.

4385. Introduction to Microsystems I (3:3:0). Fundamentals of microelectromechanical (MEMS) and microfluidic systems. Project-based course introduces microsystem design, analysis, simulation, and manufacture through several case studies using representative devices.

4386. Introduction to Microsystems II (3:3:0). Prerequisite: E E 4385. Application of microfabrication to create microsensor systems. Integration of optics, optoelectronics, and microfluids. Includes other MEMS projects.

4391. Electric Machines and Drives (3:3:0). Prerequisite: E E 3353. Analysis and control of DC machines and induction machines. Space vector theory. Field oriented control. Modeling of machine and controller dynamics.

Engineering Physics

Professor James Gregory (C.E.), Coordinator; ***Professor*** Myles (Phys.), Director; ***Assistant Professor*** Dallas (E.E.), Director. ***Horn Professors*** Kristiansen (E.E.) and Menzel (Phys.); ***Professors*** Dunn (M.E.), Gangopadhyay (Phys.), Hatfield (Phys.), Lichti (Phys.), Trost (E.E.), and Vann (C.E.); ***Associate Professors*** Baker (E.E.), Holtz (Phys.), Lamp (Phys), and Thacker (Phys.).

The College of Engineering and the Department of Physics supervise the following degree program: ENGINEERING PHYSICS, *Bachelor of Science in Engineering Physics*. The program, which emphasizes flexibility and personalized advisement, is directed toward students who are seriously interested in the interplay between basic physics and work at the frontiers of engineering development. This program is ideal for students in the Honors College who have a love for physical science. Each degree program must include a distinct engineering specialty that provides a cohesive set of engineering courses leading through upper level engineering design. Students should review the mission statement and objectives for the department providing the engineering specialty.

The engineering physics program is a cooperative effort of the College of Engineering and the Department of Physics in the College of Arts and Sciences. Graduates are prepared for advanced study in both engineering and physics.

Mission. The mission of the engineering physics program is to develop students into professionals with in-depth knowledge and skills in mathematics, science, and engineering to understand physical systems and to research, design, and solve problems in the context of societal and community needs.

Educational Goal and Objectives. Engineering physics is a unique program with three educational goals:

- Provide an in-depth knowledge of physical laws, principles, and material properties of physical systems to prepare graduates to work in either a research or industrial setting;
- Meet the educational objectives of the engineering program in which the option is selected; and
- Provide courses and experiences that develop students who have the professional skills to practice engineering.

The constituencies of the engineering physics program have established six specific educational objectives enabling graduates to:

- Identify and understand the fundamental physical principles underlying engineering devices and processes necessary to become successful engineers and lifelong learners;
- Evaluate engineering problems and solutions on the basis of fundamental scientific principles;
- Understand and know how to apply the basic physical limitations inherent in all real tools, instruments, and engineering processes;
- Apply a broad, generalist background of fundamental physics common to all engineering disciplines;
- Work in teams to research, design, and solve problems of a physical nature and to communicate effectively both internally and externally to the team; and
- Practice engineering with a commitment to professional, scientific, and ethical responsibility.

In the first semester of their freshman year, students should consult the advisor in the particular engineering department in which they expect to specialize. No later than the first semester of the junior year, students must file a degree plan approved by the engineering advisor, the physics advisor, and the Dean of the College of Engineering. Students, in consultation with the physics advisor and the engineering advisor, select the courses to be used for the electives shown in the curriculum tables in this section. This allows considerable flexibility to accommodate the various programs available in the engineering departments.

A student majoring in Engineering Physics must complete all Phase I courses with a minimum grade of C as specified for all engineering majors. The student must then petition the program coordinator to enter Phase II. The criteria for the student to successfully complete Phase II are determined by the engineering department in which the student has chosen to specialize. The requirements are available from the departments. Successful completion of Phase II allows the student to petition for entrance to Phase III, once again subject to the stipulations of the specialty department.

Engineering Physics Curriculum Electrical Engineering Option

FIRST YEAR

Fall		*Spring*	
MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
PHYS 1305, Eng. Phys. Anal. I	3	PHYS 2301, Prin. Phys. II	3
PHYS 1308, Prin. Phys. I	3	PHYS 1106, Prin. Phys. II (Lab)	1
PHYS 1105, Prin. of Phys. I (Lab.)	1	E E 2372, Mod. Dig. Sys. Des.	3
ENGL 1301, Ess. Coll. Rhetoric	3	C S 1462, Fund. of Comp. Sci.	4
POLS 1301, Amer. Govt., Org.	3	ENGL 1302, Adv. Coll. Rhetoric	3
TOTAL	16	TOTAL	17

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calculus III	3	MATH 3350, Math. for Engrs. I	3
PHYS 2402, Prin. Phys. III	4	E E 2331, Proj. Lab. I	3
E E 3302, Fund. of Elec. Eng.	3	E E 3303, Linear Sys.	3
E E 3362, Eng. Appr. to Dig. Des.	3	CHEM 1307, Prin. of Chem. I	3
Elective (History)	3	CHEM 1107, Prin. of Chem. I (Lab)	1
TOTAL	16	E E 3311, Electronics I	3
		TOTAL	16

THIRD YEAR

Fall		*Spring*	
PHYS 3305, Elect & Mag.	3	PHYS 3204, Intermed. Lab.	2
E E 3312, Electronics II	3	PHYS 3306, Elec. and Magnet.	3
E E 3323, Prin. of Comm. Sys.	3	E E 3333, Proj. Lab. III	3
E E 3332, Proj. Lab. II	3	E E 3353, Feedback Cont. Sys.	3
**Elective (Engineering)	3	*POLS 2302, Amer. Pub. Pol.	3
TOTAL	15	Elective (History)	3
		TOTAL	17

FOURTH YEAR

Fall		*Spring*	
PHYS 4307, Intro. Quant. Mech.	3	PHYS 4304, Mechanics	3
E E 4333, Proj. Lab IV	3	PHYS 4302, Statist. and Therm. Physi.	3
PHYS 4306, Senior Project	3	or PHYS 4309, Solid State Physics	
**Elective (Engineering)	3	E E 4334, Proj. Lab. V	3
Elective (Hum. and Fine Arts)	3	Elective (Indiv. and Group Behav.)	3
TOTAL	15	Elective (Hum. and Fine Arts)	3
		TOTAL	15

*Any approved political science course may be substituted.
**Non-electrical engineering.

Engineering Physics Curriculum Civil Engineering Structures Option

FIRST YEAR

Fall		*Spring*	
MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
PHYS 1305, Eng. Phys. Anal. I	3	PHYS 2301, Prin. Phys. II	3
PHYS 1308, Prin. Phys. I	3	PHYS 1106, Prin. Phys. II (Lab)	1
PHYS 1105, Prin. of Phys. I (Lab.)	1	CHEM 1307, Prin. of Chem. I	3
ENGL 1301, Ess. Coll. Rhetoric	3	CHEM 1107, Prin. of Chem. I (Lab)	1
POLS 1301, Amer. Govt., Org.	3	ENGL 1302, Adv. Coll. Rhetoric	3
TOTAL	16	POLS 2302, Amer. Pub. Pol.	3
		TOTAL	17

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calculus III	3	MATH 3350, Math. for Engrs. & Scient.	3
PHYS 2402, Prin. Phys. III	4	C E 3303, Mech. of Solids	3
CHEM 1308, Prin. of Chem. II	3	I E 3301, Engr. Eco. Anal.	3
CHEM 1108, Prin. of Chem. II (Lab)	1	M E 2322 or CH E 3321 Eng. Thermo.	3
C E 2301, Statics	3	C E 2101, Const. Materials (Lab)	1
Elective (Hum. and Fine Arts)	3	Elective (History)	3
TOTAL	17	TOTAL	16

THIRD YEAR

Fall		*Spring*	
PHYS 3305, Elect & Mag.	3	PHYS 3306, Elect. & Mag. II	3
C E 3305, Mech. of Fluids	3	C E 3341, Prin. of Struct. Des.	3
C E 3440, Structural Analysis	4	C E 3321, Intro. Geotech. Eng.	3
C E 3130, Civil Eng. Seminar	1	C E 4340, Structural Analysis II	3
C E 3103, Mech. of Solids (Lab)	1	PHYS 3204, Intermed. Lab,	2
TOTAL	12	COMS 3308, Bus. and Prof. Comm.	3
		C E 3121, Geotech. Eng. (Lab)	1
		TOTAL	18

FOURTH YEAR

Fall		*Spring*	
PHYS 4307, Intro. Quant. Mech.	3	PHYS 4305, Mechanics	3
or PHYS 3301, Optics		PHYS 4302, Stat. & Them. Phys.	3
PHYS 4306, Senior Project	3	C E 4330, Des. Eng. Systems	3
C E 4343, Des. Concrete Struc.	3	Elective (Hum. and Fine Arts)	3
C E 4321, Geotech. Eng. Des.	3	Elective (History)	3
C E 4342, Des. of Steel Struc.	3	TOTAL	15
TOTAL	15		

Engineering Physics Curriculum Civil Engineering Environmental Option

FIRST YEAR

Fall		*Spring*	
MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
PHYS 1305, Eng. Phys. Anal. I or		PHYS 2301, Prin. Phys. II	3
PHYS 1308, Prin. Phys. I	3	PHYS 1106, Prin. Phys. II (Lab)	1
PHYS 1105, Prin. of Phys. I (Lab.)	1	CHEM 1307, Prin. of Chem. I	3
ENGL 1301, Ess. Coll. Rhetoric	3	CHEM 1107, Prin. of Chem. I (Lab)	1
POLS 1301, Amer. Govt., Org.	3	ENGL 1302, Adv. Coll. Rhetoric	3
TOTAL	13	POLS 2302, Amer. Pub. Pol.	3
		TOTAL	17

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calculus III	3	MATH 3350, Math. for Engrs. & Scient.	3
PHYS 2402, Prin. Phys. III	4	C E 3303, Mech. of Solids	3
CHEM 1308, Prin. of Chem. II	3	I E 3301, Engr. Eco. Anal.	3
CHEM 1108, Prin. of Chem. II (Lab)	1	M E 2322 or CH E 3321 Eng. Thermo.	3
C E 2301, Statics	3	Elective (History)	3
Elective (History)	3	TOTAL	15
TOTAL	17		

THIRD YEAR

Fall		*Spring*	
PHYS 3305, Elect & Mag.	3	PHYS 3306, Elect. & Mag. II	3
C E 3305, Mech. of Fluids	3	PHYS 3204, Intermed. Lab	2
C E 3440, Structural Analysis	4	C E 3309, Environmental Eng.	3
COMS 3308, Bus. and Prof. Comm.	3	C E 3321, Intro. Geotech. Eng.	3
TOTAL	13	C E 3121, Geotech. Eng. (Lab)	1
		C E 3171, Environmental ENG. (Lab)	1
		C E 3354, Engineering Hydrology	3
		C E 3105 Mech. Fluids (Lab)	1
		TOTAL	17

FOURTH YEAR

Fall		*Spring*	
PHYS 4307, Intro. Quant. Mech. or PHYS 3301, Optics	3	PHYS 4304 Mechanics	3
		PHYS 4302, Stat. & Them. Phys.	3
PHYS 4306, Senior Project	3	C E 4330, Des. Eng. Systems	3
C E 3372, Water Sys. Des.	3	Elective (Hum. and Fine Arts)	3
C E 4353, Des. Hydraulic Sys.	3	TOTAL	12
ENVE 4391 or 4399	3		
Elective (Hum. and Fine Arts)	3		
TOTAL	18		

Engineering Physics Curriculum Chemical Engineering Option

FIRST YEAR

Fall		*Spring*	
MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
PHYS 1305, Eng. Phys. Anal. I or		PHYS 2301, Prin. Phys. II	3
E E 1305, Intro. Engr. & Comp. Prog.	3	PHYS 1106, Prin. Phys. II (Lab)	1
PHYS 1308, Prin. Phys. I	3	CHEM 1307, Prin. of Chem. I	3
PHYS 1105, Prin. of Phys. I (Lab.)	1	CHEM 1107, Prin. of Chem. I (Lab)	1
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
POLS 1301, Amer. Govt., Org.	3	POLS 2302, Amer. Pub. Pol.	3
TOTAL	16	TOTAL	17

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calculus III	3	MATH 3350, Math. for Engrs. & Scient.	3
PHYS 2402, Prin. Phys. III	4	PHYS 3204, Intermed. Lab.	2
CHEM 1308, Prin. of Chem. II	3	PHYS 4302, Stat. & Them. Phys.	3
CHEM 1108, Prin. of Chem. II (Lab)	1	CH E 3330, Engr. Material Sci.	3
C E 2301, Statics	3	M E 3321 or CH E 3321 Eng. Thermo.	3
Elective (History)	3	Elective (History)	3
TOTAL	17	TOTAL	17

THIRD YEAR

Fall		*Spring*	
CH E 2343, Num. Sol. CH E Prob.	3	PHYS 4304, Mechanics	3
CH E 3306, Expos. Tech Info.	3	CH E 4343, Engr. Exper.	3
CH E 3322, Che. Engr. Thermo II	3	CH E 3308/3108, Phys. Chem. III	3
CH E 3325, Trans. Proc. I	3	CH E 3441 Mass-Trans. Operations	4
CH E 3226, Trans. Proc. II	2	CH E 4323, Chem. Reactor Engr.	3
TOTAL	14	TOTAL	16

FOURTH YEAR

Fall		*Spring*	
PHYS 3305, Elect. & Mag.	3	PHYS 3306, Elect. & Mag. II	3
PHYS 4306, Senior Project	3	PHYS 4307, Intro. Quant. Mech.	3
CH E 4232, Unit Oper. Lab. I	2	or PHYS 3301, Optics	
CH E 4353, Process Control	3	CH E 4233, Unit Oper. Lab. II	2
CH E 4354, Chem. Eng. Plant Des.	3	CH E 4355, Chem. Proc. Des. & Sim.	3
Elective (Hum. and Fine Arts)	3	Elective (Hum. and Fine Arts)	3
TOTAL	17	Elective (Ind. and Group Behav.)	3
		TOTAL	17

Engineering Physics Curriculum Industrial Engineering Option

FIRST YEAR

Fall		*Spring*	
MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
PHYS 1305, Eng. Phys. Anal. I	3	PHYS 2301, Prin. Phys. II	3
PHYS 1308, Prin. Phys. I	3	PHYS 1106, Prin. Phys. II (Lab)	1
PHYS 1105, Prin. of Phys. I (Lab.)	1	CHEM 1307, Prin. of Chem. I	3
ENGL 1301, Ess. Coll. Rhetoric	3	CHEM 1107, Prin. of Chem. I (Lab)	1
POLS 1301, Amer. Govt., Org.	3	I E 2351, Prin. of Ind. Auto	3
TOTAL	16	E GR 1306, Engr. Graphics	3
		TOTAL	17

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calculus III	3	PHYS 3204, Intermed. Lab.	2
PHYS 2402, Prin. Phys. III	4	MATH 3350, Math. for Engrs. & Scient.	3
CHEM 1308, Prin. of Chem. II	3	I E 2301, Engr. Des. Prod.	3
CHEM 1108, Prin. of Chem. II (Lab)	1	I E 3301, Engr. Eco. Anal.	3
C E 2301, Statics	3	M E 3321 or CH E 3321 Eng. Thermo.	3
ENGL 1302, Adv. Coll. Rhetoric	3	POLS 2302, Amer. Pub. Pol.	3
TOTAL	17	TOTAL	17

THIRD YEAR

Fall		*Spring*	
PHYS 3305, Elec. & Mag.	3	PHYS 3306, Elect. & Mag. II	3
I E 3351, Manuf. Engr.	3	I E 3311, Op. Research I	3
I E 3341, Engr. Stat.	3	I E 3371, Production Contr.	3
I E 3361, Work Anal. & Des.	3	I E 3372, Mat. Syst. Contr.	3
Elective (History)	3	COMS 3308, Bus. and Prof. Comm.	3
TOTAL	15	Elective (History)	3
		TOTAL	18

FOURTH YEAR

Fall		*Spring*	
PHYS 4307, Intro Quan. Mech.	3	PHYS 4305, Mechanics	3
or PHYS 3301, Optics		PHYS 4302, Stat. & Them. Phys.	3
PHYS 4306, Senior Project	3	I E 4333, Senior Des. Project	3
I E 4311, Oper. Res. II	3	I E 4362, Industrial Ergonomics	3
I E 4361, Engr. Des. for People	3	Elective (Hum. and Fine Arts)	3
Elective (Hum. and Fine Arts)	3	TOTAL	15
TOTAL	15		

Engineering Physics Curriculum Mechanical Engineering Option

FIRST YEAR

Fall		*Spring*	
MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
PHYS 1305, Eng. Phys. Anal. I	3	PHYS 2301, Prin. Phys. II	3
PHYS 1308, Prin. Phys. I	3	PHYS 1106, Prin. Phys. II (Lab)	1
PHYS 1105, Prin. of Phys. I (Lab.)	1	CHEM 1307, Prin. of Chem. I	3
ENGL 1301, Ess. Coll. Rhetoric	3	CHEM 1107, Prin. of Chem. I (Lab)	1
POLS 1301, Amer. Govt., Org.	3	ENGL 1302, Advanced College Rhet.	3
TOTAL	16	E GR 1306, Engr. Graphics	3
		TOTAL	17

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calculus III	3	PHYS 3204, Intermed. Lab.	2
PHYS 2402, Prin. Phys. III	4	MATH 3350, Math. for Engrs. & Scient.	3
CHEM 1308, Prin. of Chem. II	3	M E 2322, Engr. Thermo. I	3
CHEM 1108, Prin. of Chem. II (Lab)	1	or CH E 3321, Engr. Thermo.	
M E 2315, Comp. Aided Anal.	3	I E 3301, Engr. Eco. Anal.	3
Elective (History)	3	M E 2464, Mechanics I	4
TOTAL	17	TOTAL	15

THIRD YEAR

Fall		*Spring*	
PHYS 3305, Elec. & Mag.	3	PHYS 3306, Elect. & Mag. II	3
M E 3464, Intro. to Mech. Des.	4	M E 3371, Heat Transfer	3
M E 3370, Fluid Mechanics	3	M E 3311, Materials Science	3
E E 2304, Fund. of Elec. Engr.	3	M E 3322, Engr. Thermo. II	3
POLS 2302, Amer, Pub. Pol.	3	COMS 3358, Bus. and Prof. Comm.	3
TOTAL	16	M E 3465, Intro. to Design	4
		TOTAL	19

FOURTH YEAR

Fall		*Spring*	
PHYS 4307, Intro. Quan. Mech. or PHYS 3301, Optics	3	PHYS 4304, Mechanics	3
PHYS 4306, Senior Project	3	PHYS 4302, Stat. & Them. Phys.	3
M E 4370, Design I	3	M E 4371, Design II	3
M E 3433, Systems & Vibrations	4	Elective (History)	3
E E Elective (2372, 3303, or 3311)	3	Elective (Vis. & Perf. Arts)	3
Elective (Hum. and Fine Arts)	3	TOTAL	15
Multicultural Elective	3		
TOTAL	22		

Department of Engineering Technology

Chair: Professor Ron Pigott

Professor Masten; ***Associate Professors*** Alayyan, Burkett, Ernst, Green, and Reynolds; ***Assistant Professors*** Akram, Bai, and Darwish; ***Lecturers*** Hubbard, Potter, and Reeder.

This department supervises the following degree program: ENGINEERING TECHNOLOGY, *Bachelor of Science in Engineering Technology.* Students may select course work in one of three areas of specialization—construction, electrical-electronics, or mechanical engineering technology. All three options are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology. This department also supervises engineering technology options in the Master of Engineering degree program.

The engineering technologist generally works in the applied part of the engineering spectrum and is playing an increasingly important role in our technological society. Rather than preparing students to go into research, the engineering technology program prepares students for those engineering activities that emphasize applying engineering knowledge to solving practical industrial problems. The activities of the engineering technologist usually include product development, construction supervision, technical sales, component design, field service engineering, work force coordination, and supervision.

The curriculum in engineering technology consists of a basic core of about 60 semester hours of specified courses. These courses in basic science, humanities, social studies, mathematics, and applied science give a foundation in technology and general education. The remaining 68-69 hours of required course work vary with the student's choice of an engineering technology area and electives. The program specializations allow in-depth training in the student's chosen field of occupational endeavor.

The construction specialization stresses basic structural design and construction operations to prepare students to enter various phases of the construction industry. Course work includes basic structural design and analysis, contracts and specifications, construction management, safety and health, surveying, cost estimating, scheduling, and transportation.

The curriculum in electrical-electronics engineering technology is designed to bring the student to a high level of understanding of the body of engineering and scientific knowledge within the broad scope of electrical engineering, but with emphasis upon the application of this knowledge to current industrial practices. The program prepares students to work in all phases of development, design, production, and maintenance in the field of communication, automatic controls, digital systems, computers, instrumentation, and others.

Mechanical engineering technology is concerned with energy, mechanical devices, and manufacturing. The curriculum gives a good base for further learning, via industrial experience, in all of these areas. The curriculum emphasizes environmental control (heating, ventilating, cooling, and humidity control), steam-powered electric generating plants, and mechanical design. Both environmental control and steam power plants offer relatively stable employment, and many engineering technology graduates have obtained jobs in these areas. In the area of mechanical devices, courses in

strength of materials, kinematics, dynamics, and design are offered. These courses equip the student to create a mechanical device that will perform the desired function and then design the parts of the mechanical device with sufficient strength to perform that function, including balancing the mechanical device to provide smooth operation. To provide an understanding of the current industrial practices, the curriculum includes instruction in various types of machine tools and manufacturing processes as well as an introduction to numerical control.

Students are required to plan their program in consultation with faculty advisors. Emphasis on communication skills requires the inclusion of business and professional communications studies (COMS 3358) and technical writing (ENGL 2311).

Engineering technology students may pursue a minor in virtually any field of study at Texas Tech. The minor must consist of a minimum of 18 hours, with at least 6 of those hours being junior or senior level courses.

A minor in engineering technology is available by completing 18 hours of selected engineering technology courses. The appropriate engineering technology advisor should be consulted for a list of approved courses.

To obtain a degree in engineering technology, transfer students must complete at least 30 credit hours of engineering technology courses in their discipline.

All students must have a personal computer and should check with the department to obtain recommended specifications.

Once a student has elected to take the State Board FE Exam, that student is then obligated to pass the exam in order to graduate.

If a student obtains a grade of D or less in a given course twice, or drops a given course twice, or obtains a D or less once and withdraws once, then the student will be required, with the help of the department secretary, to set up a meeting with the student's advisor, the course instructor, and the department chairperson prior to registration for the next semester or summer session. The meeting will focus on how the student can be helped to succeed and the following actions will be considered:

- The student will be counseled on how to improve performance.
- The student will be required to take courses that he may have already passed or received transfer credit for in order to correct a deficiency that is identified as hindering the student's progress.
- The student will be required to take a time management course at the PASS center.
- The student will be required to take XL 0201 (Strategies for Learning).

Students failing to set up the meeting will have a transcript and registration hold entered on their record. If a student obtains a grade of D or less in a given course, drops a given course, or some combination of the two three times, then the student may be required to transfer to the Bachelor of Arts in Engineering program.

The department's mission to provide educational opportunities to a greater cross-section of the state's population includes the following objectives:

- To provide high-quality engineering technology programs with appeal to a broad range of students including traditional students, underrepresented populations, and the by-passed learner. (The by-passed learner is one who has two or more of the following characteristics: Was not a great success in high school, was not planning to attend post-secondary education after high school, has been away from school for some time, or is a first-generation collegian. Very often these students have the ability and desire to do very well in Engineering Technology. The foundational curriculum at the beginning of the programs, the supportive faculty, and the instructional environment make the engineering technology programs more attractive to the by-passed learner than traditional engineering programs.)
- To provide programs that reflect the needs of industry worldwide.
- To provide the support necessary for students to develop their intellectual capacities, technical competencies, and social responsibilities.
- To have faculty who perform independent applied research and/or consulting that will add depth, quality, and practical experience to the department.
- To continuously improve the programs in order to correlate with the type and rate of change in the global marketplace.

Engineering Technology Curriculum Construction Specialization

FIRST YEAR

Fall		*Spring*	
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
MATH 1321, Trigonometry	3	MATH 2322, Anal. Geo. & Calc I	3
*CHEM 1305, Chem. and Society	3	PHYS 1306, Gen. Phys. I	3
*CHEM 1105, Exp. Gen. Chem. I (Lab.)	1	PHYS 1103, Exp. Gen. Phys. I (Lab.)	1
CTEC 1312, Const. Methods	3	E GR 1307, Engineering Graphics	3
GTEC 1130, Technology Seminar	1	GTEC 1211, Computer Prog.	2
TOTAL	14	TOTAL	15

SECOND YEAR

Fall		*Spring*	
MATH 2323, Calculus II	3	GTEC 3311, Appl. Mech II-Strengths	3
HIST 2300, Hist. of U.S. to 1877	3	GTEC 3412, Appl. Mech. III—Fluids	4
PHYS 1307, General Physics II	3	GTEC 1312, AC/DC Technology	3
PHYS 1104, General Physics II Lab.	1	ENGL 2311, Technical Writing	3
GTEC 2311, Statics	3	POLS 1301, Amer. Govt., Org.	3
CTEC 2301, Surveying & Surveys	3	TOTAL	16
TOTAL	16		

THIRD YEAR

Fall		*Spring*	
*MATH 3322, High. Math for En. Tech.	3	MATH 2300, Statistical Methods	3
COMS 3358, Bus. & Prof. Comm.	3	HIST 2301, Hist. of U.S. since 1877	3
CTEC 3311, Struct. Analysis	3	CTEC 3302, Transportation Tech.	3
CTEC 3313, Found. & Earthwork	3	CTEC 3103, Materials Msmt. Lab.	1
CTEC 3104, Soil Properties Lab.	1	GTEC 2351, Thermodynamics	3
CTEC 4342, Cost Estimating	3	GTEC 4121, Technology Seminar	1
TOTAL	16	CTEC 4341, Const. Management	3
		TOTAL	17

FOURTH YEAR

Fall		*Spring*	
CTEC 4312, Steel Structures	3	GTEC 4322, Cost & Prof. Anal.	3
CTEC 4313, Masonry Struc.	3	CTEC 4311, Concrete Structures	3
CTEC 4270 Capstone Design	2	CTEC 4321, Contracts & Specs.	3
POLS 2302, Amer. Public Policy	3	CTEC 4343, Constr. Safety & Health	3
*ECO 2305, Prin. of Economics	3	Visual & Performing Arts Elective	3
Humanities Elective	3	TOTAL	15
TOTAL	17		

Minimum number of hours required for graduation—129 including internship.
*Suitable substitutions can be made with approval of option coordinator.

Electrical–Electronics Specialization

FIRST YEAR

Fall		*Spring*	
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
MATH 1321, Trigonometry	3	MATH 2322, Anal. Geo. & Calc I	3
CHEM 1305, Chem. and Society	3	PHYS 1306, Gen. Phys. I	3
CHEM 1105, Exp. Gen. Chem. I (Lab.)	1	PHYS 1103, Exp. Gen. Phys. I (Lab.)	1
E GR 1307, Engineering Graphics	3	HIST 2300, Hist. of U.S. to 1877	3
GTEC 1130, Technology Seminar	1	GTEC 1211, Computer Prog.	2
POLS 1301, Amer. Govt., Org.	3	Ind. or Group Behav.	3
TOTAL	17	TOTAL	18

SECOND YEAR

Fall		*Spring*	
MATH 2323, Calculus II	3	EET 2312, Optoelec. Devices	3
GTEC 1312, AC/DC Technology	3	EET 2112, Optoelectronics Lab.	1
EET 2311, Linear Elec.	3	GTEC 2351, Thermodynamics	3
EET 2111, Linear Elec. Lab.	1	GTEC 2311, Statics	3
EET 2314, Digital Techn. I	3	HIST 2301, Hist. of U.S. Since 1877	3
EET 2114, Digital Technology I Lab.	1	ENGL 2311, Technical Writing	3
PHYS 1307, General Physics II	3	TOTAL	16
PHYS 1104, General Physics II Lab	1		
TOTAL	18		

THIRD YEAR

Fall		*Spring*	
MATH 3322, High. Math. for En. Tech.	3	EET 3312, Digital Communications	3
POLS 2302, Amer. Pub. Pol.	3	EET 3112, Digital Comm. Lab.	1
EET 3311, Telecomm. Tech.	3	EET 3314, Digital Technology II	3
EET 3111, Telecomm. Tech. Lab.	1	EET 3114, Digital Tech. II Lab	1
EET 3316, Local/Internet Networks	3	EET 3324, Linear Des. Appls.	3
EET 3116, Local/Internet Lab.	1	EET 3124, Linear Des. Lab	1
TOTAL	14	COMS 3358, Bus. & Prof. Comm.	3
		TOTAL	15

FOURTH YEAR

Fall		*Spring*	
EET 4317, Adv. Micro-Electronics	3	EET 4353, Control Systems	3
EET 4331, System Des. Lab. I	3	EET 4370, Capstone Design	3
EET 3321, Prog. Logic Cont.	3	GTEC 4131, Intro. Proj. Mgt.	1
EET 3121, Prog. Logic Cont. Lab.	1	Visual & Performing Arts Elective	3
GTEC 4121, Technology Seminar	1	C S 1462, Fund. of Comp. Sci.	4
Humanities Elective	3	TOTAL	14
TOTAL	14		

Minimum number or hours required for graduation—129 including internship.

Mechanical Specialization

FIRST YEAR

Fall		*Spring*	
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
MATH 1321, Trigonometry	3	MATH 2322, Anal. Geo. & Calc I	3
CHEM 1305, Chem. and Society	3	PHYS 1306, Gen. Phys. I	3
CHEM 1105, Exp. Gen. Chem. I (Lab.)	1	PHYS 1103, Exp. Gen. Phys. I (Lab.)	1
E GR 1306, Engineering Graphics	3	POLS 1301, Amer. Govt., Org.	3
GTEC 1130, Technology Seminar	1	GTEC 1211, Computer Prog.	2
MTEC 1312, Mechanical Technology	3	TOTAL	15
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
MATH 2323, Calculus II	3	GTEC 3311, Strength of Materials	3
PHYS 1307, Gen. Phys. II	3	MTEC 3370, Intro. Proj. Mgt.	3
PHYS 1104, Exp. Gen. Phys. II (Lab.)	1	GTEC 2351, Thermodynamics	3
POLS 2302, Amer. Public Policy	3	ENGL 2311, Technical Writing	3
GTEC 2311, Statics	3	COMS 3358, Bus. & Prof. Comm.	3
GTEC 1312, AC/DC Technology	3	TOTAL	15
TOTAL	16		

THIRD YEAR

Fall		*Spring*	
MTEC 3441, Mat. for Mech. Tech.	4	GTEC 3412, Fluid Mechanics & Lab.	4
GTEC 2151, Intro. to Thermo. Lab	1	MTEC 3412, Vap. & Gas Cycl. & Lab.	4
HIST 2300, Hist. of U.S. to 1877	3	GTEC 4121, Technology Seminar	1
MATH 3322, High. Math. for En. Tech.	3	MTEC elective	3
Individual or Group Behavior	3	HIST 2301, Hist. of U.S. Since 1877	3
TOTAL	14	Humanities Elective	3
		TOTAL	18

FOURTH YEAR

Fall		*Spring*	
MTEC 4351, Mechanisms	3	MTEC 4352, Dynamics	3
MTEC 4311, AC Design I	3	MTEC 4353, Mech. Design	3
MTEC 4321, Mech. Tech. Lab.	3	GTEC 4322, Cost and Prof. Anal.	3
MTEC 4170, Capstone Design I	1	MTEC 4270, Capstone Design II	2
MTEC Elective	3	Elective	3
Visual & Performing Arts Elective	3	TOTAL	14
TOTAL	16		

Minimum number of hours required for graduation—128 including internship.

Internship. The Department of Engineering Technology believes that its students benefit greatly from participation in an internship program. One of the major benefits is improved full-time employment opportunities after graduation. Accordingly, all engineering technology students are required to complete at least the equivalent of three months of full-time work of an appropriate nature in order to graduate. However, part-time work of an appropriate nature conducted during the regular semester also will be considered. Students must enroll in GTEC 4300 while pursuing the internship.

Credit by Exam. In addition to standard transfer credits, the Department of Engineering Technology will permit students to receive credit for any course in the curriculum if they can demonstrate proficiency in that area by examination. It is the responsibility of the students to petition the department chair for such examination(s) well before they would enroll in the course(s).

The examination for credit for E GR 1306, Engineering Graphics, is held only in the fall the first Friday after classes begin. Students must register for the exam in 224 Mechanical Engineering Building, by 5 p.m. the first Wednesday after classes begin for the fall term. Students should have a background in beginning drawing and descriptive geometry.

Engineering Graphics (E GR)

1306. Engineering Graphics–Software A (3:2:4). Fundamental engineering graphical design techniques and terminology to include freehand lettering, scales, and sketching of views of solid models using basic descriptive geometry principles. Transition to 3-D Computer-Aided Design and Drafting (CADD) and Solid Modeling occurs early in the course with emphasis on generic design principles and documentation. SDRC's IDEAS is the software used in this class.

1307. Engineering Graphics–Software B (3:2:4). Fundamental engineering graphical design techniques and terminology to include freehand lettering, scales, and sketching of views of solid models using basic descriptive geometry principles. Transition to 3-D Computer-Aided Design and Drafting (CADD) and Solid Modeling occurs early in the course with emphasis on generic design principles and documentation. AutoCAD is the software used in this class.

General Engineering Technology (GTEC)

1130. Technology Seminar (1:2:0). Introduction for first-year and transfer students to the subdisciplines of practice within engineering technology. Other topics to promote progress and understanding by students will be included. The student will also be required to take a simple communications test in this class.

1211. Computer Programming (2:1:2). Theory and practice in logical solutions of numerical problems. Introduction to computer languages. Computer programming using an appropriate level language. [ENGR 2304]

1312. Alternating and Direct Current Technology (3:2:3). Prerequisite: MATH 1321; corequisite: PHYS 1307 and GTEC 1211. Principles of electrical and magnetic circuits and their application in the operation of electrical power equipment. [ENGR 2405]

2151. Introduction to Thermodynamics Lab (1:0:3). Prerequisite: PHYS 1103, 1306; corequisite: MATH 1352 or 2323 and GTEC 2351. Provide a laboratory experience to compliment the lecture course GTEC 2351.

2311. Applied Mechanics–Statics (3:3:0). Prerequisite: PHYS 1306, 1103; corequisite: MATH 1352 or 2323. Equilibrium of particles and rigid bodies. Analysis of trusses, frames, machines, and beams. Friction, centroids, moments of inertia.

2351. Introduction to Thermodynamics (3:3:0). Prerequisite: PHYS 1306, 1103, and GTEC 1211; corequisite: MATH 1352 or 2323. A study of the fundamental laws of thermodynamics and their application to analysis of gas, steam, and refrigeration cycles.

3311. Applied Mechanics II–Strength of Material (3:3:0). Prerequisite: GTEC 2311. Corequisite: MATH 1352 or 2323. A study of the elastic and plastic behavior of materials and structural elements. [ENGR 2332]

3412. Applied Mechanics III–Fluids (4:3:3). Prerequisite: GTEC 2311. Fluid statics and dynamics, flow of fluids in pipe and open channel. Laboratory: Study of fluid flow systems, pumps, and measurement.

4121. Technology Seminar (1). Prerequisite: Advanced standing. Review of engineering technology fundamentals. Final is a mini-fundamentals of engineering type examination.

4131. Special Topics in Technology (1:1:0). Prerequisite: Approval of chairperson. Individual studies in special areas of technology.

4300. Cooperative Education (3). Prerequisite: Junior standing and approval of department chairperson. Practice in industry and written reports. Maximum of six semester credit hours may be earned and applied to degree requirements.

4322. Cost and Profit Analysis for Engineering Technologists (3:3:0). Prerequisite: Senior standing or approval of option coordinator. Application of engineering economics to engineering technology disciplines. Factors of time, cost, profit, and risk are evaluated and when applicable integrated into the decision process. Ethical issues are examined.

4331. Special Topics in Technology (3). Prerequisite: Advanced standing and approval of chairperson. Individual studies in special areas in technology. May be repeated for credit.

4431. Special Projects in Engineering Technology (4:3:3). Prerequisite: Approval of chairperson. Individual projects in areas of engineering technology. May be repeated for credit.

Construction Engineering Technology (CTEC)

1312. Construction Methods (3:3:0). Introduction to the construction environment and construction methods, materials, processes, working drawings, and specifications. Field trips to local construction sites and laboratory construction projects are required.

2301. Surveying and Surveys (3:2:3). Prerequisite: MATH 1321 or equivalent. Care and use of modern surveying equipment; differential leveling, area calculations; horizontal and vertical curves; effects of observation errors. [ENGR 1307]

3103. Materials Measurements Laboratory (1:0:3). Prerequisite: GTEC 3311. The study and testing of construction materials; including nondestructive methods.

3104. Soil Properties Laboratory (1:0:3). Prerequisite: GTEC 3311. The study and testing of the engineering properties of soils, including field-testing simulations.

3302. Transportation Technology (3:3:0). Prerequisite: CTEC 2301 and GTEC 3412. Design of components of the transportation system needed for modern society with practical examples.

3311. Structural Analysis (3:3:0). Prerequisite: GTEC 3311. Analysis of determinate and indeterminate structural systems.

3313. Foundations and Earthwork (3:3:0). Prerequisite: GTEC 3311. Soil properties, elements of soil mechanics, and the design of foundations for structures.

4270. Capstone Design Course (2:1:4). Prerequisite: Approval of the CTEC advisor. Design and development of construction projects. Projects vary from semester to semester. The ASC-Region V Competition is one of the projects. Generally will include cost estimating, scheduling, design, final report, presentation, and teamwork.

4311. Reinforced Concrete Structures(3:3:0). Prerequisite: CTEC 3311. Common practices of design and construction of reinforced concrete structures (ACI-318). Includes wood form work design.

4312. Steel Structures (3:3:0). Prerequisite: CTEC 3311. Common practices of design and construction of steel structures (AISC-ASD).

4313. Masonry Structures (3:3:0). Prerequisite: GTEC 3311. A study of material properties and common practices of design and construction of masonry structures.

4321. Construction Contracts and Specifications (3:3:0). Prerequisite: Senior standing or approval of option coordinator. Principles and analysis of construction contracts and project specifications. Other aspects of construction management such as contract laws, negotiations, and professional ethics will be examined.

4331. Special Topics in Construction Technology (3). Prerequisite: Senior standing. Special study project within field of interest of student.

4341. Construction Management (3:2:2). Prerequisite: Senior standing or consent of instructor. Capstone course for the construction engineering technology student. Modern methods for managing construction projects, including critical path scheduling, resource allocation, and funds flow. Practical applications are made through simulated projects.

4342. Cost Estimating (3:2:2). Prerequisite: Senior standing or consent of instructor. Analysis of construction working drawings and specifications to quantify material, labor, overhead, and equipment requirements relative to project bid preparation. Computer software programs are utilized to develop construction bids for simulated projects and case studies are used to develop both technical and professional ethics.

4343. Construction–Safety and Health (3:3:0). Prerequisite: Senior standing or consent of instructor. Management of safety and health in the construction environment. Examines basic elements of a safety and health program for the construction general contractor, including regulator agencies.

Electrical-Electronics Engineering Technology (EET)

2111. Linear Electronics Lab (1:0:3). Corequisite: EET 2311 concurrent enrollment. Designed to supplement the lecture course with laboratory experimental techniques.

2112. Optoelectronics Lab (1:0:3). Corequisite: EET 2312 concurrent enrollment. A laboratory course to introduce students to experimental techniques and to complement the lecture material in EET 2312.

2114. Digital Technology I Lab (1:0:3). Corequisite: EET 2314 concurrent enrollment. Designed to supplement the lecture material of EET 2314 with laboratory experiments.

2311. Linear Electronics (3:3:0). Prerequisite: PHYS 1306, 1103; corequisite: GTEC 1312. Fundamentals of electronic circuit theory and characteristics of active devices networks.

2312. Optoelectronic Devices (3:3:0). Prerequisite: EET 2311, 2111; corequisite: PHYS 1307, 1104. A study of optoelectronic devices, fiber optics, and basic communication systems.

2314. Digital Technology I (3:3:0). Corequisite: GTEC 1312, EET 2311, 2111. Fundamentals of Boolean theorems, logic circuits, and applications.

3111. Telecommunications Lab (1:0:3). Corequisite: EET 3311 concurrent enrollment. Implementation of the theorem and applications of EET 3311 in the laboratory.

3112. Digital Communications Lab (1:0:3). Corequisite: EET 3312 concurrent enrollment. Designed to introduce students to experimental techniques and to complement the lecture course EET 3312.

3114. Digital Technology II Lab (1:0:3). Corequisite: EET 3314 concurrent enrollment. Laboratory experiments to complement the lecture material of EET 3314.

3116. Local–Internet Lab (1:0:3). Corequisite: EET 3316 concurrent enrollment. Laboratory experiments include logic link control (LLC) and medium access control (MAC).

3121. Program Logic Controller Lab (1:0:3). Corequisite: EET 3321 concurrent enrollment. Laboratory experiments include EEPROM's, GAL's, and PAL's IC's.

3124. Linear Design Lab (1:0:3). Corequisite: EET 3324 concurrent enrollment. Laboratory experiments include design and applications to complement the lecture material in EET 3324.

3311. Telecommunications Technology (3:3:0). Prerequisite: EET 2112, 2312, MATH 2322; Corequisite: MATH 2323. A study of voice and data communications with fiber optic applications.

3312. Digital Communications (3:3:0). Prerequisite: EET 3111, 3311; corequisite: EET 3114, 3314. A study of modulate and demodulate digital signals and digital satellite systems.

3314. Digital Technology II (3:3:0). Prerequisite: EET 2114, 2314. A study of advanced MSI and LSI digital IC's with emphasis on applications.

3316. Local—Internet Network Systems (3:3:0). Prerequisite: EET 3111, 3311; corequisite: EET 3112, 3312. A study of transmission media, protocols, interface, bridges, routing, and Internet working standards.

3321. Programmable Logic Controller (3:3:0). Prerequisite: EET 3114, 3314; Corequisite: MATH 2323. A comprehensive study of relay logic, ladder logic, and programming controllers.

3324. Linear Design and Applications (3:3:0). Prerequisite: EET 3121, 3321. An advanced study of operational amplifiers, phase locked loops, and RLC oscillators.

4317. Advanced Micro-Electronic Technology (3:3:0). Prerequisite: EET 3324 and 3124. The study of microprocessor circuits and their incorporation into functional systems.

4331. System Design Laboratory I (3:0:9). Corequisite: EET 4317 and GTEC 4121. A laboratory course to accompany first-semester senior courses in electrical-electronics engineering technology.

4353. Control Systems (3:3:0). Prerequisite: EET 3324, 4317, MATH 3322. An introduction to automatic control systems and the electro-mechanical components used in control systems.

4370. Capstone Design Course (3:1:6). Prerequisite: EET 4331. Corequisite: MATH 3322 and EET 4353. Design and analysis of electrical-electronics engineering projects. Projects vary from semester to semester. Participation in a suitable competition can satisfy this course requirement. Generally will include presentation of proposal, scheduling, design, final report, presentation, and teamwork.

Mechanical Engineering Technology (MTEC)

1312. Mechanical Technology (3:3:0). Introduction to manufacturing processes and plant operations; plant visits and field trips; familiarization with equipment and instruments; metal fabrication, machine

tools, welding, heat treating, and associated safety practices.

3342. Process Automation (3:2:3). Prerequisite: MTEC 1312 and junior standing. Selected topics in automated manufacturing systems including: numerical controlled machinery, programmed controllers, robotics, inspection, and material handling devices.

3370. Introduction to Project Management and Quality Control (3:3:0). Prerequisite: Consent of coordinator. Introduction to project management, including evaluation, planning, and implementation. The course also includes an introduction to statistical process control and ISO standards.

3412. Analysis of Vapor and Gas Cycles with Laboratory (4:3:3). Prerequisite: GTEC 2351. Evaluation of power and refrigeration cycles. Laboratory study of the component equipment of refrigeration and power cycles.

3441. Materials Technology (4:3:3). Prerequisite: Junior or senior standing. Introduction to the fundamental nature of the structure and properties of engineering materials, their mechanical properties, and behavior based upon their composition.

4311. Air Conditioning System Design I (3:3:0). Prerequisite: GTEC 2351. The design and arrangement of air conditioning systems. Calculation of heating and cooling loads, piping design, and duct design. Psychrometric system analysis.

4312. Applied Energy Conversion (3:3:0). Prerequisite: MTEC 3412. Overview of modern power plants and the thermodynamics of steam power stations. Analysis and design of turbines. Introduction to alternative energy conservation. F, even years.

4313. Air Conditioning System Design II (3:3:0). Prerequisite: MTEC 4311. Continuation of MTEC 4311 with energy use estimations, energy conservation, automatic controls, selection of fans and pumps, and a design project. S, odd years.

4321. Mechanical Technology Laboratory (3:0:6). Senior projects laboratory. Testing and analysis of components of heat power, refrigeration, and mechanical systems.

4332. Specialized Topics in Mechanical Technology (3). Prerequisite: Senior standing and consent of instructor. In-depth study of specialized topics of particular interest to the mechanical technologist. May be repeated for credit.

4351. Mechanisms of Machinery (3:3:0). Prerequisite: MATH 1351 or 2322. Kinematic analysis and synthesis of cams, gears, and linkages. Applications to machine elements and assemblies.

4352. Dynamics of Machinery (3:3:0). Prerequisite: GTEC 2311, MTEC 4351. Study of dynamic forces generated in machinery. Balancing of rotating machines. Analysis of gyroscopes and vibration of mechanical systems.

4353. Mechanical Design (3:3:0). Prerequisite: GTEC 3311, MTEC 3441, MTEC 4351. Analysis of stresses and deformations in machine elements. Analysis of strength of machine elements including theories of failure. Design of mechanical elements such as shafts, screws, columns, springs, journal bearings, roller and ball bearings, spur gears, and flexible mechanical elements.

4170. Capstone Design Course I (1:1:0). The design and analysis of mechanical engineering projects. Topics included will be the design process, design for manufacturability, concept evaluation, codes and standards, reliability, tolerances, quality, scheduling, and working in teams. Projects will be chosen and worked upon in preparation for MTEC 4270.

4270. Capstone Design Course II (2:0:6). A continuation of MTEC 4170 with emphasis on the application of the material previously learned to complete respective design projects. Projects will vary from semester to semester. Participation in the SAE Mini-Baja competition can satisfy this requirement. A final report and presentation is generally required as well as other reports throughout the semester.

Department of Industrial Engineering

Chair: Professor Milton L. Smith

Professors Ramsey, J. Smith, and Zhang; ***Associate Professors*** Beruvides, Hsiang, Kobza, and Liman; ***Assistant Professor*** Yang; ***Emeritus Faculty*** Ayoub, Burford, and Dudek.

This department supervises the following degree programs: INDUSTRIAL ENGINEERING, *Bachelor of Science in Industrial Engineering, Master of Science in Industrial Engineering, Doctor of Philosophy;* SYSTEMS AND ENGINEERING MANAGEMENT, *Master of Science in Systems and Engineering Management;* MANUFACTURING SYSTEMS AND ENGINEERING, *Master of Science in Manufacturing Systems and Engineering.*

The mission of the department is to provide the highest quality of industrial engineering education by stimulating discovery, integration, application, and communication of knowledge. Modern industrial engineering is a combination of basic engineering knowledge and quantitative analysis techniques to support managerial decision making. Industrial engineers use the information and techniques from physical, mathematical, biological, behavioral, and engineering sciences to plan, control, design, and manage complex organizations and systems. Just as the other branches of engineering use the laws of physical sciences in designing and operating a product, industrial engineering applies these same laws to designing and operating systems in which these products are produced or in which services are provided. The major distinction between industrial engineering and other branches of engineering is that the industrial engineer must consider not only the behavior of inanimate objects, as they are governed by physical laws, but also the behavior of people as they interface with inanimate objects and as they operate together in organizations, whether these organizations be simple or complex.

The objectives of the industrial engineering program are as follows: To graduate well-rounded industrial engineers who are prepared for employment and for entry into a graduate program; to graduate industrial engineers who have a strong sense of professionalism, with respect for fellow workers and their profession; and to provide graduates with a set of skills that will allow them to grow professionally and provide service and leadership in their careers.

The curriculum provides students with an opportunity to apply their engineering, mathematical, and science knowledge to design systems (production or processes) and solve engineering problems. Students learn to function on teams, communicate effectively, design and conduct experiments, and utilize current engineering tools. Students gain an understanding of their professional and ethical responsibilities as they examine contemporary issues and the impact of engineering solutions in the global workplace. Perhaps most importantly, students learn to learn so that they can continue to update their industrial engineering skills throughout their careers.

The curriculum is continually evaluated by faculty, students, alumni, and industry to provide a contemporary industrial engineering program that meets the needs of our customers. A variety of assessment tools are utilized in the evaluation process. Program changes are implemented on an ongoing basis.

Students entering the industrial engineering program are assigned a faculty advisor and are responsible for arranging a course of study with the advisor's counsel and approval. Programs leading to joint B.S.–M.S. degrees requiring 150 credit hours are available. Students interested in these programs should inform their academic advisor during the first semester of the junior year. Both thesis and nonthesis M.S. degree programs are included with the nonthesis M.S. requiring 6 additional credit hours.

Industrial Engineering Curriculum. The curriculum is designed to provide a comprehensive education in industrial engineering and to balance the breadth and depth of instruction to develop effective engineers. The minimum hours required for graduation is 128. The courses are offered so that progress through the program is efficient and flexible to individual students' needs. A faculty advisor assists each student with his or her individual program on a semester by semester basis.

Industrial Engineering Curriculum

FIRST YEAR

Fall		*Spring*	
I E 1305, Engr. Anal.	3	I E 1101, Intro. to I E	1
MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
CHEM 1307, Prin. of Chem. I	3	E GR 1307, Engr. Graphics	3
CHEM 1107, Prin. Chem. I (Lab.)	1	CHEM 1308, Prin. of Chem II	3
*Social Science—Humanities	3	CHEM 1108, Prin. of Chem II Lab.	1
TOTAL	16	*Social Science-Humanities	3
		TOTAL	17

SECOND YEAR

Fall		*Spring*	
I E 2301, Engr. Design Prod.	3	I E 3301, Engr. Eco.	3
MATH 2350, Calculus III	3	M E 3311, Materials	3
PHYS 1308, Prin. of Phys. I	3	MATH 3350, Higher Math Engr. I	3
PHYS 1105, Prin. of Phys. I (Lab.)	1	††Communications Elective	3
C E 2301, Statics	3	PHYS 2301, Prin. of Phys. II	3
*Social Science Elective	3	PHYS 1106, Prin. of Phys. II (Lab)	1
TOTAL	16	TOTAL	16

THIRD YEAR

Fall		*Spring*	
I E 3351, Manuf. Engr.	3	I E 3311, Op. Research I	3
I E 3341, Engr. Stat.	3	I E 3343, Q. C. & Engr. Stat.	3
I E 3361, Work Anal. & Des.	3	I E 3371, Production Contr.	3
M E 2322, Engr. Thermo. I	3	I E 3372, Mgt. Syst. Contr.	3
*Soc. Sci.—Humanities	3	E E 3302, Elec. Sys. Analy.	3
TOTAL	15	*Soc. Sci.—Humanities	3
		TOTAL	18

FOURTH YEAR

Fall		*Spring*	
I E 4311, Operations Res. II	3	I E 4333, Senior Design Proj.	3
I E 4361, Engr. Des. for People	3	†I E Electives	6
†I E Elective	3	C E 3302, (or M E 3331) Dynamics	3
I E 4351, Facilities Planning	3	or C E 3303, Mech. of Solids	
+Engineering Elective	3	*Soc. Sci.—Humanities	3
TOTAL	15	TOTAL	15

Minimum hours required for graduation—128.
*Choose from Core Curriculum requirements.
**Mathematics and science elective from the following courses: GEOL 1303; BIOL 1401, 1402; ZOOL 2403; MATH 2360, 3351, 4310.
†I E electives from the following courses: I E 2351, 4312, 4320, 4331, 4352, 4362, 4363.
††Communications elective from the following courses: COMS 2300, 3358, HDFS 2320, MGT 3373, PETR 3308, CH E 2306.
+Engineering elective from the following courses: C E 3302, 3303, 3305, E E 3388, M E 3331, 3370.

Industrial Engineering (I E)

1101. Introduction to Industrial Engineering (1:1:0). The profession of industrial engineering, history of production systems, the profession and its relation to resources utilization and control.

1305. Engineering Analysis (3:3:0). Use of microcomputers in engineering analysis and design. Structured programming languages.

2301. Engineering Design in Production Operations (3:3:0). Prerequisite: I E 1305 and E GR 1306. The engineering design process applied to development management objectives, resource planning, product design, production operations, and engineering design team operations.

2351. Principles of Industrial Automation (3:2:3). Prerequisite: I E 1305. Principles of design of industrial automation and real-time systems using structured languages. Hardware and software interfacing.

3301. Engineering Economic Analysis (3:3:0). Prerequisite: MATH 1352 or equivalent. Evaluation of engineering proposals using time value of money. Selections between alternatives, break even and minimum cost studies, depreciation, taxes, replacement studies, life cycle costing, and inflation.

3311. Operations Research I (3:3:0). Corequisite: MATH 2350. Introduction to operations research, linear programming, dynamic programming, integer programming, traveling salesman problem, transportation, and assignment problems.

3341. Engineering Statistics (3:3:0). Corequisite: MATH 2350. Descriptive statistics, probability theory, discrete and continuous distributions, point and interval estimates, sampling distributions, one- and two-parameter hypothesis testing, simple linear regression, and linear correlation.

3343. Quality Assurance and Engineering Statistics (3:3:0). Prerequisite: I E 3341. Quality assurance systems, quality control and statistical quality control (including control charting, acceptance sampling, quality costs, and loss functions), multiple linear regression, goodness of fit testing, and introduction to experimental design.

3351. Manufacturing Engineering I (3:2:3). Prerequisite: M E 3311, PHYS 1105, or consent of instructor. Properties of materials as related to manufacturing. Processing methods for metals, plastics, ceramics, semiconductors, and composites. Process selection, planning, and economics.

3361. Work Analysis and Design (3:2:3). Corequisite: I E 3341. Principles and techniques of work measurement, methods engineering, workplace design, work sampling, and predetermined time systems. Basic ergonomic principles applied to workplace design and physiological work measurement.

3371. Production Control (3:3:0). Prerequisite: I E 3341. Production control systems, production planning, forecasting, scheduling, materials and inventory control systems and models, learning curves, critical path methods of PERT and CPM.

3372. Management Systems Control (3:3:0). Prerequisite: Junior standing. Cost control techniques for management, methods of financial statement analysis, capital and expense budgets, cost ratios, cost behavior, pricing methods, and overhead allocation methods.

4311. Operations Research II (3:3:0). Prerequisite: I E 3311 or equivalent and a working knowledge of microcomputer operation. Fundamentals of Monte Carlo methods. Systematic development, programming, and analysis of computer simulation models using a high-level simulation language such as GPSS, SLAM II, or SIMAN.

4312. Operations Research Problems (3:3:0). Prerequisite: I E 3311 and 4311 (or equivalents). Course focuses on the application of operations research methods. Extensive use is made of case studies and projects. Problems are drawn from both public and private service systems and industrial operations.

4320. Fundamentals of Systems (3:3:0). Basic foundations and applications of general systems theory applied to engineering and organizational enterprises addressing systems efficiency, effectiveness, productivity, economics, innovation, quality, and QWL.

4331. Individual Studies in Industrial Engineering (3). Prerequisite: Advanced standing and departmental approval. May be repeated.

4333. Senior Design Project (3:3:0). Prerequisite: Industrial engineering senior. Individual industrial engineering design project. Applications of systems thinking, oral and written communications, professionalism, and ethics.

4351. Facilities Planning and Design (3:3:0). Prerequisite: I E 3311, 3361, 3371. Modern plant layout and materials handling practices, stressing the importance of interrelationships with management planning, product and process engineering, methods engineering, and production control.

4352. Manufacturing Engineering II (3:3:0). Prerequisite: I E 3351 or consent of instructor. Introduction to computer-aided manufacturing. Computer-aided process planning; control and monitoring of processes. Numerical control and industrial robots.

4361. Engineering Design for People (3:2:3). Design of systems for human use, Including human sensory and information processing abilities, human-machine system design processes and principles, and reduction of human error in systems design.

4362. Industrial Ergonomics (3:2:3). Prerequisite: I E 3361. Advanced ergonomics principles. Emphasis on physiological, biomechanical, and psychological assessment of work. Establishing human capabilities and limitations.

4363. Work and Product Safety Engineering (3:3:0). Prerequisite: Junior or senior standing. Principles of design for work and product safety, accident theory, loss prevention, accident cost analysis, standards and regulations, system safety, hazards recognition, evaluation and control, product safety, and liability.

Department of Mechanical Engineering

Chair: Professor Thomas D. Burton

Professors Anderson, Cardenas-Garcia, Chyu, Ertas, Lawrence, and Levitas; ***Associate Professors*** Barhorst, Berg, Dunn, Hashemi, James, Jordan, Maxwell, Oler, Parameswaran, and Rasty; ***Assistant Professors*** Ekwaro-Osire, Idesman, and Pantoya; ***Emeritus Faculty*** Reis.

This department supervises the following degree programs: MECHANICAL ENGINEERING, *Bachelor of Science in Mechanical Engineering, Master of Science in Mechanical Engineering, Doctor of Philosophy.*

The mission of the department is to offer students nationally recognized educational opportunities grounded in the fundamentals of mechanical engineering and involving state-of-the-art technology. The educational objectives of the mechanical engineering program are as stated below:

Fundamentals. To provide students with technical competence in science, mathematics, and mechanical engineering science in order to develop a foundation for effective practice and as a basis for future learning of technical material.
Application. To provide students with the skills needed to apply the fundamentals to the design, analysis, experimentation, and simulation of mechanical engineering components and systems, including the ability to communicate their work effectively.
Nontechnical. To provide students with the background and outlook needed to function in interdisciplinary teams in the global environment of the future; to account for societal, economic, and environmental factors; and to be guided by principles of ethics and professionalism.

Mechanical engineering is the broadest of the engineering disciplines with a curriculum providing a strong foundation in mathematics and the physical sciences of chemistry and physics followed by an in-depth education in five of the principal engineering sciences—thermal science, fluids engineering, mechanics and materials, dynamics and controls, and mechanical design. The program in mechanical engineering provides students the ability to apply their engineering, mathematics, and science knowledge to design mechanical systems and to solve engineering problems. Students learn to design and conduct experiments, to communicate effectively, to function in teams, and to utilize modern engineering tools. Students gain an understanding of their professional and ethical responsibilities as engineers. Perhaps most important, students are prepared for the lifelong learning necessary to function effectively as the practice of engineering evolves.

Graduates with a degree in mechanical engineering will find employment opportunities covering a wide spectrum, including the aerospace, automotive, petroleum production and refining industries, petrochemicals, electrical power, electronics, semiconductors and computers, manufacturing, and production, as well as research positions in industry and government laboratories. Problem-solving techniques learned in the mechanical engineering curriculum are also applied to continued educational pursuits or graduate study in engineering, as well as in areas such as law, medicine, business administration, and other professions.

The department requires students to have computational devices for use in the classroom and at home. Each student is required to have a scientific calculator for use in the classroom. Students are also expected to have a personal computer for use at home. At a minimum, this computer should support high-level programming languages such as C and application packages such as word processing, spreadsheets, and mathematical analysis software.

150–Hour Combined Bachelor's–Master's Degree Program. The department has recently implemented a combined B.S.–M.S. program that will allow qualified students to obtain a Master of Science in Mechanical Engineering (M.S.M.E.) degree through an additional 12-15 months of study beyond the bachelor's degree. Students enrolled in the program will follow the standard undergraduate mechanical engineering curriculum for course work through the first seven semesters shown in the mechanical engineering curriculum below. In the final undergraduate semester, two graduate courses will be substituted for the mechanical engineering and design electives, which will be waived. At this time the student receives the B.S.M.E. degree. The two graduate courses

taken in the final undergraduate semester are applied to the student's master's program. In addition, during the final undergraduate semester, the student will be expected to contact faculty in the department in order to identify possible research areas for the master's thesis. The completion of the M.S.M.E. program would then typically require an additional 12-15 months of study. Applications for admission to this program may be obtained from the department and must be submitted prior to completion of the junior year. Further information on this combined program is available from the department.

Co-Op Program. Mechanical engineering students are encouraged to consider the College of Engineering Co-op program. This normally involves three work assignments in industry for a cumulative duration of one year. These work assignments are normally completed prior to the start of the senior year. Co-op students gain valuable real-world engineering experience that enhances the academic experience on campus and provides excellent preparation for a career in industry.

Students are expected to follow the curriculum presented in the table below. Students whose high school courses do not include chemistry, physics, mathematics through analytical geometry, and at least two credits of a foreign language will be required to take additional course work during an adjusted first year of study. All students must earn a grade of C or better in all courses and must maintain a GPA of 2.0 or better.

The department rigorously enforces prerequisite requirements for all courses.

Mechanical Engineering Curriculum

FIRST YEAR

Fall		*Spring*	
MATH 1351, Calculus I	3	MATH 1352, Calculus II	3
CHEM 1307, Prin. of Chem. I	3	PHYS 1308, Prin. of Phys. I	3
CHEM 1107, Prin. Chem. I (Lab.)	1	PHYS 1105, Prin. of Phys. I (Lab)	1
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
M E 1315, Intro to Mechanical Engineering	3	E GR 1306, Engr. Graphics	3
HIST 2300, Hist. of U.S. to 1877	3	*Elective (History)	3
TOTAL	16	TOTAL	16

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calculus III	3	MATH 3350, Higher Math. Engr. I	3
PHYS 2301, Prin. of Phys. II	3	M E 2322, Eng. Thermo. I	3
PHYS 1106, Prin. of Phys. II (Lab)	1	M E 2464, Eng. Mechanics I	4
E E 3302, Fund. of E E 3	3	*Elective (Political Science)	3
M E 2315, Comp. Aided Anal.	3	*Elective (Oral Communication)	3
POLS 1301, Amer. Govt., Org.	3	TOTAL	16
TOTAL	16		

THIRD YEAR

Fall		*Spring*	
M E 3364, Engr. Mechanics II	3	M E 3322, Engr. Thermo. II	3
M E 3164, Engr. Mech. II Lab.	1	M E 3328, Materials & Mech. Lab.	3
M E 3311, Materials Science	3	M E 3433, Systems & Vibrations	4
M E 3331, Dynamics	3	M E 3465, Intro. to Design	4
M E 3370, Fluid Mechanics	3	M E 3371, Heat Transfer	3
I E 3301, Engr. Econ. Anal.	3	TOTAL	17
TOTAL	16		

FOURTH YEAR

Fall		*Spring*	
M E 4334, Cont. Dynamic Sys.	3	M E 4371, Engr. Design II	3
M E 4351, Thermal-Fluid Sys. Lab.	3	**Elective (Mech. Engr. Design)	3
M E 4370, Engr. Design I	3	**Elective (Math or Science)	3
MATH 3342, Math. Stat. Engr. Sci.	3	**Elective (Mech. Engr.)	3
M E 4120, Senior Seminar	1	*Elective (Visual or Performing Arts)	3
*Elective (Humanities)	3	TOTAL	15
†Elective (Multicultural)	3		
TOTAL	19		

Minimum hours required for graduation—128.
*Choose from Core Curriculum requirements.
**Select from departmentally approved list.
†Requirement can be met in combination with either humanities or visual and performing arts courses.

Mechanical Engineering (M E)

1315. Introduction to Mechanical Engineering (3:3:0). Corequisite: MATH 1351. Introduction to the mechanical engineering discipline including familiarization with the thermal and mechanical sciences, engineering problem solving, discussion of professionalism and ethics, and experiences in team design projects.

2315. Computer-Aided Analysis (3:3:0). Prerequisite: M E 1315, MATH 1352, and PHYS 1308. Introduces numerical methods used in solution of typical engineering problems. Includes design activity.

2322. Engineering Thermodynamics I (3:3:0). Prerequisite: MATH 2350 and PHYS 1308. Properties of pure substances, ideal gas behavior, first and second law analysis, and applications to energy conversion and power cycles. (Cross-listed with CH E 2321.)

2464. Engineering Mechanics I (4:4:0). Prerequisite: MATH 2352 and PHYS 1308. Corequisite: M E 2315. An introduction to statics and solid mechanics.

3164. Engineering Mechanics II Laboratory (1:0:3). Corequisite: M E 3364. Introduces students to the use of finite elements software to perform load and stress analysis on mechanical components.

3311. Materials Science (3:3:0). Prerequisite: CHEM 1307. Corequisite: MATH 2350. Fundamental thermodynamic and chemical nature of the structure and properties of materials.

3322. Engineering Thermodynamics II (3:3:0). Prerequisite: M E 2322. Principles of thermodynamics for general systems, cycle analysis, availability and irreversibility, thermodynamics of state, thermodynamics of nonreacting and reacting mixtures. Includes design activity.

3328. Materials and Mechanics Laboratory (3:2:3). Prerequisite: M E 2464 and 3311. Evaluating and reporting the characteristics of materials and mechanical systems.

3331. Dynamics (3:3:0). Prerequisite: MATH 2350 and M E 2464 (or C E 2301). Kinematics and kinetics of particles and rigid bodies. [ENGR 2302]

3364. Engineering Mechanics II (4:3:3). Prerequisite: M E 2464; corequisite: ME 3164. Analysis of structures to determine stresses, strains, and deformations using classical and finite element methods.

3370. Fluid Mechanics (3:3:0). Prerequisite: M E 2322 and 2464 (or C E 2301). Basic principles of fluid statics, fluid dynamics, ideal and viscous flows, and turbomachinery. Includes design activity.

3371. Heat Transfer (3:3:0). Prerequisite: M E 3370. Introduction to heat transfer by the mechanisms of conduction, convection, and radiation. Includes design activity.

3433. Systems and Vibrations (4:3:3). Prerequisite: MATH 3350 and M E 3331. Modeling and analysis of dynamic systems, equilibrium, stability and linear systems theory, introduction to mechanical vibrations. Companion laboratory.

3465. Introduction to Design (4:4:0). Prerequisite: M E 3164, 3364. Analysis, design, and evaluation of mechanical elements.

4000. Special Topics in Mechanical Engineering (V1-6). Prerequisite: Departmental approval. Individual studies of special topics in mechanical engineering. May be repeated for credit.

4120. Senior Seminar (1:1:0). Prerequisite: Senior standing. Discussion of issues associated with ethics, professionalism, and starting a career in mechanical engineering.

4130. Graduate Preparation Seminar (1:1:0). Limited to undergraduate students in 150-hour program; topics to prepare students for graduate study and research.

4316. Mechanical Vibrations (3:3:0). Prerequisite: M E 3331 and MATH 3350. Free and forced vibration of damped and undamped single- and multi-degree freedom mechanical systems. Approved M E elective.

4331. Individual Study in Mechanical Engineering (3). Prerequisite: M E 3364 and departmental approval. Individual study in advanced mechanical engineering areas. Approved M E or design elective.

4334. Control of Dynamic Systems (3:3:0). Prerequisite: M E 3433. Introduction to analysis and design of control systems, including applications to electromechanical systems.

4338. Solar Systems Design (3:3:0). Prerequisite: M E 3371. Fundamental principles of the design and analysis of solar systems and components. Includes a solar heating design project. Approved M E or design elective.

4341. Materials in Design (3:3:0). Prerequisite: M E 3311, 3364, and senior standing. Application of material selection in the design process. Approved M E or design elective.

4342. Design Through Failure Analysis (3:3:0). Prerequisite: M E 3311. Case studies presenting "forensic engineering" techniques necessary for the determination of failure mechanisms, design integrity, materials selection, legal problems, and product liability. Approved M E or design elective.

4343. Mechanical Metallurgy (3:2:3). Prerequisite: M E 3311 and 3364. Introductory elasticity, plasticity, dislocation theory, and strengthening mecha-

nisms. Testing and controlling of mechanical properties and their variation with temperature, strain rate, and microstructure. Approved M E elective.

4344. Manufacturing Processes for Engineering Materials (3:3:0). Prerequisite: M E 3311 and 3464. Analysis of stresses, tribology, and economics associated with primary and secondary manufacturing processes and their effects on properties of engineering materials. Approved M E elective.

4350. Microprocessor Applications for Mechanical Engineers (3:3:0). Prerequisite: Junior standing. Design of microprocessor firmware for digital control applications. Introduction to microprocessor hardware and operation. Approved M E or design elective.

4351. Thermal-Fluid Systems Laboratory (3:2:3). Prerequisite: M E 3370 and 3322; corequisite: M E 3371. Measurements, testing, performance evaluation, and documentation of thermal-fluid systems.

4354. Automotive Systems (3:3:0). Prerequisite: M E 3371. Modeling and analysis of typical automobile and truck powertrains, suspension, and performance. Theory and practice are discussed with emphasis on practical applications. Approved M E elective.

4356. Aerodynamics (3:3:0). Corequisite: M E 3370. An introduction to aerodynamics, including wing and airfoil theory, aircraft performance, and aircraft stability and control. Approved M E or design elective.

4358. Combustion (3:3:0). Prerequisite: M E 3322 and 3371. Introduction to combustion kinetics; the theory of premixed flames and diffusion flames; turbulent combustion; dynamics of detonations and deflegrations. Approved M E or design elective.

4370. Engineering Design I (3:2:3). Prerequisite: M E 3311, 3331, 3465, corequisite: M E 3371. Design problems characteristic of mechanical engineering, including consideration of cost, design optimization, codes and standards, and ethics.

4371. Engineering Design II (3:0:9). Prerequisite: M E 4370. Design projects characteristic of mechanical engineering, including consideration of cost, design optimization, codes and standards, and ethics.

4373. Thermal-Fluid Systems (3:3:0). Prerequisite: M E 3371. Corequisite: M E 3322. Design and analysis of thermal-fluid systems. Approved M E or design elective.

4375. HVAC System Design (3:3:0). Prerequisite: M E 3322 and 3371. The determination of loads and the design of heating, ventilating, and air conditioning systems. Approved M E or design elective.

Department of Petroleum Engineering

Chair: Roy S. Butler Professor James F. Lea

George P. Livermore Professor Davis; ***George F. and Joan M. Watford Associate Professor*** Heinze; ***Associate Professors*** Frailey, Lawal, and Oetáma; ***Assistant Professor*** Cox; ***Lecturer*** Adisoemarta; ***Emeritus Faculty*** Arnold, Crawford, Land, and Winkler.

This department supervises the following degree programs: PETROLEUM ENGINEERING, *Bachelor of Science in Petroleum Engineering; Master of Science in Petroleum Engineering; Doctor of Philosophy.*

The department is uniquely located in the Permian Basin, where approximately 22 percent of the nation's petroleum resources and 68 percent of Texas' petroleum resources lie within a 175-mile radius. The department fulfills an obligation to the people of the State of Texas and the nation in making available the technical expertise for the safe and efficient development, production, and management of petroleum resources.

Petroleum engineering is the practical application of the basic and physical sciences of mathematics, geology, physics, and chemistry and all of the engineering sciences to the discovery, development, production, and transportation of petroleum. Petroleum is the most widely used form of mobile energy and now supplies approximately three-fourths of the total energy used in the United States. It is also a major raw material from which a wide variety of products are manufactured.

Petroleum engineering applies the curriculum management of the College of Engineering. Phase I includes the first three semesters, Phase II the fourth semester, and Phase III the final two years of study. Progress from one phase to the next requires a satisfactory GPA, designated course completion, and departmental

consent. To graduate, the student must complete the specified minimum number of hours in each phase of the curriculum, have a minimum overall GPA of 2.0, and earn a grade of C or better in all courses.

Students applying for transfer into this program from another institution or from another department at Texas Tech must have a minimum 2.0 cumulative GPA. Transfer applicants must also have earned a grade of C or better in all courses related to the degree.

The department has observed that students with access to a personal computer are more successful in their college endeavors. At a minimum, a student's computer should support high-level programming languages and application packages such as e-mail, Internet access, presentations, spreadsheets, and word processing.

The Petroleum Engineering curriculum is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Program Educational Objectives. The department supports the mission of the university through its undergraduate program by providing students with an appropriate curriculum and educational experience. The course selection and content remain current through continuous assessment by employers, alumni, faculty, and students. Students obtain a broad education that enables them to understand the impact of petroleum engineering solutions in a global, social, and environmental context. To accomplish the mission, the petroleum engineering faculty, with advice from students, alumni, petroleum industry advisory board (PIAB) members, and industry employers, endorse the following program educational objectives:

- To provide students with the best possible education in order to lead useful and productive lives;
- To educate students to be practical, employable, and qualified petroleum engineers and to provide them with a foundation for continuing education;
- To support the industry with well-educated and highly skilled petroleum engineers;
- To serve society by encouraging the ideals of ethical behavior, professionalism, conservation of resources, and environmental responsibility;
- To offer useful technology to the people of the State of Texas, the nation and international communities through research and publications; and
- To continue the development of the undergraduate and graduate programs by recruiting highly motivated students as well as faculty who are dedicated to teaching, research, and service.

The Department of Petroleum Engineering, by fulfilling these objectives, will remain faithful to the mission of the College of Engineering and Texas Tech University, and in so doing, will satisfy the needs of the people of the State of Texas.

Program Outcomes. Graduates of the B.S.P.E. program (and the M.S.P.E. and Ph.D. programs) at Texas Tech University are educated to:

- Apply knowledge of mathematics, geology, physics, and chemistry as well as other engineering sciences.
- Conduct experiments safely and accurately and be able to correctly analyze the results.
- Design a process or system.
- Work in a team environment.
- Understand professional and ethical conduct and act accordingly.
- Recognize, express, and resolve engineering problems.
- Communicate successfully.
- Develop knowledge of present-day issues.
- Develop a special multidisciplinary knowledge of geology and engineering.
- Use modern engineering tools to apply engineering practice.
- Develop an appreciation of the need to continue to learn.
- Evaluate a project not only from a technical standpoint, but also from the principles of economics, risk, and uncertainty.

Planning and Assessment. The department strongly encourages students to experience at least one summer internship for professional growth. Intern students will be assessed externally. The department has conferred over 1,600 B.S. degrees since the program's inception in 1948. A high-priority goal is to produce quality B.S. graduates measured by:

A. One hundred percent placement of graduates each year,
B. Student average starting salaries higher than the national average in accredited U.S. petroleum engineering departments,
C. Provide summer intern opportunities and experiences within the industry for 100 percent of students desiring positions,

D. Ninety percent Fundamentals Examination pass rate of graduating seniors,
E. Recruiting quality undergraduates,
F. ABET accreditation,
G. Petroleum Industry Advisory Board recommendations on curriculum and graduates, and
H. An independent assessment of capstone senior course.

The department is heavily involved in assisting our students to find employment—both summer internships and full-time positions—upon graduation. Approximately 50 companies have recruited our students and nearly 100 percent of them have been placed upon graduation for the previous 12 years. Approximately 60 percent of our undergraduate body is on scholarship. An interview and resume workshop for the fall and spring semesters is conducted to assist students with interviewing and resume writing skills as an additional effort to maintain our outstanding placement rate. The curriculum is under continuous review, and revisions are made as needed to maintain accreditation and ensure employability of students. Faculty participation with ABET and the SPE Education and Accreditation Committee ensure the department is current on engineering education. In addition, faculty have attended and been principal planners in all five of the Colloquiums on Petroleum Engineering Education. Changes in the petroleum engineering curriculum since 1991 have been implemented by the Petroleum Engineering Curriculum Committee after due consideration of input from the Petroleum Industry Advisory Board, ABET recommendations, and the department's planning and assessment tools.

The department assists students to obtain summer internships This provides invaluable and highly recommended industry experience to students. The increasing department involvement in industrial research provides an opportunity for undergraduate students to participate actively in the research experience on campus.

One year (two semesters) of a single foreign language must be taken at the college level unless the second year of credit in a single foreign language has been received before entrance into the university.

Petroleum Engineering Curriculum

FIRST YEAR

Fall		*Spring*	
MATH 1351, Calculus I	3	MATH 1352, Calc. II	3
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
CHEM 1307, Prin. Chem. I	3	CHEM 1308, Prin. Chem. II	3
CHEM 1107, Prin. Chem. I (Lab.)	1	CHEM 1108, Prin. Chem. II (Lab.)	1
GEOL 1303, Phys. Geology	3	PETR 1305, Engr. Anal.	3
GEOL 1101, Phys. Geology Lab.	1	POLS 1301, Amer. Govt., Org.	3
PETR 1101, Intro. to Petroleum Engr.	1	TOTAL	16
TOTAL	15		

SECOND YEAR

Fall		*Spring*	
MATH 2350, Calc. III	3	PHYS 2301, Prin. of Phys. II	3
PHYS 1308, Prin. of Phys. I	3	PHYS 1106, Prin. of Phys. II (Lab.)	1
PHYS 1105, Prin. of Phys. I (Lab.)	1	MATH 3350, Math. Engrs. I	3
POLS 2302, Amer. Pub. Pol.	3	PETR 2302, Res. Fluid Prop.	3
PETR 2301, Petr. Develop.	3	C E 3305, Mech. of Fluids	3
C E 2301, Statics	3	M E 2322, Engr. Thermo.	3
**Structural Geology Elective	3	TOTAL	16
TOTAL	19		

THIRD YEAR

Fall		*Spring*	
MATH 3342, Statistics for Engineers	3	C E 3303, Mech. of Solids	3
PETR 3303, Petr. Prod. Meth.	3	PETR 3304, Formation Eval.	3
PETR 3302, Res. Rock Prop.	3	PETR 3306, Reservoir Engr.	3
PETR 3113, Core Anal. Lab.	1	HIST 2300, Hist of U.S. to 1877	3
E E 3302, Fund. of Elec. Engr.	3	GEOL 4324, Geol. of Petroleum	3
C E 3302, Dynamics	3	PETR 3407, Drilling Engr.	4
PETR 3308, Engr. Comm.	3	TOTAL	19
TOTAL	19		

FOURTH YEAR

Fall		*Spring*	
PETR 4306, Adv. Res. Engr.	3	PETR 4309, Adv. Prod. Engr.	3
PETR 4305, Nat. Gas. Engr.	3	PETR 4308, Well Test. Anal.	3
PETR 4121, Petro. Eng. Sem.	1	PETR 4300, Petr. Prop. Eval.	3
HIST 2301, Hist. of U.S. since 1877	3	*PETR Elective	3
I E 3301, Engr. Eco. Anal.	3	†Humanities Elective	3
PETR 4105, Gas & Prod. Lab.	1	TOTAL	15
†Humanities Elective	3		
TOTAL	17		

Minimum hours required for graduation–136.
*Select from PETR 4000 or 4331.
**Geology electives from the following: GEOL 3402 or 4000 GEOL 400 approved by the Department Chair.
†Choose from Core Curriculum requirements.

Petroleum Engineering (PETR)

1101. Introduction to Petroleum Engineering (1:1:0). Introduction to the petroleum engineering profession. Group discussions and selected readings on requirements, responsibilities, ethics, opportunities, and history of petroleum engineering.

1305. Engineering Analysis I (3:3:0). Corequisite: MATH 1351. Introduction to engineering fundamentals, dimensions, units, and conversions. Synthesis and analysis of typical engineering problems. Introduction to the use of computers, word processing, spreadsheet and Fortran programming.

2301. Petroleum Development Methods (3:3:0). Prerequisite: MATH 1351 and PETR 1305. Introduction to petroleum engineering, rotary drilling, and well completion practices, including casing, cementing, perforating, and workovers. Discussion of equipment design and use.

2302. Reservoir Fluid Properties (3:3:0). Prerequisite: MATH 1351 and CHEM 1308. Study of reservoir fluid properties including PVT behavior of hydrocarbon systems. Investigation of the nature, methods of estimation, and use of reservoir fluid properties. Laboratory PVT demonstrations.

3113. Core Analysis Laboratory (1:0:3). Corequisite: PETR 3302. Laboratory determination of reservoir rock properties to include porosity, permeability, saturations, compressibility, and resistivity with weekly formal lab reports submitted.

3302. Reservoir Rock Properties (3:3:0). Prerequisite: PETR 2302 and C E 3305. A study of the physical properties of petroleum reservoir rocks as they relate to the production of oil and gas, including multiphase fluid flow in petroleum reservoirs.

3303. Petroleum Production Methods (3:3:0). Prerequisite: PETR 2301 and C E 3305. Artificial lift practices including design of sucker rod pumping systems and gas lift installations. Well stimulation practices including acidizing and hydraulic fracturing. Application of inflow performance relationships.

3304. Formation Evaluation (3:3:0). Prerequisite: PHYS 2301, PETR 3302. Use of open-hole well logs including logging suites for the electric survey to the induction and laterlog suites to determine volume and relative producibility of hydrocarbon reserves. Analysis and design techniques of actual well logging packages are emphasized.

3306. Reservoir Engineering (3:3:0). Prerequisite: PETR 3302 and structural geology elective. Production performance predictions and estimation of hydrocarbons in place for gas, condensate, and oil reservoirs. Applications of material balance calculations for various reservoir types.

3308. Engineering Communications (3:3:0). Prerequisite: ENGL 1302, Junior standing, or consent of instructor. Written and oral communication techniques for professional engineers, including writing matrix, fog index, computer analysis, and visual aid production, proposal writing, and other tools. (Writing Intensive)

3407. Drilling Engineering (4:3:1). Prerequisite: PETR 2301, 3303, and C E 3305. Rotary drilling systems, drilling fluids and rheology, drilling mechanism, well planning, blowout and well control, hole deviation, and directional drilling. (Writing Intensive)

4000. Special Studies in Petroleum Engineering (V1-6). Prerequisite: Departmental and instructor approval. Individual studies in petroleum engineering areas of special interest. May be repeated for credit.

4105. Natural Gas and Production Laboratory (1:0:3). Corequisite: PETR 4305. Experiments in production practices, including gas and liquid measurement, fluid property determination, flow metering devices, pumping well characteristics, and lease operations.

4121. Petroleum Engineering Seminar (1). Prerequisite: C E 3302, 3303, 3305, E E 3302, MATH 3350, M E 2322; corequisite: I E 3301. Study of engineering problems of special interest and value to the student. Review for Fundamentals Examination.

4300. Petroleum Property Evaluation and Management (3:2:3). Prerequisite: PETR 3304, 3306, 3308, I E 3301, GEOL, 4324 and structural geology elective, statistics elective; corequisite: PETR 4308. Economic, physical, analytical, and statistical evaluation of hydrocarbon-producing properties, emphasizing relative worth of investments based on engineering judgment, business strategy, and risk analysis using actual oil properties in team projects. Senior design project. (Writing Intensive)

4305. Natural Gas Engineering (3:3:0). Prerequisite: PETR 3303, 3306, M E 2322; corequisite: PETR 4105. The production of natural gas and condensate reservoirs; processing, transportation, distribution, and measurement of natural gas and its derivatives.

4306. Advanced Reservoir Engineering (3:3:0). Prerequisite: PETR 3306. Frontal-advance theory and application, mechanisms of waterflooding processes, and application to reservoir performance prediction.

4308. Well Testing and Analysis (3:3:0). Prerequisite: PETR 3306. Basic theory of transient flow in porous media and its application to the design and analysis of actual well tests using pressure-time relationships with emphasis on the pressure derivative. Buildup, drawdown, falloff, injectivity, pulse, interference, and drill stem tests are included for single or multiphase wells.

4309. Advanced Production Engineering (3:3:0). Prerequisite: PETR 3303, 3306, M E 2322, and advanced standing. Problem course in analysis, design, and application of production and processing equipment, separator problems, emulsions, treating, and transmission systems.

4331. Special Problems in Petroleum Engineering (3). Prerequisite: Advanced standing. Individual studies in advanced engineering areas of special interests. May be repeated for credit.

College of Human Sciences

Professor Linda C. Hoover, *Interim Dean*

Web Site: www.hs.ttu.edu

Texas Tech human sciences programs at the baccalaureate, master's, and doctoral levels are innovative in focus, relevant to the needs of a rapidly changing society, and designed to prepare professionals—both men and women—for employment in broad career options.

The college focus is on people, the development of human potential, and the reciprocal relationships between individuals and their environments. Graduates contribute to the functioning of individuals and families and the quality of goods and services available within the diverse global community.

The College of Human Sciences is a professional college, requiring the highest expectations for its graduates. College programs are accredited by the American Association of Family and Consumer Sciences and seven other national accrediting agencies. Additionally, the college offers courses of significance to the general and professional education of students majoring in other colleges and provides continuing education for professionals in fields related to human sciences. Most undergraduate degree programs lead to the Bachelor of Science degree. Majors are offered in family financial planning and in clothing, textiles, and merchandising with specializations in fashion design and merchandising; food and nutrition with a specialization in general dietetics; human development and family studies, early childhood, and family and consumer sciences. The college also offers the Bachelor of Science degree in Restaurant, Hotel, and Institutional Management and the Bachelor of Interior Design degree. For additional information about undergraduate degree programs in the various departments, see the following pages and/or contact the office of Academic Advising Services.

The College of Human Sciences at Texas Tech offers a dynamic curriculum, a well-qualified faculty, outstanding facilities, and a commitment to excellence. In addition to undergraduate majors, the college offers the Master of Science and Doctor of Philosophy degrees with majors in all departments. Specific information regarding graduate degrees may be found in the *Graduate Catalog*.

General Standards and Requirements

The College of Human Sciences expects the student to assume responsibility for knowing the rules, regulations, and policies of the university and the requirements pertaining to his or her degree program and to consult the *Undergraduate Catalog, Directory of Classes,* registration guidelines, and degree plans for the major.

Admission of Transfer Students. Students planning to take their first two years of work at a junior or community college should follow our lower division degree requirements. Up to 66 hours required in the degree program can be accepted from a junior or community college. All hours transfer to the College of Human Sciences for classification purposes but may not necessarily meet degree plan requirements. Only grades earned while enrolled at Texas Tech are used in calculating the grade point average for meeting graduation requirements.

Financial Aid to Students. A number of student scholarships and assistantships providing financial assistance and valuable experience to capable students are available in human sciences. Write to the Dean of the College of Human Sciences, Box 41162, Texas Tech University, Lubbock, Texas 79409-1162. The scholarship application deadline is February 1. Emphasis will be on leadership, service, high school and transfer grade point averages, test scores, and need.

Catalog Selection. Students must use the catalog issued for the year in which they were first officially admitted to the College of Human Sciences or a more recent

catalog if approved. However, if they are not enrolled at Texas Tech for one academic year or transfer to another institution or another college at Texas Tech, they must be readmitted to the College of Human Sciences and use the catalog in effect at the time of readmission. For graduation purposes, a catalog expires after seven years.

Academic Advising Services. The purpose of Academic Advising Services is to provide quality service to the faculty and students in the college. Academic advisors are available to address student needs as they arise and to assist students in achieving their goals regarding their education. To avoid pitfalls that could delay graduation, students should visit with an academic advisor each semester prior to advance registration to update their degree plan, plan the next semester's courses, and pick up registration information. Schedule of classes, registration, adding and dropping of classes, and payment of fees are available through the TechSIS Web for students (http://techsis.admin.ttu.edu/student). Students needing assistance can go to Human Sciences 134 or call 742-1180.

Graduation. Graduation is attained by fulfilling the requirements for a bachelor's degree using an acceptable catalog edition. The student is responsibe for fulfilling all catalog requirements. At least one year prior to the graduation semester, students should file a Statement of Intention to Graduate form with Academic Advising Services. After submission of the form, the Coordinator of Undergraduate Programs will complete a degree audit and mail a Progress Report for Graduating Seniors (list of courses lacking towards degree completion) to the student. Thereafter, students will follow the audited list of remaining courses. Substitutions and minor forms must be filed prior to or at the same time as the Statement of Intention to Graduate. The Progress Report for Graduating Seniors will be reviewed prior to the last semester and students will be notified of any discrepancies which may prevent graduation. The last 30 hours are to be taken in residence at Texas Tech unless permission has been granted by the Dean. This includes correspondence and off-campus courses. Any change in graduation date must be communicated to the office of Academic Advising Services.

Correspondence Courses. All correspondence courses must be approved in writing by the Coordinator of Undergraduate Programs.

Credit by Examination. A matriculated student may attempt credit by examination (described elsewhere in this catalog) by obtaining written approval from the Coordinator of Undergraduate Programs.

Course Load. The normal course load for a semester is 15 to 18 hours. The maximum load for a semester is 19 hours (7 hours for a summer term). A minimum of 12 hours is required for full-time status.

Course Prerequisites. Prerequisites are governed by the catalog in effect when the course is taken.

Ineligible Registration. The College of Human Sciences reserves the right to drop any ineligibly registered student from a course for reasons such as lower division-upper division rule infractions, lack of prerequisites, GPA requirements, and failure to attend the first week of class in HDFS 3311 and 3313. Courses taken ineligibly are not used in the degree program.

Minor. The student should consult with the academic department of the intended minor and have a Minor Approval form signed. Declared minors can be filed either before or at the same time as the Intention to Graduate form. Grades of C or better are required in each course. Specific minors are listed in the departmental areas.

Pass-Fail. A maximum of 13 hours may be taken pass-fail. The pass-fail option may be used for free elective courses. If an ineligible course is taken pass-fail, it must be replaced by the next higher course. Pass-fail hours are excluded in determining eligibility for the Dean's Honor or President's List. No student on probation is allowed the pass-fail option.

Selection of a Major. Freshman level human sciences courses will be helpful in clarifying career goals. See an academic advisor for additional information.

Substance Abuse Studies

The colleges of Human Sciences and Arts and Sciences jointly offer an interdisciplinary minor in substance abuse studies (SAS). This minor is designed for students with professional, academic, or personal interest in addictive disorders. It will provide students with an understanding of the physiological, psychological, societal, and familial factors contributing to addiction and the recovery from addiction. It is recommended that the 18 hours of course work be taken in this order:

1. Take this class first: HDFS 3325, Family Dynamics of Addiction.
2. Take this class last: HDFS 4325, Treatment of Addictive Disorders.
3. Take at least two of these classes in any order: HDFS 2327, Substance Abuse Prevention; HLTH 3325, Health and Chemical Dependency; SOC 3383, Alcohol, Drugs, and Society; PSY 4325, Drugs, Alcohol, and Behavior.
4. Take remaining classes in any order: FCSE 3325, Educational Programming: Addiction Issues; HDFS 3329, Addictive Relationships; FFP 2325, Family Financial Counseling.
5. One of these classes may be substituted for Group IV: HDFS 3321, Human Sexuality; HDFS 3326, Families in Crisis; HDFS 3317, Problems of Adolescence; SOC 4327, Juvenile Delinquency; SOC 4325, Criminology.

The Texas Commission on Alcohol and Drug Abuse and the Texas Certification Board of Alcoholism and Drug Abuse Counselors accept completion of this minor as fulfillment of all required academic hours of training for licensure and certification.

Additional information may be obtained from the Program Director, Dr. Kitty Harris, Center for the Study of Addiction, 172 Human Sciences Building.

Courses

Human Sciences (HUSC)

1100. Introduction to Human Sciences (1:1:0). Overview of the College of Human Sciences and instruction on how to study within the college can help prepare a student for academic and personal success. Topics include personal and family relationships, personal finance, nutrition, academic advising, etc. Required first semester.

2000. Special Studies (VI-6). A course for lower-level human sciences majors for individual study or special problems.

3214. Human Sciences Seminar (2:2:0). Prerequisite: Human Sciences majors only, junior or senior standing. Recommended to be taken one year prior to anticipated graduation. Integrative approach and professional orientation to societal issues, including public policy, ethics, cultural diversity, and global interdependence.

Department of Education, Nutrition, and Restaurant-Hotel Management

Chair: Professor Lynn Huffman

Professors Brittin, Couch, Felstehausen, and Spallholz; ***Associate Professors*** Boylan, Dodd, Hoover, and Stout; ***Assistant Professors*** Adams, Blum, Goh, March, Reichelt, Roman-Shriver, Shriver, Shumate, and Wu; ***Instructors*** Tolbert and Ward.

This department supervises the following degree programs: FAMILY AND CONSUMER SCIENCES, *Bachelor of Science in Family and Consumer Sciences;* FAMILY AND CONSUMER SCIENCES EDUCATION, *Master of Science* and *Doctor of Philosophy;* FOOD AND NUTRITION, *Bachelor of Science, Master of Science,* and *Doctor of Philosophy;* RESTAURANT, HOTEL, AND INSTITUTIONAL MANAGEMENT, *Bachelor of Science* and *Master of Science.*

In addition to the regular degree programs, this department provides a 10.5-month post-baccalaureate clinical didactic internship that is accredited by the American Dietetic Association (ADA) and meets the ADA eligibility requirements for dietetic registration.

Mission

The mission of the department is to provide quality education, research, and service focused on the knowledge and skills intrinsic in the disciplines of family and consumer sciences education, food and nutrition, and hospitality management. To accomplish this mission, the department offers the following program areas:

- Family and Consumer Sciences
- Food and Nutrition
- Restaurnat, Hotel, and Institutional Management

Family and Consumer Sciences Program

The mission of the family and consumer sciences education program is to prepare individuals for professional positions in secondary schools, colleges and universities, extension education, and related areas through quality education, research, and service. The family and consumer sciences program offers specialization in both family and consumer sciences teacher certification and family and consumer sciences. Each specialization provides a broad background in all family and consumer sciences subject areas and prepares students for a wide variety of career opportunities. Students take courses in human development and family studies, family financial planning, food and nutrition, housing and interior design, clothing construction, textiles, restaurant, hotel, and institutional management. The certification course work meets Texas requirements for teacher certification in family and consumer sciences.

Family and Consumer Sciences Teacher Certification. The family and consumer sciences teacher certification program is designed for students planning teaching careers in junior high and high school family and consumer sciences, extension, adult and community-based education, educational support services such as curriculum development and media, business, government, human services, and other fields. The program includes course work in all family and consumer sciences content areas and the professional education courses required for teacher certification in Texas. See an academic advisor for current information.

Students seeking teacher certification must meet all requirements outlined in the Teacher Education section of this catalog. Admission requirements include completion of approximately 60 semester hours with an overall 2.5 GPA or better and a satisfactory level of performance on the TASP test or equivalent. Other requirements include a 2.5 GPA or better in professional education courses and the teaching field and a grade of C or better in all required specialization and support courses. To be recommended for certification, graduates must achieve a satisfactory level of performance on the TExES examination prescribed by the State Board of Education.

It is possible to become qualified to teach in a second teaching field by taking additional courses. Students also may earn a teaching certificate in family and consumer sciences as a part of a major in human development and family studies. See the Human Development and Family Studies section.

Family and Consumer Sciences Teacher Certification Curriculum

FIRST YEAR

Fall		*Spring*	
HUSC 1100 or I S 1100	1	ENGL 1302	3
ENGL 1301	3	*Math. of Logical Reasoning	3
*Mathematics	3	Oral Communication	3
FCSE 2102	1	POLS 2302	3
POLS 1301	3	EDIT 2318	3
*Visual & Performing Arts	3	TOTAL	15
I D 1380	3		
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
HIST 2300	3	HIST 2301	3
English Literature	3	ENGL 2311	3
*Natural Lab. Science	4	HDFS 3301	4
EDSE 2300	3	FFP 2325 or FCSE 3301	3
FADS 2311	3	F&N 1410	3
FADS 1303	3	TOTAL	16
TOTAL	19		

THIRD YEAR

Fall		*Spring*	
FCSE 3301	3	HDFS 3313 or 3311	3
HDFS 3320	3	FCSE 3350	3
HDFS 3331	3	FCSE 3103, 4302	4
F&N 2310	3	**EDSE 4310	3
HDFS 3312	3	**EDSE 4322	3
HDFS 3310	3	**EDLL 4380	3
TOTAL	18	TOTAL	19

FOURTH YEAR

Fall		*Spring*	
FCSE 4308	3	**FCSE 4601	6
FCSE 4306, 4103	4	**FCSE 4601	6
RHIM 3460	4	**FCSE 4304	3
Guided H S Elective	3	TOTAL	15
HUSC 3214	2		
TOTAL	16		

TOTAL—134-148 hours, dependent on transfer student status.
*Choose from Core Curriculum requirements.
**Admission to Teacher Education and a minimum 2.5 GPA required (apply prior semester).

Family and Consumer Sciences. The Family and Consumer Sciences specialization prepares students for careers in human services, extension, business, government, communications, and other fields that require a broad background in family and consumer sciences. The program includes course work in all family and consumer sciences content areas. Students may expand career opportunities by selecting electives in support areas such as mass communications, business, or computer science. A minor may be obtained by taking 18 semester hours in approved courses. Qualified students must complete an internship (2.5 GPA required) during the junior or senior year. A grade of C or better is required for all courses in the specialization.

Family and Consumer Sciences Curriculum

FIRST YEAR

Fall		*Spring*	
HUSC 1100 or I S 1100	1	ENGL 1302	3
ENGL 1301	3	*Math. or Logical Reasoning	3
*Mathematics	3	ANTH 1301 or EDSE 2300	3
FCSE 2102	1	POLS 2302	3
POLS 1301	3	EDIT 2318	3
*Visual & Performing Arts	3	TOTAL	15
I D 1380	3		
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
HIST 2300	3	HIST 2301	3
*Humanities	3	ENGL 2311	3
*Natural Lab. Science	4	SOC 1301 or 1320	3
FADS 2311	3	HDFS Elective	3
Minor or Elective	3	F&N 2310	3
FADS 1303	3	TOTAL	15
TOTAL	19		

THIRD YEAR

Fall		*Spring*	
HDFS 3320	3	FCSE 3303	3
HDFS 3301	3	HDFS 3331	3
FFP 3301 or FCSE 3350	3	HDFS 3310 or 3312	3
F&N 1410	4	F&N or RHIM Elective	3
Minor or Elec.	3	Minor or Elec.	3
TOTAL	16	TOTAL	15

FOURTH YEAR

Fall		*Spring*	
HUSC 3214	2	Minor or Elec.	3
*Oral Communication	3	Minor or Elec.	3
RHIM Elective	3	FCSE 4307	3
Minor or Elec.	3	FCSE 4307	3
HDFS 3311 or 3313	3	FFP or I D Elective or FCSE 3350	3
TOTAL	14	TOTAL	15

TOTAL—125-136 hours, dependent on transfer student status.
*Choose from Core Curriculum requirements.

Pre-Teaching Family and Consumer Sciences Minor. The Pre-Teaching Minor is designed for students in any major in the College of Human Sciences who plan to seek a family and consumer sciences teaching certificate after completing a bachelor's degree. The minor allows undergraduate students to take 22 hours of the course work required for teacher certification, reducing the time needed to complete certification requirements after graduation. To be admitted to a teacher certification program, students must meet all requirements outlined in the Teacher Education section of this catalog. Students who meet the requirements for admission to a graduate program may combine teacher certification requirements with work toward a master's degree. Courses: FCSE 2102, 3301, FADS 1303, F&N 2310, and 12 hours of guided human sciences electives.

Family and Consumer Sciences Minor. The Family and Consumer Sciences minor is available to students in any major who desire a broad background in family and consumer sciences. The minor includes 18 semester hours in course work representing the various family and consumer sciences content areas. Courses: FCSE 3301 or 3303 and 15 hours of guided human sciences electives.

Extension Family and Consumer Sciences Minor. The minor in Extension Family and Consumer Sciences is designed for students in any major in the College of Human Sciences who wish to prepare for employment in extension family and consumer sciences positions. The 25 hours of course work include courses from various family and consumer sciences content areas as well as courses that focus on educational methods in Extension. Courses: HDFS 3320, F&N 1410, FFP 3301, HDFS 2303, FCSE 3301 or 3303, 4307, and 6 hours of guided human sciences electives.

Food and Nutrition Program

The mission of the food and nutrition program is to prepare individuals who will make a contribution to professions related to food and nutrition and to society as a whole through quality education, research, and service. This program emphasizes the role of food and nutrition in the health and well-being of people. The specialization prepares competent professionals for nutrition and dietetic careers in hospitals, schools, colleges, food service, business, and government agencies. Courses also contribute to the liberal education of all students who enroll in food and nutrition classes.

Food and Nutrition Minor. A student may minor in food and nutrition by completing 18-19 hours of selected course work. Specific courses for the food and nutrition minor are finalized and approved by the student in conjunction with the major and minor advisors. Courses: F&N 1325 or 1410, 2310, choose 4 from the following: F&N 2320, 2325, 3340, 4330, 4360, or 4380.

General Dietetics. The Didactic Program in Dietetics at Texas Tech is approved by The American Dietetic Association (ADA) and designed to provide the student with an academic program that "provides for the achievement of knowledge requirements for entry-level dietitians" as outlined by ADA. After graduation from the program, the student must complete an ADA accredited internship (such as the post-baccalaureate internship offered at Texas Tech) or an approved preprofessional practice (AP4) program including 900 hours of supervised practice to gain performance skills needed to be an entry level dietitian. After successful completion of both an undergraduate and practice program, the student is eligible to take the dietetic registration examination and become a registered dietitian (R.D.)

after passing the exam. General Dietetics emphasizes the nutritional care and education of people and prepares the student to qualify for an internship; graduate school; or a position in a hospital, community agency, or a food service system or business with the prime responsibility of improving and maintaining the nutritional status of people.

Food and Nutrition—General Dietetics Curriculum

FIRST YEAR

Fall		*Spring*	
HUSC 1100 or I S 1100	1	ENGL 1302	3
ENGL 1301	3	PSY 1300	3
*Mathematics	3	CHEM 1308, 1108	4
CHEM 1307, 1107	4	POLS 2302	3
POLS 1301	3	F&N 1410	4
F&N 1201	2	TOTAL	17
TOTAL	16		

SECOND YEAR

Fall		*Spring*	
HIST 2300	3	HIST 2301	3
ZOOL 2403	4	RHIM 3303	3
F&N 2310	3	RHIM 3320	3
CHEM 2303, 2103	4	RHIM 3322	3
COMS 2300 or 3358	3	AAEC 3401 or MATH 2300	3-4
TOTAL	17	F&N 2320	3
		TOTAL	18-19

THIRD YEAR

Fall		*Spring*	
RHIM 3460	4	RHIM 3470	4
F&N 3340	3	FD T 3301 or 3303	3
F&N 3402	4	F&N 3311, 4120	4
RHIM 3341	3	RHIM 3390	3
HUSC 3214	2	FCSE 3303	3
F&N 3310	3	TOTAL	17
TOTAL	19		

FOURTH YEAR

Fall		*Spring*	
RHIM 4316	3	F&N 4350	3
F&N 4340, 4130	4	F&N 4341, 4130	4
F&N 4330	3	F&N 4320	3
F&N 4380	3	F&N 4360	3
HDFS 3320	3	*Visual & Performing Arts	3
*Humanities Elective	3	TOTAL	16
TOTAL	19		

TOTAL—138-159 hours, dependent on transfer student status.
*Choose from Core Curriculum requirements.

Restaurant, Hotel, and Institutional Management Program

The RHIM program prepares students for career opportunities in the hospitality industry and includes courses in food and nutrition, arts and sciences, and core courses in RHIM. The curriculum keeps pace with changes in the hospitality field by providing classroom and laboratory experiences.

The mission of the restaurant, hotel, and institutional management program is to prepare individuals who will make a contribution to the hospitality industry and to society as a whole through quality education, research, and service.

Texas Tech's RHIM program, recognized as one of the top programs in the nation, offers a multidisciplinary approach to hospitality education. The curriculum is designed to prepare the student to meet both current and future hospitality needs. The program emphasizes problem solving and creativity in addition to strong practical laboratory experiences. The RHIM program is accredited by the Accreditation Commission for Programs in Hospitality Administration.

Restaurant, Hotel, and Institutional Management Minor. A student may minor in restaurant, hotel, and institutional management by completing 19 hours of selected course work. Specific courses for the RHIM minor are finalized and approved by the student in conjunction with the major and minor advisors. Courses: RHIM 2308, 3341, 3350, 3460, and 6 hours of RHIM electives.

Restaurant, Hotel, and Institutional Management Curriculum

FIRST YEAR

Fall		*Spring*	
HUSC 1100 or I S 1100	1	ENGL 1302	3
ENGL 1301	3	*MATH Elective	3
*MATH Elective	3	POLS 2302	3
POLS 1301	3	F&N 1410	4
RHIM 2210	2	RHIM 2308	3
RHIM 2312 of Elective	3	TOTAL	16
TOTAL	15		

SECOND YEAR

Fall		*Spring*	
HIST 2300	3	HIST 2301	3
ECO 2305	3	HDFS 3320	3
SPCS 1300	3	SPCS 1301	3
RHIM 3460	4	RHIM 3350	3
Elective	3	RHIM 3470	4
TOTAL	16	Elective	3
		TOTAL	19

THIRD YEAR

Fall		*Spring*	
RHIM 3303	3	ANSC 3404	4
COMS 3358	3	*Visual & Performing Arts	3
RHIM 3341	3	RHIM 3320	3
RHIM 3321	3	RHIM 3322	3
FD T 3303	3	RHIM 3358	3
HUSC 3214	2	TOTAL	16
TOTAL	17		

FOURTH YEAR

Fall		*Spring*	
RHIM 4322	3	RHIM 4300	3
RHIM 4415	4	Elective	3
RHIM 3390	3	RHIM 4316	3
RHIM 4312	3	RHIM 4313	3
**RHIM elective	3	**RHIM elective	3
TOTAL	16	TOTAL	15

TOTAL—129-150 hours, dependent on transfer student status.
*Choose from Core Curriculum requirements.
**Choose from RHIM 3000, 3308, 3330, 3355, 4320, 4330.

Family and Consumer Sciences Education (FCSE)

2102. Introduction to Family and Consumer Sciences (1:1:0). Exploration of family and consumer sciences programs in traditional and nontraditional settings, including family and consumer sciences extension, adult education, business and community agencies, and public schools. Includes field experience.

3103. Field Experience in Family and Consumer Sciences I (1:1:0). Supervised observation and teaching in family and consumer sciences. (Concurrently with FCSE 4302).

3301. Foundations of Family and Consumer Sciences Education (3:3:0). Prerequisite: FCSE 2102, 2.5 GPA, and application and/or admission to the Teacher Education Program. Introduction to programs in secondary schools and other settings. Program development and teaching methods.

3303. Educational Processes in Family and Consumer Sciences Professions (3:3:0). Designed for nonmajors. Focus on the teaching-learning process in professional settings outside the traditional classroom.

3325. Educational Programming: Addiction Issues (3:3:0). Prerequisite: HDFS 3325. Addiction issues affecting individuals and families in business, community, and

school settings. Emphasis on program development, implementation, and evaluation.

3350. Special Topics in Family and Consumer Sciences (3:3:0). Semester long study of a specific topic pertinent to the family and consumer sciences profession. May be repeated (different topics) for a maximum of 12 credit hours.

4000. Individual Study (V1-6). Prerequisite: Written consent of supervising faculty member. May be repeated for credit for up to 6 hours.

4103. Field Experiences in Family and Consumer Sciences II (1:1:0). Corequisite: FCSE 4306. Supervised observation and teaching in occupational family and consumer sciences.

4131. Occupational Clothing Services (1:1:1). Prerequisite: FCSE 4302, corequisite: FCSE 4132 and 4133. Fundamentals of production merchandising, promotion, coordination and repair, and alteration of mass-produced apparel.

4132. Occupational Home Furnishings (1:1:1). Prerequisite: FCSE 4302, corequisite: FCSE 4131 and 4133. Skill development in home furnishings occupations.

4133. Occupational Child Care and Elderly Services (1:1:1). Corequisite: FCSE 4131 and 4132. Development of competencies needed in occupations related to care for children and elderly services.

4301. Student Teaching in Family and Consumer Sciences (3:3:0). Prerequisite: FCSE 3301 and admission to student teaching. Supervised teaching in an approved secondary family and consumer sciences program. (Concurrently with FCSE 3103).

4302. Professional Applications in Family and Consumer Sciences (3:3:0). Prerequisite: FCSE 3301. Application of family and consumer sciences knowledge and skills in child development, clothing and textiles, family studies, food and nutrition, housing and interiors, and management and consumer economics. (Concurrently with FCSE 3103).

4304. Instructional Management in Family and Consumer Sciences (3:3:0). Prerequisite: FCSE 4306, 4308; corequisite: FCSE 4601. Principles and procedures for managing the family and consumer sciences classroom. Designed to support the student teaching experience.

4306. Occupational Family and Consumer Sciences (3:3:0). Prerequisite: FCSE 4302. Application of family and consumer sciences knowledge and skills in food service, home furnishings, clothing, child development, services for the elderly, and institutional and hospitality management. (Concurrently with FCSE 4103).

4307. Internship in Family and Consumer Sciences (3:3:0). Prerequisite: Junior standing, FCSE 3301 or 3303, 2.5 GPA. Supervised experiences in family and consumer sciences positions in extension, business, or related areas. May be repeated once for credit.

4308. Research and Evaluation in Family and Consumer Sciences (3:3:0). Prerequisite: FCSE 4302. Introduction to methods of research and evaluation in family and consumer sciences. Includes practical applications.

4601. Student Teaching in Family and Consumer Sciences (6:6:0). Prerequisite: FCSE 4306, 4308, corequisite: FCSE 4304 Supervised teaching in an approved secondary family and consumer sciences program. (Writing Intensive)

Food and Nutrition (F&N)

1201. Introduction to Dietetics (2:2:0). Introduction to the field of dietetics including registration, ethical, legal, and professional issues.

1325. Nutrition, Foods, and Healthy Living (3:3:0). An introduction to the nutrients, their content in food, energy utilization, and the role of diet in health and disease.

1410. Science of Nutrition (4:3:2). Study of the nutrients found in foods and utilization of those nutrients by the body. Designed to convey the basic principles of nutritional science.

2310. Principles of Food Preparation (3:2:2). Application of scientific principles to food preparation. [HECO 1315]

2320. Structure and Function of Nutrients (3:3:0). Prerequisite: F&N 1410. Sources and roles of nutrients and their importance to human health.

2325. Sports Nutrition (3:3:0). Nutrition concepts and applied nutritional practices for the competitive and amateur athlete and physically active individual.

3310. Essentials of Dietetic Practice (3:2:2). Prerequisite: F&N 1410. Techniques of interviewing, assessment, nutrition care planning, and counseling in dietetic practice. Legal aspects of dietetic practice. (Writing Intensive)

3311. Dietetic Counseling Strategies (3:3:0). Prerequisite: F&N 1410, 3310, or concurrent enrollment in 3310. Application of interviewing, counseling, and educational techniques in dietetics, including individual and group methods.

3320. Nutrition and Diet Therapy for Allied Health Professionals (3:3:0). Prerequisite: ZOOL 2403. Principles of nutrition and diet therapy as applied to frequently encountered health problems. For nursing, pre-med, and other allied health students.

3340. Nutrition in the Life Cycle (3:3:0). Prerequisite: F&N 2320 and ZOOL 2403. Factors that affect diet and nutrition throughout the life cycle.

3350. Child Nutrition (3:3:0). Nutritional needs of young children in relation to mental and physical development; cultural, social, and psychological aspects of food and dietary patterns.

3402. Survey of Biochemistry (4:3:3). Prerequisite: CHEM 2103, 2303 or 3105 and 3305. Survey of general biochemistry.

4000. Individual Study (V1-6). Prerequisite: Written consent of supervising faculty member. May be repeated for up to 6 hours credit.

4120. Medical Terminology (1:1:0). Terminology in describing normal anatomical, physiological, and psychological conditions and those related to disease and its treatment. For students entering dietetic and allied health professions.

4130. Field Work in Food and Nutrition (1:0:3). Corequisite: F&N 4340 and 4341. Preplanned experiences with evaluation of student performance in hospitals, community health centers, clinics, and volume feeding establishments. May be repeated once for credit.

4320. Nutritional Biochemistry (3:3:0). Prerequisite: F&N 3340 and 3402. Concepts of normal nutrition in relation to the chemistry and physiology of the human body.

4330. Community Nutrition (3:3:0). Prerequisite: F&N 1410. Study of nutrition-related problems in the community and the various resources, activities, agencies, and programs involved in health promotion and disease prevention.

4340. Medical Nutritional Therapy I (3:3:0). Prerequisites: F&N 3340, 3402, ZOOL 2403, and concurrent enrollment in F&N 4130. Nutritional assessment and oral, enteral, and parenteral nutritional support. Pathophysiology, medical management, nutritional assessment, and nutritional therapy as they relate to protein energy malnutrition; trauma; obesity; diabetes mellitus; and endocrine, pancreatic, and gallbladder disorders.

4341. Medical Nutritional Therapy II (3:3:0). Prerequisites: F&N 4340, and concurrent enrollment in F&N 4130. Pathophysiology, medical management, nutritional assessment, and nutritional therapy as they relate to disorders of the hepatic, gastrointestinal, cardiovascular, hematopoietic, immune, renal, and pulmonary systems; cancer; diseases of childhood; and pregnancy.

4350. Emerging Issues in Food Science and Nutrition (3:3:0). Prerequisite: F&N 1410 and senior standing. Readings, discussion, and analysis of trends and developments in food science and nutrition.

4360. Experimental Methods with Food (3:1:6). Prerequisite: F&N 2310 and general chemistry. Investigation of the chemical and physical factors influencing quality in food; consideration of proportions, manipulations of ingredients, and additives in preparation.

4380. Cultural Aspects of Food (3:3:0). Prerequisite: Junior standing or consent of instructor. A study of the historical, social, psychological, economic, religious, and aesthetic significance of food customs in various cultures. (Writing Intensive)

Restaurant, Hotel, and Institutional Management (RHIM)

2210. Introduction to Hospitality Management (2:2:0). Analyzes the nature of work, people, and the interrelationships within the hospitality industry. Explores various career options.

2308. Hotel Operations (3:2:3). Principles and practices of managerial functions relating to the operation of hotel and motel facilities.

2312. Introduction to Beverage Management (3:3:0). Principles and practices regarding the production, selection, storage, and serving of beverages. Emphasis on responsible beverage use in business and social settings.

2350. Culture of Travel and Tourism (3:3:0). Study of the cultural and social benefits and outcomes of travel and tourism. For non-RHIM majors and not open to RHIM majors for credit.

3000. Internship in Hospitality (V1-6). Prerequisite: Sophomore standing and 2.5 GPA. Experiences in hospitality settings. May be repeated for a maximum of six hours credit.

3303. Computers in the Hospitality Industry (3:2:3). Prerequisite: Demonstrated computer competency. Examination and application of software and systems specific to the hospitality industry.

3308. Hotel Group Sales and Services (3:3:0). Prerequisite: RHIM 2308. Emphasis on the function of convention and meeting sales and service departments related to lodging and tourism

operations. Explores factors involved in the management of large group sales.

3320. Facilities Management (3:3:0). Management principles and practices relative to the internal maintenance of public dining and lodging facilities. Systematic control of hospitality spaces to safeguard health and to use available aesthetic values.

3321. Hospitality Control I (3:3:0). Introduction to hospitality control devices needed to measure fiscal success.

3322. Hospitality Control II (3:3:0). Prerequisite RHIM 3321. Application of fiscal control devices in the hospitality industry. Includes computer applications in industry situations.

3330. Special Topics in Hospitality (3:3:0). Semester long study of a specific topic pertinent to the hospitality industry.

3341. Hospitality Management (3:3:0). Prerequisite: ENGL 1302. Factors involved in establishing hospitality operations, organization, administrative development, allocation of labor, and control. Examines hospitality organizations with emphasis on planning and problem analysis. (Writing Intensive)

3350. Travel and Tourism (3:3:0). An analysis of the economic and cultural impact of the international travel and tourism industry, including destination development, cultural integration, and demand for travel services. For RHIM majors only.

3355. Club and Resort Management (3:3:0). Principles and practices of the general managerial procedures utilized in private clubs and resorts.

3358. Human Resources in the Service Industry (3:3:0). Examination of human resource management in the service industry.

3390. Purchasing in the Hospitality Industry (3:3:0). Prerequisite: RHIM 3460. Current ethical, economic, legislative, and industrial developments related to purchasing food products and durable goods.

3460. Food Systems Management I (4:3:3). Sophomore standing. Application of scientific food preparation and management principles to quantity food production. Includes laboratory experience in quantity food facility.

3470. Food Systems Management II (4:3:3). Prerequisite: RHIM 3460 and 3 hrs. MATH. Optimum use of human, financial, and material resources by managers. Laboratory experiences include commercial food preparation and service.

4000. Individual Study (V1-6). Prerequisite: Written consent of supervising faculty member. May be repeated for up to 6 hours credit.

4300. Practicum (3:3:0). Prerequisite: Graduating senior's final semester, 600 hours of work-experience training completed, or consent of instructor. Beginning a career through the development of job search strategies, interviewing skills, and resume writing. Students can interview with a large variety of companies for entry-level management positions.

4312. Beverage Control Management (3:3:0). Prerequisite: RHIM 3460. Selection, storage, and service of beverages with emphasis on inventory control, sales promotion, and profits.

4313. Legal Aspects of Hospitality Industry (3:3:0). A study of the laws applicable to restaurants, hotels, and associated businesses. Includes duties, rights, and liabilities of institutions and guests.

4316. Hospitality Management Marketing (3:3:0). Prerequisite: RHIM 3341 and senior standing. Application of marketing concepts, methods, and techniques used in the hospitality industry. Analysis of principles of consumer behavior, market research, promotion, and marketing strategy.

4320. Hospitality Entrepreneurship (3:3:0). Prerequisite: RHIM 3322. Aspects of opening and operating a small hospitality business.

4322. Hospitality Cost Control III (3:3:0). Prerequisite: RHIM 3322. Utilization of fiscal control devices in the hospitality industry to develop financial assets and manage their application.

4330. Contemporary Problems in the Hospitality Industry (3:3:0). Prerequisite: Senior RHIM majors. In-depth examination of selected problems in the hospitality industry.

4415. Advanced Food Production Management (4:2:6). Prerequisite: RHIM 3322, 3390, 3470, 3490, 4312, FD T 3303. Assumption of maximum responsibility of management of actual food service operation based on sound managerial principles and successful food production and service techniques. (Writing Intensive)

Department of Human Development and Family Studies

Chair: Professor Dean Busby

Professors Bell, Haley, Fischer, Scott, and K. Wampler; ***Associate Professors*** Caldera, Crawford, Feng, Fitzpatrick, K. Harris, S. Harris, Hart, Ivey, Munsch, Sorell, and R. Wampler; ***Assistant Professors*** Colwell, Kowalski, Lindsey, McCarty, Mulsow, Reifman, Stelle, and Weaver; ***Instructors*** Bermudez, Driskill, Johnson, and Nathan; ***Adjunct Faculty*** S. Hendrick, Peek, Reid, and Shapiro; ***Visiting Faculty*** Powell.

This department supervises the following degree programs: HUMAN DEVELOPMENT AND FAMILY STUDIES, *Bachelor of Science, Master of Science,* and *Doctor of Philosophy;* MARRIAGE AND FAMILY THERAPY, *Master of Science* and *Doctor of Philosophy.*

The Department of Human Development and Family Studies (HDFS) offers a wide range of courses in the areas of early childhood, human development, interpersonal relations, family studies, substance abuse studies, and family therapy. Graduates of the department may enter a variety of human services vocations and/or pursue graduate studies. In addition, they receive valuable practical training to improve their own competence in parenting, child care, and interpersonal and family relationships. Students interested only in selected aspects may elect to minor in the department curriculum, in substance abuse studies, or they may choose electives while pursuing another major course of study. A student may minor in HDFS by completing 18 hours of selected course work. The specific courses for the HDFS minor are approved by the Academic Advising Office in the College of Human Sciences.

Bachelor of Science in Human Development and Family Studies

From a foundation of research and theory, this degree focuses on development across the life span (prenatal to late adulthood) in the context of couple, marriage, family, and peer relationships. This program focuses on intrapersonal (e.g., personality, cognition), interpersonal (e.g., relationship conflict, self-disclosure), and societal (e.g., race-ethnicity, class) forces as they affect personal and family well-being.

A variety of courses offers perspectives on interpersonal and marital and family behavior through development of the infant, child, adolescent, young adult (courtship, early marriage), middle-aged adult (divorce-remarriage, parenthood), and the older adult (widowhood, grandparenthood). Some courses also focus on important social issues that affect individual and family functioning (e.g., substance abuse, violence). Courses at the upper-division level provide professional training for the person wishing to seek employment in such diverse occupations as becoming a family life educator, Extension Service specialist, probation officer, child development specialist, or child care administrator.

Service-research skills are also enhanced by opportunities to observe and interact with infants, toddlers, and young children in the Child Development Research Center. The center is accredited by the National Association for the Education of Young Children. Supervised experiences with community groups provide opportunities for interaction with older children, adolescents, couples, families, and the elderly. These experiences assist students in understanding developmental stages of human behavior and interpersonal relations as they occur in family or group care settings.

Undergraduate students may want to specialize in one or more of the five block areas under which courses are offered in the department. These areas include childhood, adolescence-adult development, addictions, family relationships, or application-research. Students may specialize in one or more of these areas by taking departmental elective courses from the desired blocks.

Enrollment in the department is limited and based on an adjusted cumulative 2.5 GPA.

To continue enrolling in human development and family studies courses, students must maintain a GPA that meets or exceeds this standard. In addition, transfer students must have an adjusted cumulative 2.5 GPA. Students with a lower GPA may be provisionally admitted or continue to enroll in courses if a petition is submitted to the department and approved by the admissions committee.

Child-Care Director Specialization. Students wishing to meet the state requirement of 6 hours of administration to become child-care directors should take HDFS 4330 and HDFS 4314 practicum in the Child Development Research Center office.

Core Curriculum. All students in the department must complete the university's Core Curriculum requirements. As part of this core, it is recommended that HDFS 2320 (Basic Interpersonal Skills) be taken to fulfill the oral communication requirement. In addition, students in the department must complete the following courses to fulfill the college's core requirements: HUSC 1100, Introduction to Human Sciences; HUSC 3214, Human Sciences Seminar; and HDFS 3320, The Contemporary Family, which may also count toward the required hours in the major.

Students majoring in human development and family studies must take the following core courses for a total of 18 credit hours: HDFS 2300, Gender Roles: Lifespan Developmental Perspective; HDFS 2303, Lifespan Human Development; HDFS 3301, Theories of Human Development and the Family; HDFS 3324, Dynamics of Family Interaction; HDFS 3350, Development in a Cross-Cultural Perspective; and HDFS 3390, Research Methods.

Support Course Requirements. Students are required to take the following support courses for the major in human development and family studies: PSY 1300, General Psychology; SOC 1301 or 1320, Introduction to Sociology or Current Social Problems (also may be taken to fulfill the individual and group behavior requirement in the university Core Curriculum); and a basic computer literacy course (EDIT 2318, C S 1300) that may also count toward the university Core Curriculum for technology and applied science.

Specialization Areas. Students must select **one** course in each of the following five blocks for a total of 15 credit hours:

Area 1: Childhood
- HDFS 3306 Child and Adolescent Guidance
- HDFS 3310 Prenatal and Infant Development
- HDFS 3311 Laboratory Experiences With Infants and Toddlers
- HDFS 3312 Development During Childhood
- HDFS 3313 Laboratory Experiences With Young Children
- HDFS 4306 Preparing Environments for Children

Area 2: Adolescence/Adult Development
- W S 2300 Introduction to Women's Studies
- HDFS 3316 Development in Adolescence
- HDFS 3317 Problems of Adolescence
- HDFS 3318 Development in Young Adulthood
- HDFS 3319 Development in Middle Adulthood
- HDFS 3332 Aging in the Family

Area 3: Addiction
- HDFS 2125 Seminar in Addiction
- HDFS 2327 Substance Abuse Prevention
- HDFS 3325 Family Dynamics of Addiction
- HDFS 3329 Addiction and Relationships
- HDFS 4325 Treatment of Addictive Disorders

Area 4: Family Relationships
- HDFS 2322 Courtship and Marriage
- HDFS 3331 Parenting
- HDFS 3321 Human Sexuality Through Family Life Cycle
- HDFS 3322 Family in the Community
- HDFS 3326 Families in Crisis

Area 5: Application/Research
- HDFS 4000 Individual Study
- HDFS 4314 Practicum in Human Development and Family Studies
- HDFS 4320 Research in Human Development and Family Studies
- HDFS 4330 Administration in Human Development and Family Studies
- HDFS 4331 Introduction to Marriage and Family Therapy
- HDFS 4390 Program Development and Evaluation
- HDFS 4343 Advanced Topics in Human Development and Family Studies

Department Electives. Fifteen credit hours of electives selected from the preceding blocks are required. Some students may want to concentrate their electives in one or two areas to demonstrate a specialization.

Teacher Certification Specializations

Human Development and Family Studies Teacher Certification. Human development and family studies majors can choose an option that includes teacher certification in family and consumer sciences. The specialization provides a background in all family and consumer sciences subject areas and a certification to teach in Texas public school systems grade 8-12. Students seeking teacher certification must meet all requirements outlined in the Teacher Education section of this catalog. To be recommended for certification, graduates must achieve satisfactory performance on the TExES examination prescribed by the State Board of Education.

Human Development and Family Studies Teacher Certification Curriculum

FIRST YEAR

Fall		*Spring*	
HUSC 1100 or I S 1100	1	ENGL 1302	3
ENGL 1301	3	EDIT 2318	3
*MATH Elective	3	*Visual & Performing Arts	3
FCSE 2102	1	POLS 2302	3
POLS 1301	3	*Math. or Logical Reasoning	3
HDFS 2320	3	FFP 2325 or FCSE 3301	3
I D 1380	3	TOTAL	18
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
Natural Lab Science	4	HDFS 3301	3
ENGL 2311	3	HDFS 3350	3
HDFS 3320	3	FCSE 3350	3
HIST 2300	3	English Literature	3
FADS 1303	3	F&N 1410	4
EDSE 2300	3	HIST 2301	3
TOTAL	19	TOTAL	19

THIRD YEAR

Fall		*Spring*	
RHIM 3460	4	**EDSE 4310, 4322	6
HDFS 3321	3	**FCSE 3103, 4302	4
**FCSE 3301	3	HDFS 3313 or 3311	3
HDFS 3312	3	**EDLL 4380	3
HDFS 3310	3	HDFS 3306 or 3317	3
HDFS 3326	3	TOTAL	19
TOTAL	19		

FOURTH YEAR

Fall		*Spring*	
**FCSE 4308	3	**FCSE 4601	6
**FCSE 4306 & 4103	4	**FCSE 4304	3
HDFS 3390	3	TOTAL	9
HDFS 3322	3		
HUSC 3214	2		
HDFS 3331	3		
TOTAL	18		

TOTAL—134-151 hours, dependent on transfer student status.
*Choose from Core Curriculum requirements
**Admission into the Teacher Education Program is required to enroll, 2.5 GPA minimum.
†HDFS 2320 required and can be applied to oral communication.

Early Childhood Teacher Certification. The early childhood specialization prepares professionals to work with children from infancy through 4th grade. A strong emphasis in child development provides the foundation for understanding the child as an individual within the context of the family, the peer group, and school settings. The program meets current Texas requirements for teacher certification and is accredited by the State Board for Educator Certification and the National Council for

Accreditation for Teacher Education. State teacher certification is granted from early childhood through the 4th elementary grade. See an academic advisor for updated certification requirements that may occur from recent legislative mandates. Admission to teacher certification is competitive and is based on an overall GPA of not less than 2.7 and satisfactory completion of all three portions of the TASP test. Students seeking teacher certification must meet all requirements outlined in the Teacher Education section of this catalog. To be recommended for certification, graduates must achieve satisfactory performance on the TExES, an examination prescribed by the State Board of Education.

Early Childhood Teacher Certification Curriculum

FIRST YEAR

Fall		*Spring*	
HUSC 1100 or I S 1100	1	ENGL 1302	3
ENGL 1301	3	HDFS 2305	3
MATH 1320	3	POLS 2302	3
POLS 1301	3	*Natural Lab. Science (Earth Science)	4
GEOG 2351	3	*Oral Communication	3
HDFS 2311	3	MUSI 2301 or 3336	3
EDEL 2191	1	TOTAL	19
TOTAL	17		

SECOND YEAR

Fall		*Spring*	
HIST 2300	3	HIST 2301	3
English Elective	3	Natural Lab Science (Life Science)	4
MATH 2370	3	HDFS 3312	3
HDFS 3320	3	HDFS 3310	3
HDFS 3301	3	HDFS 3350 or	3
ART 3372	3	EDEL 2300	
TOTAL	18	TOTAL	16

THIRD YEAR

Fall		*Spring*	
EDSP 3300	3	EDLL 3351	3
EDLL 3350	3	EDLL 3352	3
EDIT 3318	3	MATH 3370	3
HDFS 3313 or 3311	3	HIST 3310	3
HDFS 3306	3	HDFS 4306	3
HUSC 3214	2	EDBL 3334	3
TOTAL	17	TOTAL	18

FOURTH YEAR

Fall		*Spring*	
#EDEL 4360, 4370	6	#EDEL 4330	3
#EDEL 4375, EDLL 4380	6	#EDEC 4000	9
HLTH 3313 or ESS 3313	3	TOTAL	12
Natural Lab. Science (Physical Science)	4		
TOTAL	19		

TOTAL—136, hours, dependent on transfer student status.
*Choose from Core Curriculum requirements.
**HDFS 2320 required and can be applied to oral communication.
#Concurrent enrollment and acceptance into Teacher Education Program; 2.7 GPA minimum.

Human Development and Family Studies (HDFS)

2125. Seminar in Addiction (1:1:3). Prerequisite: Consent of instructor. Philosophy and process of recovery from addiction. Intensive seminar and laboratory experience. May be repeated for credit.

2300. Gender Roles: Life Span Developmental Perspectives (3:3:0). Introduction to gender role concepts and to the impact of gender and gender role systems on individual and family developmental processes.

2303. Life Span Human Development (3:3:0). Introduction to the theories, processes, and enhancement of development for infants, young children, adolescents, and adults.

2305. Strategies of Studying Human Development (3:3:0). Observing, recording behavior, and reviewing techniques used in the study of human development throughout the life span.

2311. Introduction to Early Childhood (3:3:0). Introduction to the profession of early childhood focusing on developmentally appropriate practice, historical influences, program models, and current issues including legislation, public policy, and ethics.

2320. Basic Interpersonal Skills (3:3:0). The study and application of interpersonal skills as they relate to various age levels and social contexts.

2322. Courtship and Marriage (3:3:0). Considers the role of interpersonal relationships of dating, courtship, and marriage.

2327. Substance Abuse Prevention (3:3:0). Introduction to different perspectives on current research and methodologies in the field of substance abuse.

3301. Theories of Human Development and the Family (3:3:0). Survey of theories of human development with emphasis upon their implications for parenting, program development, and services. (Writing Intensive)

3306. Child and Adolescent Guidance (3:3:0). Prerequisite: HDFS 3301. Development of strategies for promoting self-discipline, creative capacities, and positive relationships with children and adolescents.

3310. Prenatal and Infant Development (3:3:0). Prerequisite: HDFS 3301. Study of how to promote the psychomotor, social-emotional, and cognitive-language development of infants from the prenatal period through the first two years in their interactions with caregivers, peers, and the environment.

3311. Laboratory Experiences With Infants and Toddlers (3:1:4). Prerequisite or concurrent: HDFS 3310. Supervised experiences with infants and toddlers.

3312. Development During Childhood (3:3:0). Prerequisite: HDFS 3301. Examination of psychomotor, social-emotional, and cognitive-language development during childhood.

3313. Laboratory Experiences With Young Children (3:1:4). Prerequisite or concurrent: HDFS 3312. Supervised experiences with young children.

3316. Development in Adolescence (3:3:0). Prerequisite: HDFS 3301. Enhancing the psychosocial, social-emotional, and cognitive-language development of adolescents within their interactions with peers, adults, and the culture.

3317. Problems of Adolescence (3:3:0). Overview of problems associated with the adolescent years and training in use of helping skills appropriate for adolescent populations.

3318. Development in Young Adulthood (3:3:0). Examination of individual developmental processes during the transition to adulthood and the first two decades of adult life.

3319. Development in Middle Adulthood (3:3:0). Examination of individual developmental processes from the midlife transition through the middle years of adult life.

3320. The Contemporary Family (3:3:0). Analysis of family interaction patterns with an introduction to family research. A study of family heritage, development, and networks emphasizing the successful family and sociocultural variations of family forms. (Writing Intensive)

3321. Human Sexuality Through Family Life Cycle (3:3:0). Human sexuality from a life cycle perspective, with an emphasis on developmental, familial, and societal factors that influence individual sexuality.

3322. The Family in the Community (3:3:0). Study of community resources as they relate to welfare of children and families.

3324. Dynamics of Family Interaction (3:3:0). Examination of interpersonal processes in the family and other intimate groups. Conceptual analysis of family interaction patterns (e.g., communication, roles, relationships, power, decision making, love, conflict).

3325. Family Dynamics of Addiction (3:3:0). An examination of the family system with specific reference to the causes and effects of chemical abuse and addiction.

3326. Families in Crisis (3:3:0). Prerequisite: Sophomore standing. Examination of theories and strategies for helping families deal productively with crises. Consideration of child exceptionality, child abuse, unemployment, divorce, rape, alcoholism, death, and other crisis events.

3329. Addiction and Relationships (3:3:0). Prerequisite: F S 3325. Addicted persons have difficulties with intimate relationships. Relationships can also be a specific addiction. This course examines addiction, relationships, and addictive relationships.

3331. Parenting (3:3:0). Basic principles and skills for parent effectiveness. Includes strategies for inclusion of parents in the developmental-educational processes of the child.

3332. Aging in the Family (3:3:0). Needs that arise from changes in family relationships, living arrangements, income, and employment.

3350. Development in Cross-Cultural Perspective (3:3:0). Critical examination of developmental and family theory research across a diverse range of cultures.

3390. Research Methods in Human Development and Family Studies (3:3:0). Prerequisite: HDFS 3320. Introduction to methods of research in human development and family studies. (Writing Intensive)

4000. Individual Study (V1-6). Prerequisite: Written consent of supervising faculty member. May be repeated for up to 6 hours credit.

4306. Preparing Environments for Children (3:3:0). Prerequisite: HDFS 3311 or 3313. Utilizing developmental principles acquired by the student in previous child development courses, this course focuses on the application of these principles to the design of environments for children.

4314. Practicum in Human Development and Family Studies (3). Prerequisite: Senior standing. Supervised experiences in established career-related positions; focus selected on basis of professional interest. May be repeated once for credit.

4320. Research in Human Development and Family Studies (3:3:0). Prerequisite: HDFS 3390 or consent of instructor. Supervised independent work in selected areas. May be repeated once for credit.

4325. Treatment of Addictive Disorders (3:3:0). Prerequisite: HDFS 3325. Survey of the current treatment philosophies and programs designed to assist individuals and families affected by addictive disorders.

4330. Administration in Human Development and Family Studies (3:3:0). Prerequisite: 12 hours in department. This course includes application of administrative models, leadership attributes, research findings, and assessments of skills of human service settings.

4331. Introduction to Marriage and Family Therapy (3:3:0). An experiential course with emphasis on developing skills that apply to interview situations. A problem-centered approach to family needs.

4343. Advanced Topics in Human Development and Family Studies (3:3:0). This course focuses on recent developments in theory, philosophy, research, and/or applied approaches to human development and family studies.

4390. Program Development and Evaluation (3:3:0). Knowledge and experience in the practice of program development and evaluation. Class evaluates an ongoing program.

Department of Merchandising, Environmental Design, and Consumer Economics

Chair: Professor JoAnn Shroyer

Rockwell Professor Horridge; ***Associate Professors*** Curry, Gustafson, Hampton, Harp, Khan, Russ, and Wilson; ***Assistant Professors*** Amor, Bagwell, Joo, Tombs, and Yoo; ***Instructors*** Alexander, Campbell, and Peggram; ***Part-Time Instructors*** Barnhill, Kirkman, and Payne.

The department supervises the following degree programs: FAMILY FINANCIAL PLANNING, *Bachelor of Science, Master of Science;* INTERIOR DESIGN, *Bachelor of Interior Design;* CLOTHING, TEXTILES, AND MERCHANDISING, *Bachelor of Science;* ENVIRONMENTAL DESIGN, *Master of Science;* ENVIRONMENTAL DESIGN AND CONSUMER ECONOMICS, *Doctor of Philosophy.* A student in another college may minor in this department by completing a minimum of 18 hours selected in conference with the program coordinator.

General Requirements

The Bachelor of Science and Bachelor of Interior Design degree programs are separated into lower division (first and second years) and upper division (third and fourth years). Students remain in the lower division until they have completed courses designated as first and second year requirements; earned at least 64 hours; have at least a 2.0 cumulative GPA in fashion design, interior design, or merchandising; and have at least a 2.5 GPA in family financial planning for all work at Texas Tech. The grade of C is a minimum requirement in all departmental and support courses for all majors in the department. Prerequisites for departmental courses are governed by the catalog in effect when the course is taken.

An internship is required of each student specializing in fashion design, family financial planning, interior design, and merchandising. The internship experience is jointly planned by the faculty and the student. Application should be made through the program coordinator one year prior to the semester in which the internship is planned. A laboratory fee is required.

For the internship in fashion design, a grade of C or higher must be earned in FADS 3303, 3305, 3310, 4389, 4307, 4309, and 4310. FADS 4389 is required the spring semester prior to enrollment in FADS 4390, 4391.

For the internship in family financial planning, a grade of C or higher must be earned in FFP 2310, 3374, 3375, 3378, 3198, FIN 4324, and ACCT 3307. FFP 4399 may be taken for up to 6 hours.

For the internship in interior design, a grade of C or higher must be earned in I D 3190, 3385, and 3386. I D 3190 is required the spring semester prior to enrollment in I D 4307.

For the internship in merchandising, a grade of C or higher must be earned in MER 3340, 3360, 3370, 4330, 4360, 4370, 4389; MGT 3370; MKT 3350, 3352 or 3353, 4351, 4359, or 4360; and ACCT 2301 or MGT 3376. MER 4389 is required the spring semester prior to enrollment in MER 4390, 4391.

Bachelor of Science in Clothing, Textiles, and Merchandising Specializations

Fashion Design Core. All students majoring in fashion design are required to take the fashion design core courses that are prerequisite to many of the advanced courses. The fashion design core consists of the following courses: FADS 1301, 1303, 1304, 2302, and 2308.

Fashion Design Specialization. The fashion design program offers a comprehensive curriculum that prepares students for entry-level positions in the apparel industry or for continued study in graduate school. The curriculum emphasizes creativity, technical skills, knowledge of textiles, apparel product management, custom design for individual consumers, and design for mass production.

The fashion design program is the only four-year program in the state of Texas that offers machine knitting. Students can also participate in extracurricular activities that provide additional learning opportunities, including the Hi-Tech Fashion Organization, the Annual Fashion Tour of New York or Los Angeles, two yearly design competitions, and a Senior Fashion Exhibit.

Sophomore Portfolio Review. In the Spring semester of the sophomore year, students submit a portfolio with representative work from specific art and fashion design courses. In the event a “conditional” evaluation is received by a student, the student must resubmit the portfolio within one semester following portfolio review. At this time, the student must have met the recommended conditions stated by the reviewers to progress to the next level of course work.

Senior Portfolio Review. During the spring semester of the senior year, students are required to present a portfolio to be reviewed by a jury of apparel design professionals. If a “conditional evaluation” is received, the recommendations of the jury must be met prior to graduation.

Program Policies. A minimum grade of C is required in all art and fashion design courses. In addition, students must be registered in FADS 4310 to enter design competitions in the spring semesters of the junior and senior years. One design competition must be entered during the senior year to meet program requirements.

Fashion Design Curriculum

FIRST YEAR

Fall		*Spring*	
HUSC 1100 or IS 1100	1	**ENGL 1302	3
ENGL 1301	3	*Mathematics	3
ART 1320	3	**ART 1325	3
ART 1324	3	**FADS 2308	3
FADS 1301	3	**FADS 1304	3
FADS 1303	3	TOTAL	15
TOTAL	16		

SECOND YEAR

Fall		*Spring*	
*Natural Science Lab.	4	*Natural Science Lab.	4
HIST 2300	3	HIST 2301	3
**ART 2320	3	**FADS 2302	3
**FADS 2311	3	**FADS 2310	3
*Mathematics or Logical Reasoning	3	TOTAL	13
TOTAL	16		

THIRD YEAR

Fall		*Spring*	
POLS 1301	3	**POLS 2302	3
**FADS 3312	3	HUSC 3214	2
**FADS 3310	3	ART 1310 or 1311	3
**FADS 4309	3	FADS 3303	3
TOTAL	12	**FADS 3312	3
		TOTAL	14

FOURTH YEAR

Fall		*Spring*	
*Individual or Group Behavior	3	HDFS 3320	3
COMS 3358	3	Minor or Guided Elective	6
**FADS 3305	3	**FADS 4310	3
**FADS 4307	3	**FADS 4389	3
Minor or Guided Elective	3	TOTAL	15
TOTAL	15		

SUMMER

First Term		*Second Term*	
FADS 4390	3	FADS 4391	3

TOTAL—121-134 hours, dependent on transfer student status.
*Choose from Core Curriculum requirements.
**Prerequisites apply.

Merchandising Specialization. Merchandising offers an innovative and challenging undergraduate program through a multidisciplinary curriculum that combines a creative approach to problem solving with an understanding of business principles. Merchandising courses emphasize integration of team building, leadership, career planning strategy, and industry application. Course work outside the major includes study in technology, marketing, management, accounting, and economics. By focusing on both the role of diverse and global consumers and the complex infrastructure of retailing goods and services, faculty members maintain and expand a partnership between the retail industry and academics. A well-established internship program, retail lecture series, and a strong alumni base afford students the opportunity to interface with a dynamic combination of retail executives and organizations throughout their academic study.

Merchandising Curriculum

FIRST YEAR

Fall		*Spring*	
HUSC 1100 or I S 1100	1	ENGL 1302	3
ENGL 1301	3	MATH 1331	3
MATH 1330	3	HIST 2300	3
POLS 1301	3	*Natural Lab. Science	4
MER 1340	3	TOTAL	13
TOTAL	13		

SECOND YEAR

Fall		*Spring*	
POLS 2302	3	*Natural Lab. Science	4
HIST 2301	3	ACCT 2300	3
ISQS 2440	4	ECO 2305	3
ENGL 2311	3	MER 2370	3
MER 2340	3	TOTAL	13
TOTAL	16		

THIRD YEAR

Fall		*Spring*	
MKT 3350	3	ACCT 2301 or MGT 3376	3
MGT 3370	3	MKT 3352 or 3353	3
COMS 3358 or MGT 3373	3	HDFS 3320	3
MER 3340	3	HUSC 3214	2
MER 3370	3	MER 3360	3
TOTAL	15	TOTAL	14

FOURTH YEAR

Fall		*Spring*	
MKT 4351	3	MKT 4359 or 4360	3
Upper Level Elective	3	*Humanities	3
*Visual & Performing Art	3	Upper Level Elective	3
MER 4360	3	MER 4330	3
MER 4370	3	MER 4389	3
TOTAL	15	TOTAL	15

SUMMER

First Term		*Second Term*	
MER 4390	3	MER 4391	3

TOTAL—120-135 hours, dependent on transfer student status.
*Choose from Core Curriculum requirements.

Bachelor of Science in Family Financial Planning

Students are prepared for careers in financial planning and counseling in private practice, financial institutions, and governmental and social agencies. The multidisciplinary program includes courses in finance, accounting, economics, family studies, and communications. Students will develop a background for graduate study in family financial planning and for certification programs as financial planners and financial counselors.

The program is registered by the Certified Financial Planner Board of Standards, Inc. (CFP Board). The marks "CFP™" and "Certified Financial Planner™" represent the most respected professional certification in the financial services industry. The mark "CFP™" identifies a licensee who has met educational standards, passed the CFP Board examination, satisfied a work experience requirement, and agreed to the CFP Board's Code of Ethics and Professional Responsibility.

Family Financial Planning Curriculum

FIRST YEAR

Fall		*Spring*	
HUSC 1100 or I S 1100	1	ENGL 1302	3
ENGL 1301	3	MATH 1331	3
MATH 1330	3	FFP 2310	3
*Humanities	3	*Natural Lab. Science	4
POLS 1301	3	POLS 2302	3
FFP 1370	3	TOTAL	16
TOTAL	16		

SECOND YEAR

Fall		*Spring*	
ACCT 2300	3	ACCT 2301	3
ECO 2301	3	ACCT 3307	3
ENGL 2311	3	ECO 2302	3
HIST 2300	3	FFP 3375	3
MATH 2345	3	FFP 2330	3
TOTAL	15	TOTAL	15

THIRD YEAR

Fall		*Spring*	
HIST 2301	3	*Natural Lab. Science	4
HDFS 3320	3	FIN 4324	3
FIN 3320	3	HUSC 3214	2
FFP 3374	3	FFP 3378	3
BLAW 3391	3	FFP 3198	1
TOTAL	15	FFP 3350	3
		TOTAL	16

SUMMER

FFP 4399 (Summer only)	3

FOURTH YEAR

Fall		*Spring*	
COMS 3358	3	COMS 3359 or HDFS 4331	3
FIN 3323	3	*Visual & Performing Arts	3
HDFS Elective	3	FFP 4375	3
FFP 4377	3	FFP 4376	3
FFP 4370	3	FFP 4380	3
TOTAL	15	TOTAL	15

TOTAL—125-141 hours, dependent on transfer student status.
*Choose from Core Curriculum requirements, pages 94-105.

Bachelor of Interior Design

Accredited by the Foundation for Interior Design Education Research, the Bachelor of Interior Design program provides a sound curriculum that prepares individuals to qualify as entry-level professional interior designers. The curriculum also may serve as preparation for continued study in graduate schools offering advanced degrees in interior design or related areas.

Students participate in a wide range of design experiences: lectures, studios, seminars, group presentations and discussions, professional critiques, field trips, and field experiences. The interior design program has limited enrollment and emphasizes practical application of multidisciplinary principles to residential and nonresidential interior environments.

Sophomore Portfolio Review. In the fall and spring semesters, sophomores submit a portfolio with representative work from specific studio courses (ARCH 1441, 1442, I D 1382, 2380, 2383). In the event a "conditional" evaluation is received by a student, the portfolio is reviewed a second time by the interior design faculty. A consensus of opinion by the faculty is required for determining recommendations for the student. Prior to being admitted to I D 3385, students who received "conditional" evaluations must have met the recommended conditions identified by the reviewers.

Senior Portfolio Review. During the senior year and while enrolled in I D 4104, students are required to present a portfolio to be reviewed by a jury of design professionals. This experience provides the student practice in critically evaluating, organizing, and presenting work. Students receiving "conditional" evaluations must meet the recommended conditions stated by the reviewers.

Student Projects Policy. The Department of Merchandising, Environmental Design, and Consumer Economics reserves the right to retain, exhibit, and reproduce design projects submitted by students. Work submitted for a grade is the property of the department and remains such until it is returned to the student.

Interior Design Curriculum

FIRST YEAR

Fall		*Spring*	
HUSC 1100 or I S 1100	1	ENGL 1302	3
ENGL 1301	3	*Math. or Logical Reasoning	3
*MATH Elective	3	ARCH 1442	4
ARCH 1441	4	POLS 1301	3
I D 1380, 1382	6	I D 2380	3
TOTAL	17	TOTAL	16

SECOND YEAR

Fall		*Spring*	
FADS 2311	3	ENGL 2311	3
HIST 2300	3	*Natural Lab. Science	4
Natural Lab. Science	4	ART 1310 or 1311	3
I D 2383	3	I D 3311	3
I D 3381	3	I D 3387	3
TOTAL	16	TOTAL	16

THIRD YEAR

Fall		*Spring*	
HIST 2301	3	POLS 2302	3
ARCH 2351	3	ARCH 3350	3
I D 3382, 4383	6	I D 3385	3
ECO 2305	3	I D 3190, 3383, 3386	7
TOTAL	15	TOTAL	16

SUMMER

I D 4307 (Internship)	3

FOURTH YEAR

Fall		*Spring*	
HUSC 3214	2	COMS 3358	3
MKT 3350	3	PHOT 2310	3
HDFS 3320	3	I D 4104, 4385	4
I D 4406	4	*Humanities	1
Guided Elective	3	TOTAL	11
TOTAL	15		

TOTAL—126-139 hours, dependent on transfer student status.
*Choose from Core Curriculum requirements.

Family Financial Planning (FFP)

1370. Introduction to Family Financial Planning (3:3:0). For FFP majors only. Introduction to personal financial planning, including goal setting, cash management, insurance, taxes, investment alternatives, housing and retirement plans.

2310. Technological Applications in Family Financial Planning (3:1:3). Prerequisite: MATH 1330 and successful completion or concurrent enrollment in FFP 1370. Introduction to computer software programs used in family financial planning, including spreadsheets, word processing, data base management, and presentations.

2325. Family Financial Counseling (3:3:0). For nonmajors only. Methods and procedures to assist individuals and families of different socio-economic environments to resolve dysfunctional financial behaviors including skills essential in counseling clients.

2330. Family Financial Counseling for Financial Professionals (3:3:0). Prerequisite: FFP major. Methods and procedures to assist individuals and families of different socioeconomic environments to resolve dysfunctional financial behaviors including skills essential in counseling clients.

3198. Professional Practices in Family Financial Planning (1:1:0). Prerequisite: GPA of 2.5 and all FFP 3000 level courses completed or concurrent enrollment. Principles of professional practices focusing on ethics, effective managerial strategies, and the student's transition to the professional workplace.

3301. Financial Planning for Young Adults (3:3:0). Prerequisite: Upper-division standing. For nonmajors only. Introduction to personal financial planning, including goal setting, cash management, credit, insurance, taxes, housing, investment alternatives, and retirement plans.

3350. Regulatory Influences on Family Financial Planning (3:3:0). Prerequisite: GPA of 2.5, ACCT 3307, FFP 1370, and 2310. Study of the impact of federal and state regulations on family financial planning decisions.

3374. Family Retirement Planning (3:3:0). Prerequisite: GPA of 2.5 and successful completion of FFP 1370, 2310, and ACCT 3307. A foundation course in family retirement planning and employee benefits. (Writing Intensive)

3375. Family Risk Management (3:3:0). Prerequisite: GPA of 2.5 and successful completion of FFP 1370 and 2310. A foundation in family risk management.

3378. Family Estate Planning (3:3:0). Prerequisite: GPA of 2.5 and successful completion of FFP 1370, 2310, and ACCT 3307. A foundation course in family estate planning.

4000. Individual Study (V1-6). Prerequisite: Written consent of supervising faculty member prior to registration. Individual study or research under the guidance of a family financial planning faculty member to enhance the degree program. May be repeated for up to 6 hours credit.

4370. Family Financial Planning Capstone (3:1:3). Prerequisite: GPA of 2.5 and successful completion of FFP 3374, 3375, 3378, ACCT 3307, and FIN 4324. Integrates the financial planning content areas into the development of comprehensive financial plans. Course work includes case studies and work with clients.

4375. Financial Planning in Institutional Setting (3:3:0). Prerequisite: GPA of 2.5 and successful completion of all 3000 level FFP courses. Focuses on delivering financial planning and counseling services through public and private employer-based systems.

4376. Family Financial Analysis (3:1:3). Prerequisite: GPA of 2.5, successful completion of all 3000 level FFP courses, ACCT 3307 and FIN 4324 with grades of C or higher. The evaluation of client risk tolerance, analysis of asset manager's historic performance, and the creation of portfolios using mutual funds and variable annuities.

4377. Family Financial Planning and Counseling Seminar (3:3:0). Prerequisite: GPA of 2.5 and successful completion of all 3000 level FFP courses. Analysis of ethical issues involving financial planners and counselors. Examines impact of public policy and demographic trends.

4380. Advanced Technological Applications in Family Financial Planning (3:1:3). Prerequisite: FFP 4370. Advance course work in professional software packages for financial planning and investment portfolio applications.

4399. Internship in Family Financial Planning (3:1:6). Prerequisite: All FFP 3000 level courses, ACT 3307, and FIN 4324 completed with a grade of C or higher. Supervised intern experiences in established career-related positions. May be repeated for credit.

Interior Design (I D)

1380. Introduction to Interior Design (3:3:0). A survey of basic principles and concepts including aesthetics and processes relevant to planning residential and nonresidential environments.

1382. Interiors I (3:1:4). Corequisite: I D 1380. Introduces principles and concepts including processes relevant to planning residential and nonresidential environments.

2380. Interiors II (3:1:4). Prerequisite: A grade of C or higher in I D 1380, 1382, and ARCH 1441 (or concurrent enrollment). Introduces skills necessary to design, analyze, and present concept, preliminary, working, and presentation drawings.

2383. Interiors III (3:1:4). Prerequisite: A grade of C or higher in I D 2380 and ARCH 1442 (or concurrent enrollment). Graphic media application in rendering and presentation methods. Perceptual development in volumetric organization relative to 2 and 3 dimensional design.

3190. Preinternship Seminar (1:1:0). Prerequisite: Junior standing, I D 3385 and 3386 or concurrent enrollment, and a 2.0 cumulative GPA; enrollment required in spring immediately preceding I D 4307. Emphasis on preparation for interior design internship, career opportunities, job search, and interview strategies.

3311. Textiles for Interiors (3:2:2). Prerequisite: A grade of C or higher in FADS 2311. Characteristics and composition of contemporary textiles used in nonapparel products. (Writing Intensive)

3381. Lighting Systems (3:2:2). Prerequisite: A grade of C or higher in I D 2380 or equivalent. Survey of the human factors relating to the luminous environment that support health, safety, comfort, human performance, and aesthetics.

3382. Period Furnishings I (3:3:0). Introduction to furniture and interior elements through the 17th century. Emphasis on the evolution of forms, relationships to previous periods, and implications for current design applications.

3383. Period Furnishings II (3:3:0). Prerequisite: A grade of C or higher in I D 3382. Introduction to furniture and interior elements from 18th, 19th, and 20th centuries. The evaluation of forms, relationships to previous periods, and implications for current and future designs are emphasized.

3385. Advanced Design Processes (3:1:4). Prerequisite: A grade of C or higher in I D 3381, 3387, ENGL 2311 or concurrent enrollment, and successful completion of sophomore portfolio review. Emphasis on problem formulation, programming, design conceptualization, design development, working drawings, specifications, schedules, furniture selection, layout and design presentation, universal design, life safety, and building codes. (Writing Intensive)

3386. Studio Procedures and Professional Practices for Interior Designers (3:3:0). Prerequisite: Junior standing, interior design. Professional opportunities as they relate to individual competencies. Preparation of business documents. Study of the ethics, business, and legal aspects of studio procedures.

3387. Computer Aided Drafting for Interior Designers I (3:1:4). Prerequisite: A grade of C or higher in I D 2380 or equivalent. Introduction to computer-aided design and drafting for the interior designer and other uses of computers in the two-dimensional practice of interior design.

4000. Individual Study (V1-6). Prerequisite: Written consent of supervising faculty member. May be repeated for up to 6 hours credit.

4104. Senior Portfolio Seminar (1:1:0). Prerequisite: 2.0 GPA and senior standing in interior design. Analysis of professional issues with emphasis on portfolio development and review.

4307. Internship in Interior Design (3:1:6). Prerequisite: Departmental approval and a grade of C or higher in I D 3190, 3385, and 3386. Supervised intern experiences in established career-related positions. May be repeated as I D 4000 Individual Study.

4380. Contemporary Issues in Interior Design (3:3:0). A survey of current issues in interior design including environmental and energy concerns, laws and codes, accessibility, indoor air quality, acoustics, and other related topics.

4383. Computer-Aided Drafting for Interior Designers II (3:1:4). Prerequisite: A grade of C or higher in I D 3387 or consent of instructor. Advanced three-dimensional computer-aided design and drafting for the interior designer and other uses of computers in the practice of interior design.

4385. Advanced Interiors (3:1:4). Prerequisite: A grade of C or higher in I D 3385. Advanced experiences in residential and nonresidential design that integrate problem solving skills, building systems, techniques of graphic expression, materials and specifications, and aesthetic sensibility.

4406. Collaboration Studio (4:1:9). Prerequisite: A grade of C or higher in I D 3385. An interdisciplinary studio for the design profession that addresses the process and skills necessary for collaboration.

Fashion Design (FADS)

1301. Introduction to Apparel Design (3:3:0). Overview of apparel design room practices. Emphasis on the business, art, and craft of apparel design.

1303. Clothing Construction (3:1:4). Application of basic apparel assembly methods, including the fundamentals of fit and use of home sewing machines and sergers.

1304. Intermediate Clothing Construction (3:1:4). Prerequisite: FADS 1303. Intermediate apparel assembly, alteration of commercial patterns, use of industrial sewing machines, and selection of appropriate fabrics.

2302. Fashion Illustration (3:1:4). Prerequisite: ART 1320, 1324. Illustration techniques for the fashion figure and rendering of garment details using various media. Includes color theory applied to fashion drawing and portfolio development.

2308. Flat Pattern Design (3:1:4). Prerequisite: FADS 1301, 1303. Application of basic flat pattern techniques to bodices, skirts, sleeves, neckline, and bodice-sleeve combinations.

2310. Design Through Draping (3:1:4). Prerequisite: FADS 2308. Application of design principles interpreted through draping techniques. Development of original designs for missy, plus sizes, menswear, and childrenswear.

2311. Textiles (3:3:0). Selection, use, and care of textiles in relation to fiber characteristics, yarn, and fabric structure.

3303. Tailoring (3:1:4). Prerequisite: Fashion design core. Advanced patternmaking, fit, construction, assembly, and finishing techniques for lined, tailored apparel. Emphasizes jackets and coats.

3305. Computer Applications in Apparel Design (3:1:4). Prerequisite: Fashion design core. Computer-aided design methods for product development, including design, illustration, specification, costing, patternmaking, and plotting. Use of CAD in portfolio development.

3307. Apparel Evaluation and Fit (3:3:0). Prerequisite: Fashion design core. Evaluation of apparel products with emphasis on apparel quality and its relation to structure, aesthetics, cost, performance, and fit.

3310. Knitted Textile and Apparel Design (3:1:4). Prerequisite: Fashion design core. Design and production of textiles on knitting machines. Emphasis on knit structures and methods for cut and sew apparel.

3312. History and Philosophy of Dress (3:3:0). Prerequisite: Junior standing. Apparel throughout the ages as reflected in cultures of the past and as an influence on contemporary design. (Writing Intensive)

4000. Individual Study (V1-6). Prerequisite: Written consent of supervising faculty member prior to registration. Individual study or research under the guidance of a fashion design faculty member to enhance the degree program. May be repeated for up to 6 hours credit.

4389. Professional Practices for Fashion Design (3:1:2). Prerequisite: A grade of C or higher in all fashion design courses and senior standing. Planning and implementing strategies necessary for securing career positions in fashion design.

4307. Apparel Manufacturing (3:1:4). Prerequisite: Fashion design core. Mass production strategies, including product development, sizing, grading, marking, costing, and manufacturing. Implementation of strategies for developing individual apparel collections.

4309. Surface Design (3:1:4). Prerequisite: Fashion design and art core. Exploration of textile dying, printing, and painting with emphasis on composition using varied media and materials.

4310. Apparel Product Development (3:1:4). Prerequisite: Fashion design core and junior standing. Research, planning, and development of an apparel collection for a target market, meeting relative workmanship, cost, and quality standards.

4390, 4391. Internship in Fashion Design (3:1:6 each). Prerequisite: A 2.0 cumulative GPA and a grade of C or higher in FADS 3303, 3305, 3310, 4389, 4307, 4309, and 4310. Applied problems in fashion design emphasizing student participation in business and industry.

Merchandising (MER)

1340. Introduction to Merchandising (3:3:0). Basic merchandising principles, concepts, and practices in the operation of retail organizations.

2340. Contemporary Issues in Merchandising (3:3:0). Prerequisite: A grade of C or higher in MER 1340. Fundamental principles and current issues that affect merchandising; emphasis on related influences from government, economics, technology, and society.

2370. Merchandise Planning and Control I (3:3:0). Prerequisite: A grade of C or higher in MER 1340, MATH 1330, 1331; corequisite: ISQS 2440. Introduction to numerical terminology, concepts, related calculations, and computer software involved in solving merchandise management problems mathematically.

3340. International Merchandising (3:3:0). Prerequisite: A grade of C or higher in MER 2340, ENGL 2311, ECO 2305. Cultural differences, world markets, and political constraints encountered in international merchandising strategy. (Writing Intensive)

3360. Diversity Concepts and Skills (3:3:0). Prerequisite: A grade of C or higher in MER 2340, 2370. Basic diversity issues and concepts, emphasis on application to the merchandising function.

3370. Merchandise Planning and Control II (3:3:0). Prerequisite: A grade of C or higher in MER 2340, 2370, ISQS 2440, ACCT 2300. Advanced application of numerical terminology, concepts, and related calculations involved in solving merchandise management problems mathematically with focus on computer simulations.

4000. Individual Study (V1-6). Prerequisite: Written consent of supervising faculty member prior to registration. Individual study or research under the guidance of a merchandising faculty member to enhance the degree program. May be repeated for up to 6 hours credit.

4330. Merchandising Research (3:3:0). Prerequisite: A grade of C or higher in MER 3340, 3370, MKT 3350. Research in the merchandising process; emphasis on application-oriented techniques and processes for implementation.

4360. Merchandise Management (3:3:0). Prerequisite: A grade of C or higher in MER 3370, MGT 3370, COMS 3358 or MGT 3373. Interrelated functions in merchandise management examined through case study. (Writing Intensive)

4370. Merchandise Promotion (3:3:0). Prerequisite: A grade of C or higher in MER 2340, 3360, MKT 3350. Merchandise communication through the interaction and coordination of sales promotion, personal selling, visual merchandising, advertising, special events, and public relations.

4389. Professional Practices in Merchandising (3:3:0). Prerequisite: Senior standing, departmental approval, and a 2.0 cumulative GPA; enrollment precedes MER 4390, 4391. Focuses on ethics and effective managerial strategies; emphasizes the relationship of total curriculum to the profession.

4390, 4391. Internship in Merchandising (3:1:6 each). Prerequisite: Departmental approval, a 2.0 cumulative GPA, and a grade of C or higher in MER 3340, 3360, 3370, 4330, 4360, 4370, 4389; MGT 3370; MKT 3350, 3352 or 3353, 4351, 4359 or 4360; ACCT 2301 or MGT 3376. Supervised applications of concepts, principles, and techniques learned in the classroom; emphasis on student participation in business or industry.

College of Visual and Performing Arts

Professor Garry W. Owens, *Dean*

Web Site: www.vpa.ttu.edu

The College of Visual and Performing Arts offers a diverse array of programs and courses in art, music, theatre, and dance. The college seeks to prepare students who will be leaders in the profession by employing the highest standards in performance, teaching, research, and artistic and creative vision. The college provides students with opportunities to be innovative and confident, to think critically, and to be successful in their chosen field. Our courses and degrees emphasize synthesis and connection via academic and creative programs, internships, and service learning. The college contributes cultural enrichment and an understanding of the arts locally, regionally, nationally, and internationally.

Core Curriculum Requirements. The Core Curriculum requirements ensure breadth in each academic program. These requirements have been incorporated into the college's various degree programs. Students should consult the Core Curriculum section of this catalog for a listing of courses that satisfy the requirements in each category.

Major, Minor, and Electives. In addition to Core Curriculum requirements, students must take major, minor, and elective courses sufficient to total 125-153 semester hours. The minor (if applicable) may be any departmental minor from outside the major, an established interdisciplinary minor, or a student-initiated interdisciplinary minor (with approval of the appropriate associate dean of the college). Many departments and programs have residency requirements for the major and minor. See departmental or program listings for specific information.

Students should have selected their major and minor (if applicable) fields by the time they reach their junior year. For the major subject they will be required to complete a minimum of 30-36 semester hours including 6 hours of intensive writing courses. As indicated in the degree programs on the following pages, some majors require more than the 30-hour minimum. At least 18-24 hours of the major subject must be in courses at the junior-senior level. For the minor, a minimum of 18 semester hours must be completed (except in foreign languages—explained under the department), at least 6 of which must be junior or senior level courses. All courses in the major and minor must be approved by the appropriate academic unit. A minimum of 40 semester hours of junior and senior work must be presented in the total degree. Information regarding graduate programs offered by the college is available in the *Graduate Catalog.*

Course Load. A normal full-time course load is 12-19 hours per long semester. In calculating the course load, the dean will consider all active correspondence courses as a part of the course load. Course loads in excess of 19 semester hours require approval by an associate dean in the college. The maximum course load for a student on probation is 16 hours. The normal course load for a single summer term is 6-8 hours. To meet graduation requirements, a graduating senior may petition to take 9 hours one summer term or a total of 15 hours across both summer terms.

Correspondence Courses. Approval for courses to be taken by correspondence must be obtained from the Dean's office, 222 Administration. All prerequisites must be met in order to be granted enrollment. A maximum of 18 credit hours can be applied to degree program requirements, with no more than 6 credit hours completed during the final 30 credit hours. Approval will be granted for one course at a time. Junior status is required to enroll in upper division correspondence courses.

Catalog Selection. Students must use the catalog issued for the year in which they were first officially admitted to the college, or a more recent catalog if approved.

However, if they are not enrolled at Texas Tech for one academic year or transfer to another institution or another college at Texas Tech, they must be readmitted to the College of Visual and Performing Arts and use the catalog in effect at the time of readmission. For graduation purposes, a catalog expires after seven years at which time the current catalog becomes the catalog in effect.

Credit by Examination. A matriculated student may attempt credit by examination (described elsewhere in this catalog) by obtaining written approval from the Dean's office. Approval is required to take an examination a second time before six months have elapsed or if more advanced material in the same subject has already been completed.

Grading Practices. The college conforms to university grading practices as set forth in the major section entitled "Academic Regulations" in this catalog.

Credit for a course in which a grade of D is earned may not be applied toward fulfillment of the major (sometimes including adjunct requirements), minor, or teaching field requirements for any degree program.

Except for those courses designated "may be repeated for credit" in this catalog, no course may be used more than once on a degree plan unless it has been approved by the Dean in the college.

Second Bachelor's Degree. Permission to enroll in courses to pursue a second bachelor's degree must be obtained from the office of the Dean in the college. No second bachelor's degree is conferred until the candidate has completed at least 24 semester hours in residence in addition to the courses counted toward the first bachelor's degree. Credit by examination and correspondence courses will not satisfy the 24-hour residence requirement.

Freshman Year. Entering freshmen develop their programs in conference with an academic advisor. The students report to their advisors for such individual conferences or group meetings as are needed for the purpose of orienting themselves to academic regulations and procedures, curricula, and degree requirements in their various areas of interest.

Admission of Transfer Students. Students transferring from another academic institution must meet the university-wide admission requirements stated in an earlier section of this catalog as well as admission requirements of the specific school or department in the college to which the student is applying. Students requesting to transfer from another college at Texas Tech must have an adjusted cumulative GPA of at least 2.0 and must meet admission requirements of the specific school or department in which they are applying. In addition, the student must provide the Dean with a transcript of all academic work. Approval will be granted by the Dean. The College of Visual and Performing Arts will determine the applicability of any transferred credit to academic programs.

Final 30 Credit Hours. The final 30 credit hours of a degree program must be completed in residence at Texas Tech. A maximum of 6 of these credit hours may be taken by Texas Tech correspondence. Credit for courses taken without prior approval may not be applied to degree program requirements.

Degree Plan and Intention to Graduate. Students are encouraged to file degree plans with the Dean as soon as their academic goals are clearly defined. Students must file degree plans after completing 60-70 hours of course work and no later than one year prior to the intended semester of graduation. The Intention to Graduate form must be submitted no later than one year before the proposed date of graduation.

Teacher Education. Prospective teachers should refer to the section of this catalog describing teacher education and also consult the College of Education and the chair or undergraduate advisor of the school or department in which they wish to major within the College of Visual and Performing Arts.

Degrees

Bachelor of Arts. The requirements for the Bachelor of Arts degree in the College of Visual and Performing Arts are the same as those of the College of Arts and Sciences. The degree is administered by the College of Visual and Performing Arts. Please consult the requirements listed under the College of Arts and Sciences section of this catalog.

Bachelor of Fine Arts. The curriculum leading to the Bachelor of Fine Arts degree provides highly professional programs in theatre arts, visual studies, design communication, and studio areas. Requirements for the B.A. degree apply unless specifically shown to the contrary. All Bachelor of Fine Arts degrees are undergoing revisions to incorporate elements of new requirements in the College of Visual and Performing Arts. The following curriculum tables for the different degree tracks are for students who entered Texas Tech *prior to fall 2002*. Students entering Texas Tech in *fall 2002 or later* should consult an advisor in the appropriate school or department within the college.

Semester Hours

1. **English 12**
2. **Required Political Science & History .. 12**
3. **Oral Communication 3**
4. **Mathematics and Logical Reasoning 6**
5. **Natural (Laboratory) Science 8**
6. ***Technology 3**
7. ****Individual or Group Behavior 3**
8. **Humanities 3**
   May be satisfied within English requirement.
9. **Personal Fitness and Wellness 2**
10. **†Foreign Language 10**
11. **Multicultural Requirement 3**
    3 hours of course work chosen from the Core Curriculum requirements approved list. This course may be used to satisfy another General Degree requirement. Consult the School of Art or the Department of Theatre and Dance.

12a. **Theatre Arts 90**
12b. **Visual Studies 73**
(leading toward teacher certification)
12c. **Design Communication 82**
12d. **Studio Art 82**

Total for degree 125-153

*No additional hours required if satisfied within the requirements for the art and theatre majors.

**No additional hours required if ART 3311 or 4315 is included in upper level art history requirements for art majors.

†Entering students are expected to have had four semesters of a single foreign language in high school. Students who do not meet this requirement will be required to complete two semesters of a single foreign language.

Bachelor of Music. Bachelor of Music degrees are offered with majors in Performance, Music Composition, Music Theory, and Music (leading to teacher certification). All Bachelor of Music degrees are undergoing revisions to incorporate elements of new requirements in the College of Visual and Performing Arts. The following curriculum tables for the different degree tracks are for students who entered Texas Tech *prior to fall 2002*. Students entering Texas Tech in *fall 2002 or later* should consult an advisor in the appropriate school or department within the college.

Semester Hours

1. **English 6-12**
   MUCP, MUPF, MUTH majors 6
   MUTC majors 12
2. **Oral Communication 3**
3. **Mathematics and Logical Reasoning 6**
   6 hrs math; or 3 hrs math plus PHIL 2310 or MUTH 3303
4. **Foreign Language 16**
   Entering students are expected to have had four semesters of a foreign language in high school. Students who do not meet this requirement will be required to complete two semesters of a single foreign language.
5. **Humanities 3**
   3 hours of literature taken in the English requirement will also satisfy this requirement.
6. **Natural (Laboratory) Science 8**
7. **Technology and Applied Science 3**
8. **Required Political Science & History .. 12**
9. **Individual or Group Behavior 3**
10. **Personal Fitness and Wellness 2**
11. **Multicultural Requirement 3**
    3 hours of course work chosen from the Core Curriculum requirements approved list. This course may be used to satisfy another General Degree requirement.
12. **Music Courses**
    MUPF 75-90
    MUCP 94
    MUTH 85
    MUTC 67-75
13. **Professional Education 18**
    (teacher certification only)

Total for degrees

MUPF 126-137
MUCP 137
MUTH 134
MUTC 131-139

School of Art

Director: Professor Don Wink

Professors Dingus, Dixon, Fuentes, Gibbons, Kreneck, Morrow, and Waters; ***Associate Professors*** Check, Fehr, Germany, Glover, Granados, Lloyd, Martin, Reed, Slagle, Steele, Stinespring Tate, and Tedeschi; ***Assistant Professors*** W. Cannings, Flueckiger, D. Fowler, and Ricco; ***Part-time Instructors*** S. Cannings, Fairbetter, C. Fowler, Hanna, Hartsfield, Howell, Locke, Milosevich, and Rasberry.

This school supervises the following degree programs: VISUAL STUDIES (leading to teacher certification), DESIGN COMMUNICATION, and STUDIO ART, *Bachelor of Fine Arts*; ART HISTORY, *Bachelor of Arts*; ART EDUCATION, *Master of Art Education*; ART, *Master of Fine Arts*; FINE ARTS, *Doctor of Philosophy* with a major in Art. The school's degree programs are accredited by the National Association of Schools of Art and Design.

Mission Statement. The mission of the School of Art is to provide a stimulating and challenging environment in which students develop creative and scholarly potential, to support faculty members in the pursuit of excellence in teaching and research, to serve and lead public and professional constituencies, and to facilitate intercultural understandings through art.

Degree programs engage students in art through an examination of contemporary, historical, and cross-cultural issues, ideas, and actions in relation to multiple, diverse, and global visual cultures. The School of Art emphasizes exhibition opportunities, contemporary technologies, interdisciplinarity, and critical discourse. The school offers students the opportunity to minor in art history, studio art, or fine art photography. Nonmajors who desire experiences in the visual arts as part of their liberal education will find a varied selection of course offerings.

Transfer Students. The freshman and sophomore art curriculum is consistent with the art curriculum for higher education approved by the Coordinating Board. The School of Art at Texas Tech therefore respects the standard art core curriculum with regard to transfer credit. In some cases, a portfolio of previous work in art and a transcript of completed courses may be necessary for the purposes of advising and placement in the degree program.

Advanced Placement. Entering art majors may be considered for advanced placement in the freshman core program through the College Board Advanced Placement Program (AP) or the School of Art Portfolio Review. Art majors who score a 4 or 5 on the College Board Portfolio Exams in Drawing and/or General Studio will receive credit for the first drawing and/or design course (ART 1320, 1324). Students may also be considered for advanced placement by presenting a comprehensive portfolio of artwork to the School of Art Advanced Placement Review Committee. Advanced placement credit by portfolio examination is a service provided to students who declare a major in art. It is not intended for students minoring in art or seeking to fulfill a fine arts general education requirement. Students who are awarded advanced placement through the College Board Advanced Placement Program (AP) or School of Art examination may earn 6 hours of college credit. Entering art majors who receive a 4 or 5 on the College Board Advanced Placement Program in Art History will be exempt from taking ART 1310 and 1311. Majors who receive AP Art History credit must take three upper-level art history courses. The School of Art also provides students majoring in design communication the opportunity to receive placement credit for ART 1381 and 1382 through a performance test offered each semester. Further information may be obtained by writing or calling the school.

Individualized Programs. Through a unified foundations program, the School of Art prepares students to develop increasingly specialized and diverse courses of study. No grade below C is accepted for transfer credit in majors, minors, or specializations. Most upper level art courses are repeatable for credit and allow for individualized instruction.

Studio Art Centers International (SACI). Texas Tech University's association with SACI offers students the opportunity to study studio art, art history, and Italian language in the heart of Florence, Italy. Year-long or summer study opportunities take full advantage of the rich past of Florence, its artistic resources, cultural offerings, and SACI's premier art facility and faculty. SACI is an accredited institutional member of the National Association of Schools of Art and Design.

School Residency Requirements. Students working toward a Bachelor of Fine Arts degree in visual studies, design communication, or studio art must complete a minimum of 30 hours of art in residence, 24 of which must be upper division courses. Students working toward a Bachelor of Arts degree in art history must complete at least 12 hours of upper division art history courses. At least 6 hours of upper division art courses must be taken in residence for all minors in this school.

Correspondence Courses. Major or minor courses may not be taken by correspondence.

Writing Intensive Requirement. Six hours of the major must be in writing intensive courses. Students may satisfy this requirement by completing art history courses numbered 3000 or above (except 3312) and designated studio and/or design courses.

Technology and Applied Science Requirement. Students pursuing the B.F.A. in Studio may satisfy this requirement by completing four courses from the following list: ART 2326, 2327, 2328, 2330, 2331, 2334, 2338, 2339, 3326, 3327, 3328, 3330, 3331, 3334, 3338, 3339, 4326, 4328, 4330, 4334, and 4338. Students pursuing the B.F.A. in Visual Studies may satisfy this requirement by completing ART 3362. Students pursuing the B.F.A. in Design Communication may satisfy this requirement by completing four courses in the major with the exception of ART 2381, 2382, 4354, and 4355.

Art Minors. Students working toward any minor in art must complete a minimum of 18-21 semester hours, which must include 6 hours of junior and senior level courses. Hours applied to the minor area of study may not include courses used to fulfill requirements in the student's major. These courses, however, may make the student eligible, immediately, for upper division courses throughout the 18-21 hours of the art minor. The area of design communication does not offer a minor. Some specific tracks for a minor in art are as follows.

Art History Minor. Students working toward an art history minor must complete a minimum of 18 hours and include ART 1310, 1311, and 3312. The remaining 9 hours must be chosen from a menu of 11 different courses offered at the 3000 and 4000 level. These courses are: ART 3310, 3311, 3314, 3315, 3316, 3317, 3318, 3319, 4310, 4311, 4315. Students minoring in art history are required to take at least two upper level courses in art history in residence.

Studio Art Minor. Students working toward a minor in studio art must complete a minimum of 18 hours, beginning with ART 1320 and 1324. The remaining 12 hours are ART 1309 (ART 1310 or 1311 may substitute) and any 2000 or 3000 level studio course for which the student has the prerequisite or permission of the instructor. Six of the 18 hours of the studio minor must be taken at the junior and senior level in residence.

Fine Art Photography Minor. Students working toward a minor in photography must complete a minimum of 21 hours. The following courses are to be taken in sequence: ART 1320 and 1324, plus ART 2326*, 2327, 3319 (or ART 1309), 3326, 4326, or 3326 with a different emphasis. Six of the 21 hours of the photography minor must be taken at the junior and senior level in residence.

Art Core. All students majoring in art are required to take 22 hours of core courses that consist of the following:

ART 1100, Introduction to Art
ART 1324, Drawing I: Introduction
ART 1325, Drawing II: Introduction
ART 1320, Design I: Introduction
ART 1331, Design II: Introduction
ART 1310, Art History Survey I
ART 1311, Art History Survey II
ART 3312, Art History Survey III

Visual Studies Major, B.F.A. Degree. The Bachelor of Fine Arts in Visual Studies (leading toward art teacher certification) prepares graduates to teach critical reflection and creative visual expression in multiple settings (schools, museums, community, and regional art programs), assume community and state leadership roles within the field of art education, and innovate curricular content based on contemporary cultural developments and community needs. The curriculum critically responds to mainstream, "fine art," popular, mass media, and other normalized images. Course work emphasizes contemporary theories and issues in art and education, such as contemporary art, intercultural issues, community activism, instructional technology, critical pedagogy, alternative resources, and dynamic teaching.

The B.F.A. degree with a visual studies major requires 73 semester hours of art and art history, 18 semester hours of professional education, and 46-62 semester hours of general requirements as stipulated by the College of Visual and Performing Arts. The minimum number of hours required for the visual studies major (leading to teacher certification) is a total of 137 credit hours. A minimum of 40 credit hours of junior and senior level courses are required for graduation.

The Bachelor of Fine Arts degrees are undergoing revisions to incorporate elements of new requirements in the College of Visual and Performing Arts. The following curriculum tables for the different degree tracks are for students who entered Texas Tech *prior to fall 2002*. Students entering Texas Tech in *fall 2002 or later* should consult an advisor in the School of Art.

General Requirements *Semester Hours*

English 12
CLEP allowed. In addition to ENGL 1301 and 1302, students must take two literature courses. Recommended courses are ENGL 2301 and 2302. Students may choose CLAS 1310 or ENGL 2311 to fulfill 3 hours of this requirement if they also take ENGL 2302, 2305, 2306, or 2307.
Oral Communication 3
COMS 2300, 3358 or HDFS 2320*
Mathematics and Logical Reasoning: 6
MATH 1320 or higher. CLEP allowed. MATH 0301, 0302, 3430, PSY 3403, SOC 3391, and MUTH 3303 may not be used to fulfill any part of this requirement.
Natural (Laboratory) Science* 8
Technology 3
ART 3362 may be used to fulfill this requirement.
American History (HIST 2300 and 2301) 6
Students normally will enroll in HIST 2300 and 2301, although any American history course will satisfy this requirement. CLEP allowed. Three hours must be taken in residence.
Political Science (POLS 1301 and 2302) 6
CLEP allowed. 3hours must be taken in residence.
Personal Fitness and Wellness 2
Select courses from Bachelor of Arts general requirements.
Foreign Language 10
Entering students are expected to have two years of foreign language training. Students who do not meet this requirement will be required to take one year of a single foreign language. CLEP allowed.
Multicultural Requirement 3
ART 1310, 1311, 3310, 3311, 3315, 3317, 3318, and 4315 may be used to fulfill this requirement.
Individual and Group Behavior 3
ART 3311 or 4315 may be used to fulfill this requirement.

Professional Education Requirements

Students should contact the College of Education concerning professional education course requirements for all-level certification and secondary art certification.

All-Level Certification

EDSE 4310 3
EDSE 4322 3
EDLL 4380 3
ART 4362 3
ART 4365 3
ART 4001 3-6
ART 4000 3-6

Art Courses

Freshman Core Studio 13
ART 1100, 1320, 1324, 1325, 1331
Art History Core 9
ART 1310, 1311, 3312
Visual Studies Core 12
ART 2364, 3362, 3364, 3365
2-Dimensional Studio Art 9
Choice of three ART 2320, life drawing; ART 2322, painting; ART 2328, printmaking; and ART 2326, photography
3-Dimensional Studio Art 9
Choice of three ART 2330 or 2331, ceramics; ART 2334, metals, and ART 2338 or 2339, sculpture
Art Electives* 6
6 SCH of 2000 level or above of which 3 SCH is art history
Studio Area of Emphasis* 12
12 SCH of 3000/4000 level courses

Senior Seminar for Studio Art Majors 3
ART 4335
Upper-level Art History* 3
If either ART 3311 or 4315 is not included in upper level art history requirements, an additional 3 hours of Individual and Group Behavior must be included under Core Curriculum requirements.

*Consult with faculty advisor.

Design Communication Major, B.F.A. Degree. The Bachelor of Fine Arts in Design Communication addresses the complexities and changing aspects of the profession. Problem-solving, conceptual development, and technological skills are essential components to the learning process. Emphasis is placed on the integration of form and information for the purpose of effective communication. To engage students in a critical understanding of the implications of their work, this program also emphasizes social responsibility.

The design communication curriculum consists of 82 semester hours of art and art history courses and 43-62 semester hours of general requirements as stipulated by the College of Visual and Performing Arts. The minimum number of hours required for majors in design communication is 125 with a minimum of 40 upper level credit hours required for graduation.

Undergraduate Application Procedure and Admissions Policy. As of 2002-2003 the design communication program has adopted a new undergraduate admissions policy. Admission for all undergraduate applicants is based upon program acceptance. Applicants must achieve a minimum cumulative GPA of 3.0 in ART 1324, 1325, 1320, and 1331 at course completion. Applicants must submit an Entrance Review Application for review. The application may be downloaded at www.art.ttu.edu. See the Web site for detailed information and deadlines.

Minimum Grade Requirement. After acceptance into the program, students must meet and maintain a minimum grade of B in all design communication courses. If a B is not achieved, the course must be retaken. A course may be retaken once for grade replacement. If a grade of B has not been achieved after retaking the course, design communication status will be revoked.

Portfolio Review. Prior to enrolling in ART 4382 (Portfolio Development), students are required to present a portfolio for review. Students must successfully pass the review before being granted entrance into the portfolio class. If a student does not pass the review, prescription courses will be assigned before granting enrollment.

General Requirements *Semester Hours*

English 12
CLEP allowed. In addition to ENGL 1301 and 1302, students must take two literature courses. Recommended courses are ENGL 2301 and 2302. Students may choose CLAS 1310 or ENGL 2311 to fulfill 3 hours of this requirement if they also take ENGL 2302, 2305, 2306, or 2307. ENGL 3211 or 2351 may also be used to fulfill 3 hours of this requirement.
Mathematics and Logical Reasoning 6
CLEP allowed. Approved courses in logic may be substituted for the last 3 hours of this requirement. MATH 0301, 0302, 3430, PSY 3403, SOC 3391, and MUTH 3303 may not be used to fulfill any part of this requirement.
Oral Communication 3
COMS 2300, 3358, or HDFS 2320*
American History (HIST 2300 and 2301) 6
Students normally will enroll in HIST 2300 and 2301, although any American history course will satisfy this requirement. CLEP allowed. Three hours must be taken in residence.
Political Science (POLS 1301 and 2302) 6
CLEP allowed. Three hours must be taken in residence.
Natural (Laboratory) Science 8
Technology* 3
Personal Fitness and Wellness 2
Select courses from Bachelor of Arts general requirements.
Foreign Language 10
CLEP allowed. Entering students are expected to have 2 years of foreign language training. Students who do not meet this requirement will be required to take 1 year of a single foreign language.
Multicultural Requirement 3
ART 1310, 1311, 3310, 3311, 3315, 3317, 3318, and 4315 may be used to fulfill this requirement.
Individual and Group Behavior* 3

Art Courses

Freshman Core Studio 13
ART 1100, 1320, 1324, 1325, 1331
Art History Core 9
ART 1310, 1311, 3312
Design Communication Core 12
ART 1381, 1382, 2381, 2382
Upper Level Art History 3
Including ART 3311 and 4315
Design Comm. Emphasis & Electives 33
Studio Art Electives* 12

*See advisor for recommendation.

Studio Art Major, B.F.A. Degree. The Bachelor of Fine Arts in Studio Art offers depth in the studio areas and requires 82 hours of art and art history courses in addition to the 43-62 hours of general requirements as stipulated by the College of Visual and Performing Arts. One-third of the semester hours in studio art above the core must be outside the student's area of emphasis and must be chosen with advisor approval. The minimum number of hours required for majors in Studio Art is 125. A minimum of 40 credit hours of junior and senior level courses are required for graduation.

Upon completion of the studio and art history core courses, students select an area of emphasis from ceramics, drawing, jewelry and metals, painting, photography, printmaking, or sculpture, with the approval of faculty advisors. Within the studio art major and after approval of an advisor, a student may take a distribution of courses that combine digital media, photography, and printmaking. This combination of courses will enable students to experiment with various media and the technical aspects of digital imagery in creating fine art.

General Requirements *Semester Hours*

English 12
CLEP allowed. In addition to ENGL 1301 and 1302, students must take two literature courses. Recommended courses are ENGL 2301 and 2302. Students may choose CLAS 1310 or ENGL 2311 to fulfill 3 hours of this requirement if they also take ENGL 2302, 2305, 2306, or 2307.

Mathematics and Logical Reasoning 6
CLEP allowed. Approved courses in logic may be substituted for the last 3 hours of this requirement. MATH 0301, 0302,3430, PSY 3403, SOC 3391, and MUTH 3303 may not be used to fulfill any part of this requirement.

Oral Communication 3
COMS 2300, 3358, or HDFS 2320*

American History (HIST 2300 and 2301) 6
Students normally will enroll in HIST 2300 and 2301, although any American history course will satisfy this requirement. Credit by examination for part of this requirement is available, but 3 hours must be taken in residence.

Political Science (POLS 1301 and 2302) 6
Credit by examination for part of this requirement is available, but 3 hours must be taken in residence.

Natural (Laboratory) Science 8

Technology* 3

Personal Fitness and Wellness 2
Select courses from Bachelor of Arts general requirements.

Foreign Language 10
Entering students are expected to have two years of foreign language training. Students who do not meet this requirement will be required to take one year of a single foreign language. CLEP allowed.

Multicultural Requirement 3
ART 1310, 1311, 3310, 3311, 3315, 3317, 3318, and 4315 may be used to fulfill this requirement.

Individual and Group Behavior 3
ART 3311 or 4315 may be used to fulfill this requirement.

Art Courses

Freshman Core Studio 13
ART 1100, 1320, 1324, 1325, 1331

Art History Core 9
ART 1310, 1311, 3312

Upper Level Art History 3
Including ART 3311 and 4315. If either ART 3311 or 4315 are not included in upper level art history requirements, an additional 3 hours of Individual and Group Behavior must be included under Core Curriculum requirements.

Life Drawing 6
ART 2320, 3320 If drawing is the student's area of emphasis, ART 2320 and 3320 in the drawing emphasis will need to be replaced with 6 hours of studio electives to total the required hours.

2-Dimensional Studio Art 6
Choice of two: ART 2322, painting; ART 2328, printmaking; and ART 2326, photography

3-Dimensional Studio Art 9
Choice of three: ART 2330 or 2331, ceramics; ART 2334, metals; and ART 2338 or 2339, sculpture

Studio Area of Emphasis* 21
21 SCH of which 18 must be upper level

Studio Art Electives* 12
Exclusive of area of emphasis. 12 SCH at the 3000 level or above; one course may be upper level art history

Senior Seminar 3
ART 4335 Studio Art and Visual Studies Majors

*Consult with faculty advisor.

Art History Major, B.A. Degree. Students working toward an art history major must complete the freshman core in art, 24 hours of upper level art history courses selected with the written consent of an advisor (at least 12 of which must be taken in residence and include a senior thesis comprised of 3 hours), and other requirements for the Bachelor of Arts degree. An art history major is required to minor, subject to approval by the art history area advisor, in a field outside the school. The minimum number of hours required for majors in Art History is 125.

Art (ART)

1100. Introduction to Art (1:1:0). Introduction to Art as an academic pursuit with its diverse elements and opportunities—objectives, resources, careers, and achievements. Required of all art majors prior to admission to upper level courses. Offered fall semester only. Transfer credit acceptable. Pass-fail grading. For majors only.

1309. Art Appreciation (3:3:0). Survey of the visual arts of western and nonwestern cultures with emphasis on understanding art through form, content, and cultural context. Nonmajors and art minors only. [ARTS 1301]

1310. Art History Survey I (3:3:0). A survey of painting, sculpture, architecture, and the minor arts from prehistoric times to the 14th century. AP waiver possible. [ARTS 1303]

1311. Art History Survey II (3:3:0). A survey of painting, sculpture, architecture, and the minor arts from the 14th through 19th centuries. AP waiver possible. [ARTS 1304]

1320. Design I: Introduction (3:0:6). Emphasis upon two-dimensional design; includes the fundamentals of line, color, value, texture, shape, space, and compositional arrangement. Students learn to apply verbal skills needed in advanced visual arts. Outside assignments. AP or portfolio waiver possible. [ARTS 1311]

1324. Drawing I: Introduction (3:0:6). Investigation of a variety of media, techniques, and subjects. Students develop perceptual, descriptive, and verbal skills with consideration of drawing as a conceptual process as well as an end in itself. Outside assignments. AP or portfolio waiver possible. [ARTS 1316]

1325. Drawing II: Introduction (3:0:6). Prerequisite: ART 1324. Expansion of Drawing I stressing the expressive and conceptual aspects of drawing including developed descriptive imagery, use of color, abstraction, verbal skills, and the nude human figure as a subject. Outside assignments. [ARTS 1317]

1331. Design II: Introduction (3:0:6). Prerequisite: ART 1320 or concurrent enrollment. Emphasis on the three-dimensional concept of design. Students learn to apply verbal skills needed in advanced visual arts. Outside assignments. [ARTS 1312]

1370. Survey of Design (3:0:6). Specifically for the art minor or non-art major; a hands-on art course in basic design which integrates the elements and principles of two- and three-dimensional design. Outside assignments.

1371. Survey of Drawing (3:0:6). For art minors and nonmajors, a hands-on studio experience with freehand drawing.

1381. Computer Design Methods I (3:0:6). Prerequisite: Program acceptance. Technical aspects of page layout, vector drawing, file integration, and digital production will be introduced including digital peripherals as they relate to image capture.

1382. Computer Design Methods II (3:0:6). Prerequisite: Program acceptance. Introduces technical aspects of raster graphics. Stresses use of digital peripherals to capture and construct images, file integration, and digital production.

2320. Drawing III: Life Drawing (3:0:6). Prerequisite: Freshman studio core. Application of developed representational skills to the study of human anatomical structure and drawing from life. Encouragement toward a more personal approach to descriptive drawing, using the figure as a uniquely meaningful subject. Outside assignments. [ARTS 2323]

2322. Painting I: Introduction (3:0:6). Prerequisite: Freshman studio core. Introduction to painting concepts and techniques with designated sections for watermedia or oil. Outside assignments. Repeatable once for credit in different emphasis. [ARTS 2316, 2317, or 2366]

2326. Photographic Arts I (3:0:6). Prerequisite: ART 1320 and 1324. Introduction to creative black and white photography. Covers camera operation, exposure adjustments, film development, printing, and presentation. Outside assignments. Repeatable for credit. [ARTS 2356 or 2357] TAS

2327. Introduction to Digital Imaging (3:0:6). Prerequisite: Basic Macintosh experience or 3 ATLC workshops. Introduction to digital image making for photographers, designers, and studio artists. Covers the creative use of drawing and photographic imaging software and a variety of input and output devices. Outside assignments. TAS

2328. Printmaking I: Introduction (3:0:6). Prerequisite: Freshman studio core. Introduction to printmaking with sections designated for waterbase screenprinting, lithography, monoprints, woodcut, or etching. Outside assignments. Repeatable once for credit in different emphasis. [ARTS 2333 or ARTS 2334] TAS

2330. Ceramics I: Introduction to Wheel Throwing (3:0:6). Prerequisite: Freshman studio core. Introduction to wheel throwing, glazing and firing. Outside assignments. [ARTS 2346 or 2347] TAS

2331. Ceramics I: Introduction to Handbuilding (3:0:6). Prerequisite: Freshman studio core. Introduction to handbuilding techniques, glazing, and firing. Outside assignments. [ARTS 2346 or 2347] TAS

2334. Metal and Jewelry Design I: Introduction. (3:0:6). Prerequisite: Freshman studio core or consent of instructor. Introduction to basic techniques used in metalsmithing and jewelry making. Emphasis on fabrication and design. Outside assignments. Repeatable once for credit. [ARTS 2341 or 2342] TAS

2338. Sculpture I: Introduction to Metal Fabrication (3:0:6). Prerequisite: Freshman studio core. Introduction to sculpture through the study of metal fabrication, including a variety of welding and surface coloration techniques. Forge work and casting. Outside assignments. [ARTS 2326 or ARTS 2327] TAS

2339. Sculpture I: Introduction to Mixed Media and Wood (3:0:6). Prerequisite: Freshman studio core. Introduction to sculpture through the study of mixed media techniques and basic wood construction. Outside assignments. [ARTS 2326 or ARTS 2327] TAS

2364. Introduction to Theories and Practices in the Visual Arts (3:2:4). Prerequisite: Freshman studio core. Overview of the role of the visual arts in personal, social, and institutional contexts.

2381. Design Ideas (3:0:6). Prerequisite: Program acceptance. Introduction to interdisciplinary theories and methods as they relate to creative thinking. Explores social responsibility, ethics, and media literacy. Offered fall semester only. (Writing Intensive)

2382. Design Process (3:0:6). Prerequisite: Program acceptance. Design process, systematic study of form, color symbology, production of meaning and its relationship to design communication. Emphasis is placed on professional standards and craftsmanship.

3310. Greek and Roman Art (3:3:0). Prerequisite**:** ART 1309, 1310, or consent of instructor. An examination of the principal contributions of the classical world in the areas of architecture, sculpture, and painting. Emphases: Greek and Roman. Repeatable for credit in different emphasis. (Writing Intensive)

3311. Native American Arts (3:3:0). An examination of Native American cultures of the United States as revealed in ancient and contemporary architecture, arts, and crafts. (Writing Intensive)

3312. Art History Survey III (3:3:0). Prerequisite: ART 1309, 1311, or consent of instructor. An introduction to artistic movements, events, innovations, and debates of the 20th and 21st centuries, as examined in an international cultural frame.

3314. Art of the United States (3:3:0). Prerequisite: ART 1309, 1311, or consent of instructor. A survey of American art and architecture and their European background from 1520-1893. Emphases: 1520-1859 and 1859-1893. Repeatable for credit in different emphasis. (Writing Intensive)

3315. Ancient Near Eastern and Egyptian Art (3:3:0). Prerequisite: ART 1309, 1310, or consent of instructor. A discussion of Ancient Near Eastern art and architecture from Neolithic times down to 500 B.C. and the arrival of the Greeks in Persia; Ancient Egyptian art and architecture is covered from predynastic to the conquest of Egypt by Rome in 31 B.C. Repeatable for credit in different emphasis. (Writing Intensive)

3316. 19th Century Art (3:3:0). Prerequisite: ART 1309, 1311, or consent of instructor. Begins with the 18th century, then focuses on Impressionism, Post-Impressionism, Symbolism, and the French ambiance from which these movements emerged. (Writing Intensive)

3317. Baroque Art (3:3:0). Prerequisite: ART 1309, 1311, or consent of instructor. A view of European art of the Counter Reformation and a consideration of the prevailing pressures that produced this art. Analyzes of the devices, effects, and dynamics of the age of change. Focuses on N. Baroque painting in Flanders and Holland. Repeatable for credit in different emphasis. (Writing Intensive)

3318. The Art of the Renaissance (3:3:0). Prerequisite: ART 1309, 1311, or consent of the instructor. A study of aesthetic and intellectual directions in the Age of Humanism. Emphases: 15th century Florence, N. Italy, and Venice (1440-1560). Repeatable for credit in different emphasis. (Writing Intensive)

3319. Photographic Arts of the 19th & 20th Centuries (3:3:0). Prerequisite: ART 1311 or consent of the instructor. An examination of the development of photography and its relation to the other visual arts. (Writing Intensive)

3320. Advanced Life Drawing (3:0:9). Prerequisite: ART 2320. Development of individualized interpretation of the human figure using a variety of media and approaches with emphasis upon aesthetic and conceptual factors. Outside assignments. Repeatable for credit.

3322. Advanced Painting (3:0:9). Prerequisite: ART 2322 or consent of instructor. Emphasis on student's concepts and

exploration of subject matter. Students select technical approach and media with instructor consent. Outside assignments. Repeatable for credit.

3326. Advanced Photographic Arts (3:0:9). Prerequisite: ART 2326 or consent of instructor. Advanced fine art photography with topics that rotate each semester between color, studio still life, view camera, documentary, and book arts. Outside assignments. Repeatable for credit. TAS

3327. Advanced Digital Photographic Imaging (3:0:9). Prerequisite: ART 2326 and 2327. Examination of advanced digital imaging with emphasis on photographic imagery. Students will explore digital art making and creative problem solving using both photographic and digital input and output. Outside assignments. Repeatable for credit. TAS

3328. Advanced Printmaking (3:0:9). Prerequisite: ART 2328 or consent of instructor. Advanced printmaking with topics that rotate each semester between in-depth study of printmaking methods of screenprinting, lithography, intaglio, or relief printing. Outside assignments. Repeatable for credit. TAS

3330. Advanced Ceramics: Wheel (3:0:9). Prerequisite: ART 2330. Emphasis on developing student's technical expertise, conceptual skills, and problem-solving ability. Content normally different each time offered. Outside assignments. Repeatable once for credit. TAS

3331. Advanced Ceramics: Handbuilding (3:0:9). Prerequisite: ART 2331. Develops student's technical expertise, conceptual skills, and problem-solving ability. Content normally different each time offered. Outside assignments. Repeatable once for credit. TAS

3334. Advanced Metal and Jewelry Design (3:0:9). Prerequisite: ART 2334 or consent of instructor. Further study of techniques used in metalsmithing and jewelry design. Development of individual direction and exploration of various media. Outside assignments. Repeatable for credit. TAS

3338. Advanced Sculpture: Issues in Metal Fabrication (3:0:9). Prerequisite: ART 2338. Emphasis on developing student's technical expertise, conceptual skills, and problem solving ability. Rotating topics include kinetics and the object. Outside assignments. Repeatable once for credit. TAS

3339. Advanced Sculpture: Intermedia (3:0:9). Prerequisite: ART 2339. Emphasis on developing student's technical expertise, conceptual skills, and problem solving ability. Rotating topics include installation and video-performance. Outside assignments. Repeatable once for credit. TAS

3362. Technology in the Visual Arts (3:0:9). Prerequisite: Art core or consent of instructor. Instructional and studio emphases on technology in the visual arts. Outside assignments. TAS

3364. Foundations of Art in Social Institutions (3:2:4). Prerequisite: ART 2364. Examination of historical, political, and pedagogical issues and policies of the visual arts in institutional settings.

3365. Approaches to Criticism in Visual Arts (3:2:4). Self-reflective exploration of a range of strategies for interpreting and building multivocal meanings that address both the individual and shared experience of makers and viewers of visual communication.

3371. Survey of Studio Art (3:0:6). Prerequisite: 1370, 1371, freshman studio core, or consent of instructor. A course for art minors or non-art majors. Sections of ceramics, drawing, jewelry design and metalsmithing, and painting. Course in each medium will include criticism and historical perspective. Outside assignments. Repeatable for credit in different medium.

3372. Visual Arts, Children, and Artistic Development (3:1:4). Prerequisite: Sophomore standing. Examination of historical and contemporary content, issues, and practice in art and art education. Nonmajors only.

3381. Typography (3:0:9). Prerequisite: ART 1381, 2381, and 2382. Theoretical and practical survey of visual typography. Typography fundamentals, historical contexts, visual organization, meaning, and expressive qualities of type as visual form and visible language.

3382. Symbols (3:0:9). Prerequisite: ART 1382 and 3381. Exploration of symbols in design communication. Meaning, concept development, process, research, and problem solving are emphasized including appropriateness and responsibility to communicate effectively.

3383. Type and Image (3:0:9). Prerequisite: ART 1382 and 3381. Study of the relationship between visual and verbal language. Exploration of the informative, expressive, and experimental potential to solve complex narratives. Form will be stressed.

3384. Visual Systems (3:0:9). Prerequisite: ART 3382 and 3383. Development of integrated design systems and their systematic application of visual continuity. Emphasis on concept and the relationship between content and form.

4000. Student Teaching in Art—Secondary (V3-12). Prerequisite: Admission to student teaching. Supervised teaching involving a period of responsibility for art instruction in an accredited secondary school.

4001. Student Teaching in Art—Elementary (V3-6). Prerequisite: Admission to student teaching. Supervised teaching involving a period of major responsibility for art instruction and learning in accredited elementary schools.

4104. Advanced Problems (1). Prerequisite: Consent of instructor. Advanced problems in an area of production in which the student has achieved competence. Repeatable for credit.

4304. Advanced Problems (3). Prerequisite: Consent of instructor. Advanced problems in an area of production in which the student has achieved competence. Repeatable for credit.

4310. Seminar in Art History (3:3:0). Prerequisite: 6 hours of art history or consent of instructor. Extensive exploration of a particular period in art history. Repeatable for credit. (Writing Intensive)

4311. Senior Thesis in Art History (3). Prerequisite: Consent of instructor. An individual course of intensive study requiring in-depth reading and substantial written projects. (Writing Intensive)

4315. The Arts of Pre-Columbian America (3:3:0). An examination of the ideologies and cultures of Meso, Central, and South America as expressed in their arts, cities, iconography, and writing. Critical evaluation of contemporary approaches to these topics. Emphases: Central Mexico and Maya. Repeatable for credit in different emphasis. (Writing Intensive)

4320. Experimental Drawing (3:0:9). Prerequisite: ART 3320 and consent of instructor (must be drawing emphasis). Complete absorption with drawing as a total concept. Mature, individualistic development of a unique body of work utilizing a variety of media and surfaces. Outside assignments. Repeatable for credit.

4322. Experimental Painting (3:0:9). Prerequisite: ART 3322 or consent of instructor. Individual exploration of subject matter and painting media directed toward the creation of a mature and consistent body of work. Outside assignments. Repeatable for credit.

4326. Experimental Photographic Arts (3:0:9). Prerequisite: ART 3326 and consent of instructor. Exploration of advanced topics in photography directed toward the creation of a mature body of work. Outside assignments. Repeatable for credit. TAS

4328. Experimental Printmaking (3:0:9). Prerequisite: ART 3328 consent of instructor. Problems in printmaking areas. Controlled projects and individual criticism. Outside assignments. Repeatable for credit. TAS

4330. Senior Studio: Ceramics (3:0:9). Prerequisite: Six hours of 3000 level ceramics and consent of instructor. Mature, individualistic exploration directed toward developing a comprehensive, cohesive body of work for evaluation. Outside assignments. May be repeated for credit up to 12 hours. TAS

4334. Senior Studio: Metal and Jewelry Design (3:0:9). Prerequisite: Six hours of 3000 level metal and jewelry design and consent of instructor. Mature, individualistic exploration directed toward developing a comprehensive, cohesive body of work for evaluation. Outside assignments. May be repeated for credit up to 12 hours. TAS

4335. Senior Seminar for Studio Art Majors (3:3:0). Prerequisite: B.F.A. studio and visual studies majors with senior standing. A capstone course. Basic and necessary information that will enable the student to compete in the professional art world and acquaint the student with the requirements for graduate admission and application procedures. Offered fall semester only. (Writing Intensive)

4338. Senior Studio: Sculpture (3:0:9). Prerequisite: Six hours of 3000 level sculpture and consent of instructor. Mature, individualistic exploration directed toward developing a comprehensive, cohesive body of work for evaluation. Outside assignments. May be repeated for credit up to 12 hours.

4354. Illustration (3:0:9). Prerequisite: ART 1382, 3381, and 2320 (drawing 03). Exploration of illustration through structured practical application. Image making, concept, style, appropriateness of imagery, and interpretation of narrative will be stressed.

4355. Professional Internship (3). Prerequisite: Consent of instructor. Provides on-site internship experience. Placement is student initiated and faculty approved. Student's progress will be monitored.

4356. Packaging (3:0:9). Prerequisite: ART 3382 and 3383. Study and design of three-dimensional form and surface. Stresses problem solving and innovative thinking as they relate to the environment and ecological concerns.

4357. Online Media (3:0:9). Prerequisite: ART 3382 and 3383. Introduction to key concepts and underlying processes used to create interactive experiences, including implications of new technology on social construction of meaning as it relates to the professional field of design.

4358. Motion Graphics. (3:0:9). Prerequisite: ART 3383 and 3384. Explores the interactive effects of time and motion, including visual rhythm, continuity, and relationship between form and content of visual communication.

4362. Curriculum Theory and Instructional Methodology in the Visual Arts (3:2:4). Prerequisite: ART 3364, 3365, or consent of instructor. Art teaching methodologies, including curriculum design, classroom organization and management, assessment strategies, and teaching effectiveness evaluation.

4365. Application of Art Education Theories (3:2:4). Prerequisite: ART 4362, EDSE 4310 and 4322, or consent of instructor. Reflective applications in a Saturday School practicum focusing on curriculum and teaching theories, as well as communication strategies with various constituencies.

4380. Publication Design (3:0:9). Prerequisite: ART 3384. Sequential design and structural systems dealing with experimentation of type, image, pacing, and form. Emphasizes concept development, research, writing, and presentation skills. Outside assignments.

4381. Public and Social Service Design (3:0:9). Prerequisite: ART 3384 Emphasis is placed on the role of the designer in the community, public awareness, and social responsibility. Stresses teamwork, communication, and interpersonal skills.

4382. Portfolio Development (3:0:9). Prerequisite: Must pass portfolio review. Emphasizes resumé development and final portfolio preparation and refinement. Discusses business procedures, self promotion, and interviewing skills.

School of Music

Director: Professor Garry W. Owens

Horn Professors Gillas, van Appledorn, and Westney; ***Professors*** Barber, Bearden, Bogle, Brittin, Deahl, Dickson, Henry, Hobbs, Meek, Shinn, and Stoune; ***Associate Professors*** Anderson, Arnold, Birdwell, Brumfield, Dent, Dolter, Fried, Gilbert, Hartwell, Hughes, Lewis, Lucas, McNeil, Paxton, Payne, Sharpe, Strieder, and Wilson; ***Assistant Professors*** Capuzzo, Dees, Ezerman, Neumann, Rogers, L. Santa, M. Santa, Shea, Sifford, and Smith; ***Visiting Faculty*** Elrod, Hinds, Jahnke, and Wass.

The school supervises the following degree programs: PERFORMANCE, MUSIC COMPOSITION, MUSIC THEORY, MUSIC (leading toward teacher certification), *Bachelor of Music*; MUSIC, *Bachelor of Arts*; PERFORMANCE, MUSIC HISTORY AND LITERATURE, MUSIC THEORY, *Master of Music*; FINE ARTS (with a major in Music), *Master of Music Education* and *Doctor of Philosophy;* COMPOSITION, CONDUCTING, PERFORMANCE, PIANO PEDAGOGY, *Doctor of Musical Arts*. The school also participates in the ethnic studies and humanities minor programs. Graduate students are referred to the *Graduate Catalog*. The schools' degree programs are accredited by the National Association of Schools of Music.

Courses for Nonmajors. Nonmusic majors may elect class or private instruction in voice or in any instrument subject to the availability of faculty. Students enrolled in applied music are carried at their maximum level of achievement, and the nonmusic major is not examined in competition with the music major. In addition to the above, courses designed to serve all students enrolled in the university include all major ensembles such as Marching Band (fall only—MUEN 1103, 3103, 3203); Symphonic, Concert, and University Bands (MUEN 3103, 3203); Orchestra (MUEN 3104, 3204); University Choir (MUEN 3101, 3201); University Singers, Women's Chorus and Men's Glee Club (MUEN 3101); Music Theatre (MUEN 3102, 3202); Jazz Ensembles and Combos (MUEN 3105); and Small-Medium Ensembles (MUEN 3106, 3110). Auditions are required for some of these ensembles; contact the ensembles office (742-2272) for information about auditions. Nonmusic majors may also enroll in major courses in music, music composition, music literature, and music theory with consent of the instructor.

The following courses are designed specifically for nonmajors.

MUAP 1123, 1124. Group Keyboard Instruction I and II. Consent of instructor required. Beginning instruction in piano and electronic

keyboards. Sight reading, harmonization and transposition, solo and ensemble repertoire, and playing techniques.
MUAP 2123, 2124. Group Keyboard Instruction III and IV. Consent of instructor required. Intermediate instruction in piano and electronic keyboards. Sight reading, harmonization and transposition, solo and ensemble repertoire, and playing techniques.
MUAP 2133, 2134. Class Guitar. Open to both majors and nonmajors. Beginning and intermediate instruction in guitar; basic left- and right-hand approaches of classical technique; basic chords and accompaniment styles.
MUCP 1201, 1202. Introduction to Contemporary Music. Open to both majors and nonmajors. A survey of current trends, with activities emphasizing creative musicianship and new technology in composition. May be an individual study course. (For songwriting, see MUTH 1300.)
MUCP 3001. Projects in Electronic and Experimental Music. Open to both majors and nonmajors. Prerequisite: MUCP 1202, or the equivalent, and instructor approval. Independent study and creative projects utilizing the resources of the Experimental Music Studio. May be repeated for credit.
MUHL 1308. Music Appreciation. Beginning course for nonmajors. Appreciation of music is encouraged through consideration of a variety of musical styles.
MUHL 2308, 2309. Heritage of Music. Selected compositions will be studied through an interpretation of their historical, functional, and cultural significance.
MUHL 3304. History of Jazz. Historical and analytical survey of jazz from its beginning through "Rock"—its form, style, literature, and influence on 20th century music.
MUHL 3308. Masterpieces in Music. Representative musical works from the Baroque Period to the present are studied in relation to their historical and general cultural context.
MUTH 1300. Songwriting. A beginning course for nonmusic majors. A practical approach to music theory through songwriting. Includes aural training, notation, textual setting, melodic writing, and chord assignment.

Music Programs. Performance degrees include majors in piano (pedagogy or accompanying specializations are also available), organ, voice, brass, woodwind, percussion, and stringed instruments. Majors are also offered in music composition and music theory. The Bachelor of Music (leading toward teacher certification) degree replaces the degree formerly known as the Bachelor of Music Education. A minimum of 12 hours in the Bachelor of Music (leading toward teacher certification) degree must be taken in residence at Texas Tech University. There is no minimum number of hours that must be taken in residence for all other degrees in music. Minors in music are available in a variety of programs ranging from 18 to 24 semester hours; information is available in the School of Music office.

A minimum of 42 hours of music courses, 18 hours of which must be junior or senior level, are required for the Bachelor of Arts degree with a music major, including MUHL 2301, 2302, MUTH 1103 and 1303, 1104 and 1304, 2103 and 2303, 2104 and 2304, and 3303. Bachelor of Arts students also take a minor and complete the general degree requirements for the Bachelor of Arts degree.

Provisional acceptance into a major in music is based upon a combination of auditions, transcripts, entrance examinations, and/or interviews, depending upon the specific major. Admission to Texas Tech University does not guarantee admission to the School of Music as a music major. All entering students must audition in their declared principal applied area with the appropriate faculty. Final acceptance into any music program is based upon formal auditions in the appropriate applied and ensemble areas. Students wishing to change their majors to performance after having been accepted into another major in music must proceed through a formal acceptance process for performance in the appropriate applied and ensemble areas. Additional information about applied music is available from the School of Music. Graduation requirements in applied music vary according to the student's degree and major. All music students will have their work in their principal applied music studies periodically reviewed by the faculty.

Entering freshmen may receive credit for college-level work in music accomplished prior to entering the university. This may be done through advanced standing examinations administered by the faculty of the School of Music during the first semester of the freshman year after the student has obtained permission from the Dean of the College of Arts and Sciences. Advanced standing examinations will be administered only in the fields of applied music and

music theory. To receive credit by an advanced standing examination, the student must achieve a grade of not less than a B on such examination.

The student must earn a minimum grade of C during each semester of freshman and sophomore theory to qualify for advancement.

All students whose principal instrument is not keyboard must demonstrate keyboard proficiency as determined by the school.

All music majors, with the exception of those pursuing the Bachelor of Arts in Music, are required to enroll in an appropriate ensemble continuously each semester of full-time enrollment status. Refer to the curriculum tables that follow and consult with a School of Music advisor for specific ensemble requirements pertaining to particular degree plans.

Recital Requirements. Performance majors are required to present a full-length senior recital. Piano performance majors with pedagogy emphasis are required to present a three-quarter length recital, and candidates for music with teacher certification or performance degrees must present a half-length recital. The recital program must be approved by the appropriate area faculty or applied faculty member and submitted to the Publicity Office at least two weeks prior to the recital for processing. Piano performance majors with chamber music and accompanying emphasis are required to present four recitals of standard accompaniment and chamber music repertoire. Permission to present each recital must be obtained from an examining jury at least two weeks prior to the recital.

Music composition majors are required to present a recital of their original compositions during the senior year. Permission to present the recital must be obtained from the composition faculty one semester prior to the recital.

Postponement or cancellation of a scheduled recital (without penalty) is allowed only with good reason such as illness or death in the family. Failure to pass a hearing or failure of preparation are not valid reasons. The appropriate applied faculty member must verify any reason for postponement or cancellation. If a recital is postponed for verified good reason, the student may reschedule in the same or subsequent semester. If a scheduled recital is postponed or canceled without verified good reason, the student may not reschedule during the same semester in which postponement or cancellation occurs.

All music majors must attend at least 12 weekly student recitals and at least 12 additional approved concerts or recitals per semester for six semesters.

Courses in Applied Music. Additional fees for applied music are shown in this catalog under Miscellaneous Special Fees. Applied music students are required to practice a minimum of 3 clock hours per week for each semester-hour credit.

Bachelor of Music Curricula. The curriculum tables that follow are provided as a convenience to students and advisors. All music majors plan their individual courses of study in consultation with a faculty advisor.

All Bachelor of Music degrees are undergoing revisions to incorporate elements of new requirements in the College of Visual and Performing Arts. The following curriculum tables for the different degree tracks are for students who entered Texas Tech *prior to fall 2002*. Students entering Texas Tech in *fall 2002 or later* should consult an advisor in the School of Music.

Performance—Piano Curriculum

FIRST YEAR

Fall		*Spring*	
MUAP 1105, Keyboard Skills	1	MUAP 1106, Keyboard Skills	1
MUAP 1001, Piano	3	MUAP 1002, Piano	3
MUHL 1301, Intro. Mus. Lit.	3	MUHL 1302, Intro. Mus. Lit.	3
MUTH 1303, Elem. Theory I	3	MUTH 1304, Elem. Theory II	3
MUTH 1103, Elem. Aural Skills I	1	MUTH 1104, Elem. Aural Skills II	1
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
MUEN 3106-301, Accompanying	1	MUEN 3106-301, Accompanying	1
PF&W, Band or ROTC	1	PF&W, Band or ROTC	1
TOTAL	16	TOTAL	16

SECOND YEAR

Fall		*Spring*	
MUAP 2105, Keyboard Skills	1	MUAP 2106, Keyboard Skills	1
MUAP 2001, Piano	4	MUAP 2002, Piano	4
MUHL 2301, Hist. of Music	3	MUHL 2302, Hist. of Music	3
MUTH 2303, Intermed. Theory I	3	MUTH 2304, Intermed. Theory II	3
MUTH 2103, Intermed. Aural Skills I	1	MUTH 2104, Intermed. Aural Skills II	1
Oral Communications	3	Humanities	3
MUEN 3106-301, Accompanying	1	MUEN 3106-301, Accompanying	1
TOTAL	16	TOTAL	16

THIRD YEAR

Fall		*Spring*	
MUAP 3001, Piano	4	MUAP 3002, Piano	3
Tech. & Applied Science	3	MUAP 3190, Jr. Recital	1
MUTH 3303, Form Ana. Synth.	3	MUAP 3206, Conducting	2
MUAP 4301, Keyboard Lit.	3	MUAP 4302, Keyboard Lit.	3
HIST 2300, American History	3	HIST 2301, American History	3
MUEN 3106-301, Accompanying	1	PHYS 1406, Physics of Sound & Music	4
TOTAL	17	MUEN 3106-301, Accompanying	1
		TOTAL	17

FOURTH YEAR

Fall		*Spring*	
MUAP 4001, Piano	4	MUAP 4002, Piano	3
MUAP 4303, Piano Pedagogy	3	MUAP 4190, Sr. Recital	1
MUHL elective	3	MUTH 4307, Tonal Cpt. & Fugue	3
POLS 1301, Amer. Govt., Org.	3	Individual or Group Behavior	3
MUEN 3106-301, Accompanying	1	POLS 2302, Amer. Pub. Pol.	3
Mathematics	3	MUEN 3106-301, Accompanying	1
TOTAL	17	Natural Science	4
		TOTAL	18

Total program hours—133
*Program shown is for performance majors. Pedagogy or collaborative piano specialization students should consult the chairperson of keyboard studies.

Performance–Organ Curriculum

FIRST YEAR

Fall		*Spring*	
MUAP 1001, Organ	3	MUAP 1002, Organ	3
*MUAP 1001, Piano	1	*MUAP 1002, Piano	1
MUHL 1301, Intro. Music Lit.	3	MUHL 1302, Intro. Music Lit.	3
MUTH 1303, Elem. Theory I	3	MUTH 1304, Elem. Theory II	3
MUTH 1103, Elem. Aural Skills I	1	MUTH 1104, Elem. Aural Skills II	1
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
MUEN 3106-301, Accompanying	1	MUEN 3106-301, Accompanying	1
PF&W, Band, or ROTC	1	PF&W, Band, or ROTC	1
TOTAL	16	TOTAL	16

SECOND YEAR

Fall		*Spring*	
MUAP 2001, Organ	4	MUAP 2002, Organ	4
MUHL 2301, Hist. of Music	3	MUHL 2302, Hist. of Music	3
MUTH 2303, Intermed. Theory I	3	MUTH 2304, Intermed. Theory II	3
MUTH 2103, Intermed. Aural Skills I	1	MUTH 2104, Intermed. Aural Skills II	1
Oral Communications	3	Humanities	3
MUEN 3106-301, Accompanying	1	MUEN 3106-301, Accompanying	1
TOTAL	15	TOTAL	15

THIRD YEAR

Fall		*Spring*	
MUAP 3001, Organ	4	MUAP 3002, Organ	3
MUAP 3203, Church Serv. Playing	2	MUAP 3190, Jr. Recital	1
MUAP 3206, Conducting	2	MUAP 3207 or 3208, Chor. or Inst. Cond.	2
MUTH 3303, Form Ana. Synth.	3	HIST 2301, American History	3
HIST 2300, American History	3	Mathematics	3
MUEN 3106-301, Accompanying	1	PHYS 1406, Physics Sound & Music	4
Technology & Applied Science	3	MUEN 3106-301, Accompanying	1
TOTAL	18	TOTAL	17

FOURTH YEAR

Fall		*Spring*	
MUAP 4001, Organ	4	MUAP 4002, Organ	3
MUTH 4305 or 4307, Counterpoint	3	MUAP 4190, Sr. Recital	1
POLS 1301, Amer. Govt., Org.	3	MUAP 4201, Organ Pedagogy	2
Music elective	3	MUHL or MUTH elective	3
MUEN 3106-301, Accompanying	1	Individual or Group Behavior	3
Natural Science	4	POLS 2302, Amer. Pub. Pol.	3
TOTAL	18	MUEN 3106-301, Accompanying	1
		TOTAL	16

Total program hours—131
*Optional for students with extensive piano background.

Performance–Voice Curriculum

FIRST YEAR

Fall		*Spring*	
MUAP 1001, Voice	2	MUAP 1002, Voice	2
MUHL 1301, Intro. Mus. Lit.	3	MUHL 1302, Intro. Mus. Lit.	3
MUAP 1303, Sing. Diction I	3	MUSI 1304, Sing. Diction II	3
MUTH 1303, Elem. Theory I	3	MUTH 1304, Elem. Theory II	3
MUTH 1103, Elem. Aural Skills I	1	MUTH 1104, Elem. Aural Skills II	1
ENGL 1301, Ess. Coll. Rhet.	3	ENGL 1302, Adv. Coll. Rhet.	3
MUEN 3102, Music Theatre	1	Ensemble	1
Ensemble	1	PF&W, Band, or ROTC	1
PF&W, Band, or ROTC	1	TOTAL	17
TOTAL	18		

SECOND YEAR

Fall		*Spring*	
MUAP 2001, Voice	2	MUAP 2002, Voice	2
MUHL 2301, Hist. of Music	3	MUHL 2302, Hist. of Music	3
MUTH 2303, Intermed. Theory I	3	MUTH 2304, Intermed. Theory II	3
MUTH 2103, Intermed. Aural Skills I	1	MUTH 2104, Intermed. Aural Skills II	1
For. Lang. (German, French, Italian)	5	For. Lang. (German, French, Italian)	5
Oral Communications	3	Humanities	3
Ensemble	1	Ensemble	1
TOTAL	18	TOTAL	18

THIRD YEAR

Fall		*Spring*	
MUAP 3001, Voice	3	MUAP 3002, Voice	2
MUAP 3303, Vocal Literature	3	MUAP 3190, Jr. Recital	1
MUTH 3303, Form Ana. Synth.	3	For. Lang. (2nd yr. Germ., Fren., Ital.)	3
Natural Science	4	Mathematics	3
For. Lang. (2nd yr. Germ., Fren., Ital.)	3	PHYS 1406, Physics Sound & Music	4
Ensemble	1	Ensemble	1
TOTAL	17	Technology & Applied Science	3
		TOTAL	17

FOURTH YEAR

Fall		*Spring*	
MUAP 4001, Voice	4	MUAP 4002, Voice	3
HIST 2300, American History	3	MUAP 4190, Sr. Recital	1
POLS 1301, Amer. Govt., Org.	3	MUAP 3206, Conducting	2
Ensemble	1	POLS 2302, Amer. Public Pol.	3
MUAP 4305, Vocal Ped.	3	Ensemble	1
TOTAL	14	Individual or Group Behavior	3
		HIST 2301, American History	3
		TOTAL	16

Total program hours—135

Performance—Wind Instrument or Percussion Curriculum

FIRST YEAR

Fall		*Spring*	
MUAP 1001, Major Instr.	3	MUAP 1002, Major Instr.	3
Applied Music (piano)	1	Applied Music (piano)	1
MUHL 1301, Intro. Mus. Lit.	3	MUHL 1302, Intro. Mus. Lit.	3
MUTH 1303, Elem. Theory I	3	MUTH 1304, Elem. Theory II	3
MUTH 1103, Elem. Aural Skills I	1	MUTH 1104, Elem. Aural Skills II	1
Mathematics	3	ENGL 1301, Ess. Coll. Rhet.	3
*Ensemble	1-2	*Ensemble	1-2
PF&W, Band, or ROTC	1	PF&W, Band, or ROTC	1
TOTAL	16-17	TOTAL	16-17

SECOND YEAR

Fall		*Spring*	
MUAP 2001, Major Instr.	3	MUAP 2002, Major Instr.	3
Applied Music (piano)	1	Applied Music (piano)	1
MUHL 2301, Hist. of Music	3	MUHL 2302, Hist. of Music	3
MUTH 2303, Intermed. Theory I	3	MUTH 2304, Intermed. Theory II	3
MUTH 2103, Intermed. Aural Skills I	1	MUTH 2104, Intermed. Aural Skills II	1
ENGL 1302, Adv. Coll. Rhet.	3	Oral Communications	3
Ensemble	1-2	Ensemble	1-2
TOTAL	15-16	TOTAL	15-16

THIRD YEAR

Fall		*Spring*	
MUAP 3001, Major Instr.	3	MUAP 3002, Major Instr.	3
MUTH 3303, Form Ana. Synth.	3	MUAP 3190, Jr. Recital	1
HIST 2300, American History	3	MUAP 3206, Conducting	2
Humanities	3	MUCP 4207, Instrumentation	2
Ensemble	1-2	HIST 2301, American History	3
Technology & Applied Science	3	PHYS 1406, Physics Sound & Music	4
TOTAL	16-17	Ensemble	1-2
		TOTAL	16-17

FOURTH YEAR

Fall		*Spring*	
MUAP 4001, Major Instr.	3	MUAP 4002, Major Instr.	3
MUTH 4305 or 4307, Counterpoint	3	MUAP 4190, Sr. Recital	1
Individual or Group Behavior	3	MUHL or MUTH elective	3
POLS 1301, Amer. Govt., Org.	3	POLS 2302, Amer. Pub. Pol.	3
Ensemble	1-2	Ensemble	1-2
TOTAL	13-14	Natural Science	4
		TOTAL	15-16

Total program hours—126
*Twelve registrations in ensemble required.

Performance—Stringed Instrument Curriculum

FIRST YEAR

Fall		*Spring*	
MUAP 1001, Major Instr.	3	MUAP 1002, Major Instr.	3
MUHL 1301, Intro. Mus. Lit.	3	MUHL 1302, Intro. Mus. Lit.	3
MUTH 1303, Elem. Theory I	3	MUTH 1304, Elem. Theory II	3
MUTH 1103, Elem. Aural Skills I	1	MUTH 1104, Elem. Aural Skills II	1
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhet.	3
*MUEN 3104, Orch.	1	MUEN 3104, Orch.	1
PF&W, Band, or ROTC	1	PF&W, Band, or ROTC	1
TOTAL	15	TOTAL	15

SECOND YEAR

Fall		*Spring*	
MUAP 2001, Major Instr.	3	MUAP 2002, Major Instr.	3
MUHL 2301, Hist. of Music	3	MUHL 2302, Hist. of Music	3
MUTH 2303, Intermed. Theory I	3	MUTH 2304, Intermed. Theory II	3
MUTH 2103, Intermed. Aural Skills I	1	MUTH 2104, Intermed. Aural Skills II	1
Oral Communication	3	Humanities	3
MUEN 3104, Orch.	1	MUEN 3104, Orch.	1
Technology & Applied Science	3	MUAP 3206, Conducting	2
TOTAL	17	TOTAL	16

THIRD YEAR

Fall		*Spring*	
MUAP 3001, Major Instr.	4	MUAP 3002, Major Instr.	4
MUTH 3303, Form Ana. Synth.	3	MUAP 3190, Jr. Recital	1
HIST 2300, American History	3	MUHL or MUTH elective	3
Natural Science	4	PHYS 1406, Phys. of Sound & Music	4
MUEN 3104, Orch.	1	HIST 2301, American History	3
MUEN 3106, Chamber Music	1	MUEN 3104, Orch.	1
TOTAL	16	MUEN 3106, Chamber Music	1
		TOTAL	17

FOURTH YEAR

Fall		*Spring*	
MUAP 4001, Major Instr.	4	MUAP 4002, Major Instr.	4
MUTH 4305, Modal Counterpoint		MUAP 4190, Sr. Recital	1
or MUTH 4307, Counterpt. & Fugue	3	MUCP 4207, Instrumentation	2
POLS 1301, Amer. Govt., Org.	3	Individual or Group Behavior	3
Mathematics	3	POLS 2302, Amer. Pub. Pol.	3
MUEN 3104, Orch.	1	MUEN 3104, Orch.	1
MUEN 3106, Chamber Music	1	MUEN 3106, Chamber Music	1
TOTAL	15	TOTAL	15

Total program hours—126
*Guitar students participate in guitar ensemble and guitar chamber music for six semesters each.

Music Composition Curriculum

FIRST YEAR

Fall		*Spring*	
MUAP 1001, Prin. Instr. or Voice	2	MUAP 1002, Prin. Instr. or Voice	2
*Applied Music, Sec. Instr.	1	*Applied Music, Sec. Instr.	1
MUCP 1201, Intro. Contemp. Mus.	2	MUCP 1202, Intro. Contemp. Mus.	2
MUHL 1301, Intro. Mus. Lit.	3	MUHL 1302, Intro. Mus. Lit.	3
MUTH 1303, Elem. Theory I	3	MUTH 1304, Elem. Theory II	3
MUTH 1103, Elem. Aural Skills I	1	MUTH 1104, Elem. Aural Skills II	1
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhetoric	3
Ensemble	1	Ensemble	1
PF&W, Band, or ROTC	1	PF&W, Band, or ROTC	1
TOTAL	17	TOTAL	17

SECOND YEAR

Fall		*Spring*	
MUAP 2001, Prin. Instr. or Voice	2	MUAP 2002, Prin. Instr. or Voice	2
*Applied Music, Sec. Instr.	1	MUCP 2302, Mus. Composition	3
MUCP 2301, Mus. Composition	3	MUHL 2302, Hist. of Music	3
MUHL 2301, Hist. of Music	3	MUTH 2304, Intermed. Theory II	3
MUTH 2303, Intermed. Theory I	3	MUTH 2104, Intermed. Aural Skills II	1
MUTH 2103, Intermed. Aural Skills I	1	Ensemble	1
Mathematics	3	Humanities	3
Ensemble	1	TOTAL	16
TOTAL	17		

THIRD YEAR**

Fall		*Spring*	
MUAP 3001, Prin. Instr. or Voice	2	MUAP 3002, Prin. Instr. or Voice	2
MUCP 3301, Mus. Composition	3	MUCP 3302, Mus. Composition	3
MUTH 3303, Form Ana. Synth.	3	MUTH 3308, 20th Cent. Tech.	3
MUCP 4207, Instrumentation	2	MUCP 4208, Orchestration	2
†Tech. and App. Science	3	Oral Communication	3
Natural Science	4	PHYS 1406, Physics Sound & Music	4
Ensemble	1	Ensemble	1
TOTAL	18	TOTAL	18

FOURTH YEAR

Fall		*Spring*	
Individual or Group Behavior	3	MUCP 4402, Mus. Composition	4
††MUCP 4401, Mus. Composition	4	MUAP 4190, Sr. Recital	1
MUTH 4305, Modal Counterpoint	3	MUTH 4307, Tonal Cpt. & Fugue	3
HIST 2300, American History	3	HIST 2301, American History	3
POLS 1301, Amer. Govt., Org.	3	MUAP 3206, Conducting	2
Ensemble	1	POLS 2302, Amer. Pub. Pol.	3
TOTAL	17	Ensemble	1
		TOTAL	17

Total program hours—137
*The secondary instrument consists of one semester of study on each of three different instruments, to be determined in consultation with the student's advisor. In general, each secondary instrument should be a member of a different instrumental family (string, woodwind, brass, percussion, voice), and these should be distinct from the primary instrument family, so that the student gains familiarity with the broadest variety of instruments.
**Continuance in the major of music composition requires a formal review and approval of all freshman and sophomore work. The principal criteria are completion of all academic requirements through the sophomore year and a grade average in music theory courses of no less than a B.
†Recommended course: MUCP 3001.
††Candidates for the Bachelor of Music degree with a major in music composition are required to present a recital of their original compositions during the senior year. Permission to present the recital must be obtained from the composition faculty one semester prior to the recital.

Music Theory Curriculum

FIRST YEAR

Fall		*Spring*	
MUAP 1001, Prin. Instr. or Voice	2	MUAP 1002, Prin. Instr. or Voice	2
*Applied Music, Sec. Instr.	1	*Applied Music, Sec. Instr.	1
MUHL 1301, Intro. Mus. Lit.	3	MUHL 1302, Intro. Mus. Lit.	3
MUTH 1303, Elem. Theory I	3	MUTH 1304, Elem. Theory II	3
MUTH 1103, Elem. Aural Skills I	1	MUTH 1104, Elem. Aural Skills II	1
ENGL 1301, Ess. Coll. Rhetoric	3	ENGL 1302, Adv. Coll. Rhet.	3
HIST 2300, American History	3	HIST 2301, American History	3
Ensemble	1	Ensemble	1
PF&W, Band, or ROTC	1	PF&W, Band, or ROTC	1
TOTAL	18	TOTAL	18

SECOND YEAR

Fall		*Spring*	
MUAP 2001, Prin. Instr. or Voice	2	MUAP 2002, Prin. Instr. or Voice	2
*Applied Music, Sec. Instr.	1	MUHL 2302, Hist. of Music	3
MUHL 2301, Hist. of Music	3	**Foreign Language	3
MUTH 2303, Intermed. Theory I	3	MUTH 2304, Intermed. Theory II	3
MUTH 2103, Intermed. Aural Skills I	1	MUTH 2104, Intermed. Aural Skills II	1
**Foreign Language	3	Ensemble	1
Mathematics	3	Technology & Applied Science	3
Ensemble	1	TOTAL	16
TOTAL	17		

THIRD YEAR†

Fall		*Spring*	
MUAP 3001, Prin. Instr. or Voice	2	MUAP 3002, Prin. Instr. or Voice	2
MUAP 3303, Form Ana. Synt.	3	MUTH 3308, 20th Cent. Tech.	3
MUCP 4207, Instrumentation	2	MUCP 4208, Orchestration	2
Oral Communication	3	Individual or Group Behavior	3
Humanities	3	PHYS 1406, Physics Sound & Music	4
Natural Science	4	MUAP 3206, Conducting	2
Ensemble	1	Ensemble	1
TOTAL	18	TOTAL	17

FOURTH YEAR

Fall		*Spring*	
MUAP 4001, Prin. Instr. or Voice	2	MUAP 4002, Prin. Instr. or Voice	2
MUHL elective	3	MUHL elective	3
MUTH 4305, Modal Counterpoint	3	MUTH 4307, Tonal Cpt. and Fugue	3
MUTH 4302, Fund. of Comp.	3	MUTH 4303, Fund. of Comp.	3
POLS 1301, Amer. Govt., Org.	3	POLS 2302, Amer. Pub. Pol.	3
Ensemble	1	Ensemble	1
TOTAL	15	TOTAL	15

Total program hours—134
*Choice of secondary instrument(s) depends on the student's primary instrument and shall be determined in consultation with the student's advisor.
**The student must complete six hours of a language approved by the division at the sophomore level.
†Continuance in the major of music theory requires a formal review and approval of all freshman and sophomore work. The principal criteria are completion of all academic requirements through the sophomore year and a grade average in music theory courses of no less than a B.

Music Curriculum (Leading Toward Teacher Certification). All tracks have the same Core Curriculum and Professional Education courses. These tracks are undergoing revisions to incorporate elements of the new standards for certification as determined by the State of Texas. The following curriculum tables for the different teacher certification tracks are for students who entered Texas Tech *prior to fall 2002*. Students entering Texas Tech for teacher certification in music *in fall 2002 or later* should consult an advisor in the School of Music.

Core Curriculum

		Semester Hours
1.	**Basic Skills, ENGL 1301, 1302**	**6**
2.	**Oral Communication**	**3**
	COMS 2300	
3.	**Mathematics**	**6**
	MATH 1320 and MUTH 3303 counted in Music hours	
4.	**Science**	**8**
	PHYS 1406 and 4 additional hours	
5.	**Technology, MUSI 3341**	**3**
6.	**American History, HIST 2300, 2301**	**6**
7.	**Political Science, POLS 1301, 2302**	**6**
8.	**Individual or Group Behavior,**	**3**
9.	**Humanities**	**3**
10.	**Health and Physical Fitness**	**2**
	Total hours	**43**

**Professional Education*

		Semester Hours
1.	**EDSE 4310**	**3**
2.	**EDSE 4322**	**3**
3.	**EDLL 4380**	**3**
4.	**MUED 3311**	**3**
5.	**MUED 3312**	**3**
6.	**Student Teaching**	**6**
Total hours		**21**

*Students should contact the College of Education concerning professional education course requirements for all-level and secondary certification.

All Level, Vocal Track

1. **Principal Instrument:** MUAP 1001, 1002, 2001, 2002, 3001, (2 credit hours each) 3002 (1), 3190
2. **Secondary Instrument:** MUAP 1103, 2103, 3103, 4103
3. **Conducting:** MUAP 3206, 3207
4. **Piano:** Must pass proficiency level equivalent to MUAP 2124 if not piano principal.
5. **Music:** MUSI 3202, 3337, 3338, 3216*, 3217*
6. **Music History & Literature:** MUHL 1301, 1302, 2301, 2302
7. **Music Theory:** MUTH 1103 and 1303, 1104 and 1304, 2103 and 2303, 2104 and 2304, 3303, MUCP 4207
8. **Major Ensemble:** 7 semesters

Total track hours: 72
Total program hours: 136

*For those pursuing general music emphasis, substitute MUSI 3221 and 3222

All Level, Instrumental Track

1. **Principal Instrument:** MUAP 1001, 1002, 2001, 2002, 3001, (2 credit hours each) 3002 (1), 3190
2. **Secondary Instrument:** MUAP 1103, 1104, 2103, 2104, 3103, 3104, 4103, 4104 (select 6)
3. **Conducting:** MUAP 3206, 3208
4. **Piano:** Must pass proficiency level equivalent to MUAP 2124 if not piano principal.
5. **Music:** MUSI 3202, 3337, 3338, and 3218* & 3219* or 3225* & 3226*
6. **Music History & Literature:** MUHL 1301, 1302, 2301, 2302
7. **Music Theory:** MUTH 1103 and 1303, 1104 and 1304, 2103 and 2303, 2104 and 2304, 3303, MUCP 4207
8. **Major Ensemble:** 7 semesters
9. **Vocal Ensemble:** 1 hour

Total track hours: 75
Total program hours: 139

*For those pursuing general music emphasis, substitute MUSI 3221 and 3222

All Level, Keyboard Track

1. **Principal Instrument:** MUAP 1001 (1), 1105, 1002 (1), 1106, 2001 (2), 2002 (2), 3001 (2), 3002 (1), 3190
2. **Secondary Instrument:** MUAP 1103, 2103, 3103, 4103
3. **Conducting:** MUAP 3206, 3207 or 3208
4. Music: MUSI 3202, 3337, 3338, and 3216 & 3217, or 3218 & 3219, or 3225 & 3226, or 3221 & 3222
5. **Music History & Literature:** MUHL 1301, 1302, 2301, 2302
6. **Music Theory:** MUTH 1103 and 1303, 1104 and 1304, 2103 and 2303, 2104 and 2304, 3303, MUCP 4207
7. **Major Ensemble:** 7 semesters
8. **Vocal Ensemble:** 1

Total track hours: 73
Total program hours: 137

Music (MUSI)

2000. Independent Studies in Music (V1-3). Individual study at the freshman and sophomore levels, providing greater depth than required by the established curricula. Enrollment and credit hours subject to the approval of divisional coordinators.

2301. Essential Elements of Music (3:3:0). Basic elements of music with appropriate techniques and principles of singing,

playing, moving to, and listening to music. *Not for music majors*.

3108. Elementary Music Observation and Assistance (1). Prerequisite: Junior standing. Field-based observation and assistance in elementary music classes. An individual study course.

3202. Music for the Adolescent (2). Content, organization, and administration of large and small instrumental and choral ensembles, programs of individual applied music, and appreciation of music for the adolescent.

3216, 3217. Choral Techniques (2 each). Materials, repertoire, and procedures for preparing choral performances.

3218, 3219. String and Orchestral Techniques (2 each). Materials, repertoire, and procedures for preparing orchestral and string ensemble performances.

3221, 3222. General Music Techniques (2 each). Materials, repertoire, and activities appropriate for general music classes with particular emphasis on music literature for children. Must be taken sequentially.

3225, 3226. Band Techniques (2 each). Prerequisite: 2 yrs. college marching experience. Materials, repertoire, and procedures for preparing band performances. Must be taken sequentially.

3330. Music Theory for Children (3). Prerequisite: MUSI 2301. Harmonic and melodic concepts derived from creative activities appropriate for children. *Not for music majors*.

3336. Music for Young Children (3:3:0). Simultaneous study of music and the development of the young child. Basic singing, listening, and age-appropriate activities and repertoire are emphasized.

3337, 3338. Music for Children (3 each). 3337 prerequisite to 3338. A study of musical activities, materials, and creative ideas. Emphasis on developing the child's voice, movement, playing of simple melodic and harmonic instruments, and listening skills. *For majors and specialists only.*

3341. Introduction to Technology for Musicians (3:3:0). Introduces technological resources for all aspects of the musical experience, primarily from the standpoint of the Macintosh operating system. Topics covered include computer-assisted instruction, music printing MIDI sequencing, digital sampling, HyperCard software development, and nonmusic topics such as word processing, graphics, multimedia, and electronic communication.

3342. Advanced Technology for Musicians (3). Prerequisite: MUSI 3341 or consent of instructor. Intensive and extensive student-centered study in topics to be selected from the following: programming and software development in music, MIDI sequencing, multimedia development, advanced music notation, and digital sampling and synthesis.

4301. Individual Studies in Music (3). [MUSI 2262]

Applied Music (MUAP)

Applied music instruction is offered in baritone, bassoon, carillon, clarinet, cornet or trumpet, double bass, flute, guitar, harp, harpsichord, horn, oboe, organ, percussion, piano, saxophone, trombone, tuba, viola, violin, violoncello, and voice.

1103, 1104. Percussion (1:0:2 each). Fundamentals of playing and teaching percussion instruments. Laboratory ensemble experience.

1105, 1106, 2105, 2106. Keyboard Skills (1:0:2 each). Sight reading and ensemble skills. Required of all piano majors for two semesters. Enrollment limited to piano majors, or by instructor consent.

1113, 1114. Voice (1:0:2 each). Correct posture and studies for breath control; development of resonance; study of vowel formation; vocalization. Simple songs. Laboratory ensemble experience. [MUSI 1183, 1184]

1123, 1124. Group Keyboard Instruction I and II (1:0:2 each). Beginning instruction in piano and electronic keyboards. Sight reading, harmonization and transposition, solo and ensemble repertoire, and playing techniques.

1303. Singers' Diction I (3). Singers' diction in Latin, Italian, and English utilizing the International Phonetic Alphabet. Prerequisite for MUAP 1304.

1304. Singers' Diction II (3). Prerequisite: MUAP 1303. Singers' diction in French and German utilizing the International Phonetic Alphabet.

2103, 2104. Strings (1:0:2 each). Fundamentals of playing and teaching string instruments. Laboratory ensemble experience.

2113. Keyboard Skills for Classroom Use (1:02). A course in keyboard skills for the elementary music specialist. Accompanying, harmonization, improvisation, playing patriotic songs, and sequencing accompaniments.

2123, 2124. Group Keyboard Instruction III and IV (1:0:2 each). Intermediate instruction in piano and electronic keyboards. Sight reading, harmonization and transposition, solo and ensemble repertoire, and playing techniques.

2133, 2134. Class Guitar (1:0:2 each). Beginning and intermediate instruction in guitar; basic left and right hand ap-

proaches of classical technique; basic chords and accompaniment styles. [MUSI 1192, 1193]

3101. Dimensions of Performance (1:1:1). Prerequisite: Consent of instructor. An interactive course open to all performers. Expressive movement, group dynamics, and free improvisations are used to maximize the spontaneity, confidence, and creativity of performers. May be repeated for credit.

3103, 3104. Brass Instruments (1:0:2 each). Fundamentals of playing and teaching brass instruments. Laboratory ensemble experience. [MUSI 1168, 2168]

3190. Junior Recital (1). Prerequisite: MUAP 3001 on the same instrument or voice; Corequisite: Concurrent enrollment in MUAP 3002. Credit no credit grading.

3205. Jazz Improvisation (2). Prerequisite: Consent of instructor. Study and application of techniques of improvisation in jazz performance. May be repeated for credit. [MUSI 1263]

3206. Conducting (2:2:0). Basic conducting techniques.

3207. Choral Conducting (2). Prerequisite: MUAP 3206. Specific techniques of choral conducting and choral rehearsal.

3208. Instrumental Conducting (2). Prerequisite: MUAP 3206. Advanced baton techniques, score reading, and interpretation.

3303. Vocal Literature (3). Prerequisite: MUHL 2301, 2302. Historical and comparative analytical survey of the standard vocal literature of the 19th and 20th centuries.

4103, 4104. Woodwinds (1:0:2 each). Fundamentals of playing and teaching woodwinds. Laboratory ensemble experience. [MUSI 1166, 1167]

4190. Senior Recital (1). Prerequisite: MUAP 4001 on the same instrument or voice; Corequisite: Concurrent enrollment in MUAP 4002. Credit no credit grading.

4301, 4302. Keyboard Literature I and II (3 each). A survey of keyboard literature from earliest times to the present. Class performance and listening.

4303, 4304. Piano Pedagogy (3 each). Teaching procedures for prospective piano teachers, including rudiments, techniques, and materials.

4305. Vocal Pedagogy (3). Pedagogical attitudes in identifying and solving vocal problems based on a thorough knowledge of functional anatomy with an emphasis on the following: anatomy of breathing, phonation, articulation, as well as repertoire selection, memorization skills, coaching, program development, and performance skills.

4307. Choral Conducting (3). Prerequisite: MUAP 3207. Study and performances of representative choral works of all periods. Participation in a major choral organization required. An individual study course.

4308. Instrumental Conducting (3). Prerequisite: MUAP 3208. Study and performance of instrumental works of all periods. Participation in a major instrumental ensemble required. An individual study course.

Applied Music 1001, 1002, 2001, 2002, 3001, 3002. Instrument or Voice (1 each).

Applied Music 1001, 1002, 2001, 2002, 3001, 3002, 4001, 4002. (2 to 4 each).

Music Composition (MUCP)

1201, 1202. Introduction to Contemporary Music (2 each). *Open to both majors and nonmajors.* A survey of current trends, with activities emphasizing creative musicianship and new technology in composition. May be an individual study course. (For songwriting, see MUTH 1300.) [MUSI 1286, 1287]

2301, 2302. Music Composition (3 each). *For composition majors.* Prerequisite: MUCP 1202 or the equivalent. Work in traditional forms and media and also electronic media, together with the principles of notation, layout, reproduction, and copyright. May be an individual study course.

3001. Projects in Electronic and Experimental Music (V2-4). *Open to both majors and nonmajors.* Prerequisite: MUCP 1202, or the equivalent, and instructor approval. Independent study and creative projects utilizing the resources of the Experimental Music Studio. May be repeated for credit.

3301, 3302. Music Composition (3 each). *For composition majors.* Prerequisite: MUCP 2302 and formal approval to continue in the Bachelor of Music program in Music Composition. Continued work in both traditional and electronic media. May be an individual study course.

4207. Instrumentation (2:2:0). Prerequisite: MUTH 2404 or equivalent, or by permission of the division of theory and composition. A study of the properties of woodwind, brass, percussion, and string instruments, their transpositions, and their sectional treatment, leading to full scorings for both band and orchestra.

4208. Orchestration (2). Prerequisite: MUCP 4207. More advanced work in scoring for both band and orchestra.

4401, 4402. Music Composition (4 each). *For composition majors*. Prerequisite: MUCP 3302 or the equivalent. Advanced work on a larger scale, culminating in a senior recital as noted in the curriculum. May be an individual study course.

Music Education (MUED)

3311. Curriculum and Instruction in Education and Music (3:3:0). Prerequisite: Junior standing and acceptance to the Teacher Education Program. Foundations, patterns, and issues in curriculum development. Preparation of resource-teaching units. Transfer and application to the discipline of music. Field experiences required.

3312. Methods in Education and Music (3:3:0). Prerequisite: Junior standing and acceptance to the teacher education program. Foundations of teaching, methods and techniques, evaluation, and classroom management. Transfer and application to the discipline of music. Field experiences required.

Student Teaching—All-Level (MUAL)

4000. Student Teaching in Music—All-Level (V1-12). Prerequisite: Attainment of admission standards for student teaching. Supervised teaching involving a period of major responsibility for instruction and learning in an accredited school.

Student Teaching—Secondary (MUSE)

4000. Student Teaching in Music—Secondary (V1-12). Prerequisite: Attainment of admission standards for student teaching. Supervised teaching involving a period of major responsibility for instruction and learning in an accredited school.

Music Ensemble (MUEN)

Each ensemble may be taken for four successive years, because the literature studied will cover a cycle of that period of time. Two semester hours of MUEN 1103 (marching band) may be substituted for required health and physical fitness. Ensembles include Band, Choir, Music Theatre, Orchestra, Brass Band, Chamber Orchestra, Jazz Ensemble, Jazz Combo, Chamber Music, Brass Choir, Woodwind Ensemble, Guitar Ensemble, Viola Ensemble, Flute Ensemble, Saxophone Ensemble, Oboe Ensemble, Clarinet Choir, Trumpet Ensemble, French Horn Ensemble, Trombone Ensemble, Tuba Ensemble, Percussion Ensemble, Harp Ensemble, New Music Ensemble, and Collaborative Piano.

1103. Marching Band (1:0:5).
2100. New Music Ensemble (1:0:3).
3101. Choir (1:0:3). [MUSI 1141, 1151]
3102. Music Theatre (1:0:3). [MUSI 1158, 1159]
3103. Band (1:0:3). [MUSI 1127]
3104. Orchestra (1:0:5). [MUSI 1129]
3105. Jazz Ensemble (1:0:3). [MUSI 1121]
3106. Small Ensemble (1:0:1). [MUSI 1131]
3110. Medium Ensemble (1:0:2).
3201. University Choir (2:0:5). [MUSI 1241]
3202. Music Theatre (2:0:5). [MUSI 1258, 2159]
3203. Band (2:0:5). [MUSI 1227]
3204. Orchestra (2:0:5). [MUSI 1229]

Music History and Literature (MUHL)

1301, 1302. Introduction to Music Literature (3:3:0 each). *For music majors or with consent of instructor.* Through directed listening, music of various forms and styles is considered. Introduction to music history showing relationship of music studied to that preceding and following it. [MUSI 1308, 1309]

1308. Music Appreciation (3:3:0). *Beginning course for nonmajors.* Encourages appreciation of music through consideration of a variety of musical styles. [MUSI 1306]

2301, 2302. History of Music (3:3:0 each). *For music majors or with consent of instructor.* Prerequisite: MUHL 1301,1302. Historical survey of the music of Western civilization from ancient times to the present. Either course may be taken first. (Writing Intensive)

2308, 2309. Heritage of Music (3:3:0 each). *For nonmusic majors.* Studies selected compositions through an interpretation of their historical, functional, and cultural significance.

3304. History of Jazz (3:3:0). Historical and analytical survey of jazz from its beginning through "Rock"—its form, style, literature, and influence on 20th century music. *This course may count toward the upper level music literature or theory elective requirements for performance majors.*

3308. Masterpieces in Music (3:3:0). *For nonmusic majors.* Studies representative musical works from the Baroque Period to the present in relation to their historical and general cultural context.

4300. Special Topics in Music History and Literature (3:3:0). Prerequisite: MUHL 2301 and 2302. Topics may cover any historical period of music, music literature, or composers. May be repeated under a different topic.

Music Theory (MUTH)

1101. Developmental Aural Skills (1). Corequisite: MUTH 1301. For music majors or with consent of instructor. Developmental diction, sight singing, and keyboard skills.

1103. Elementary Aural Skills I (1:0:2). Corequisite: MUTH 1303. For music majors or with consent of instructor. Dictation, sight-singing, and keyboard skills.

1104. Elementary Aural Skills II (1:0:2). Prerequisite: Completion of MUTH 1303 and 1103 with a grade of C or better, or equivalent. Corequisite: MUTH 1304. Dictation, sight-singing, and keyboard skills.

1300. Songwriting (3:3:0). A beginning course *for nonmusic majors*. A practical approach to music theory through songwriting. Includes aural training, notation, textual setting, melodic writing, and chord assignment. [MUSI 1300]

1301. Introduction to Music Theory (3:3:0). Corequisite: MUTH 1101. An introduction to the elements of melody, rhythm, harmony, and sight-singing. [MUSI 1301]

1303. Elementary Music Theory I (3:3:0). Corequisite: MUTH 1103. For music majors or with consent of instructor. Melody, rhythm, and diatonic harmony.

1304. Elementary Music Theory II (3:3:0). Prerequisite: Completion of MUTH 1303 and 1103 with a grade of C or better, or equivalent. Corequisite: MUTH 1104. Melody, rhythm, and diatonic harmony.

2103. Intermediate Aural Skills I (1:0:2). Prerequisite: Completion of MUTH 1304 and 1104 with a grade of C or better, or equivalent. Corequisite: MUTH 2303. Dictation, sight-singing, and keyboard skills.

2104. Intermediate Aural Skills II (1:0:2). Prerequisite: Completion of MUTH 2303 and 2103 with a grade of C or better, or equivalent. Corequisite: MUTH 2304. Dictation, sight-singing, and keyboard skills.

2303. Intermediate Music Theory I (3:3:0). Prerequisite: Completion of MUTH 1304 and 1104 with a grade of C or better, or equivalent. Corequisite: MUTH 2103. Diatonic and chromatic harmony.

2304. Intermediate Music Theory II (3:3:0). Prerequisite: Completion of MUTH 2303 and 2103 with a grade of C or better, or equivalent. Corequisite: MUTH 2104. Diatonic and chromatic harmony; survey of twentieth-century techniques.

3303. Form, Analysis, and Synthesis (3:3:0). Prerequisite: Completion of MUTH 2304 and 2104 with a grade of C or better or equivalent. The analysis and synthesis of Classical, Romantic, Impressionist, and Contemporary styles, including harmonic and nonharmonic practices and the principles of both small and large part-forms. May be an individual study course.

3308. Twentieth Century Techniques (3). Prerequisite: MUTH 3303 or the equivalent. The study of contemporary techniques, modes, synthetic scales, serialism, and vertical structures—with syntheses and a term project.

4302, 4303. Fundamentals of Composition (3 each). Prerequisite: MUTH 3303. Original writing in small forms for voice, solo instruments, and small ensembles; the development of individual style. An individual study course.

4305. Modal Counterpoint (3). Prerequisite: Completion of MUTH 2304 and 2104 with a grade of C or better or equivalent. A study of 16th century vocal counterpoint, beginning with the principles of melodic writing and concentrating upon the analysis and synthesis of polyphonic textures, as found in the motet and the mass.

4307. Tonal Counterpoint and Fugue (3). Prerequisite: Completion of MUTH 2304 and 2104 with a grade of C or better or equivalent. The analysis and synthesis of 18th century counterpoint in two to four voices, concentrating upon the instrumental style and techniques of the invention and the fugue.

4309. Arranging (3). Prerequisite: MUCP 4207 or the equivalent. Techniques of arranging for concert band, marching band, and jazz ensembles. Laboratory performances. An individual study course.

Department of Theatre and Dance

Chair: Professor Frederick B. Christoffel

Professors Bert and Willis-Aarnio; ***Associate Professor*** Marks; ***Assistant Professors*** Donahue, Homan, and Williams; ***Visiting Faculty*** Mertz and Stinespring.

This department supervises the following degree programs: THEATRE ARTS, *Bachelor of Arts, Bachelor of Fine Arts, Master of Arts, Master of Fine Arts;* DANCE, *Bachelor of Arts.* The department also participates in the *Doctor of Philosophy* degree in FINE ARTS with a major in Theatre Arts.

The department sponsors a major season of plays in the University Theatre, a season of student-directed plays in the Laboratory Theatre, a summer repertory season of plays, and various workshops. In addition, it sponsors chapters of Alpha Psi Omega (national theatre honorary), Chi Tau Epsilon (national dance honorary), and the United

States Institute of Theatre Technology. It is an institutional member of the Texas Educational Theatre Association, the Texas Nonprofit Theatre Inc., the Southwest Theatre Association, the Association for Theatre in Higher Education, and the American College Dance Festival Association.

Grades below C in required courses of theatre and dance major and minors are not acceptable in fulfillment of degree requirements. Transfer students must complete the following minimum numbers of credit hours of major or minor courses in residence at Texas Tech: B.A. theatre majors—9 hours; B.F.A. theatre majors—30 hours; B.A. dance majors—27 hours; theatre or dance minors—3 hours.

Students seeking the B.A. degree with a major in Theatre Arts must complete the following requirements in addition to those required by the university and the College of Visual and Performing Arts: TH A 1101, 1102, 1103, 1301, 2302, 2303, 3105, 3303, 3304, 3305, 3308, 3309, 3335, 4302, two hours of dance, and 3 hours of electives for a total of 39 to 42 hours.

For a minor in theatre arts, the following courses for a total of 18 hours are required: TH A 2302, 2303, 3335; 3 hours from the following list with no course counted more than once: TH A 1101, 1102, 1103, 1104, 3105, and 1 hour from any dance course; one of the following courses: TH A 2310, 3308, 3309, and 3310; as well as one of the following courses: TH A 3303, 3304, and 3305.

Students seeking the B.A. degree with a major in Dance are required to complete 45 hours of study, including the core plus either Plan I (ballet) or Plan II (modern dance). No minor is required. Plan I allows the student to take up to 7 of the 45 hours from support areas, while Plan II permits up to 3 of the 45 hours.

Core Requirements
DAN 3104, 4104, 4207.

Plan I (Ballet) Courses
DAN 1102 (1-2 semesters), 1304 (8 semesters), 1204 (3 semesters), 4102 (1-2 semesters). In addition, ballet majors must complete 7 hours from the support areas.

Plan II (Modern Dance) Courses
DAN 1103, 1107, 1204 (5 semesters), 1304 (3 semesters), 2102 (1-2 semesters), 3201 (1-2 semesters). In addition, modern dance majors must complete 17 hours from the support areas.

Support Areas
DAN 3207, 3209, 3313, 4200, 4201, TH A 3304, 3308, 3309, 3311, 4308, 4311, MUHL 3221, 3222, 3304, 3308, 3336.

Minor in Dance. Students seeking a minor in dance will complete the following courses: DAN 1107, 1204 (2 semesters), 1304 (2 semesters), 2102, 3104 (2 semesters), 4201, and 4207.

Dance Curriculum (Recommended)

Plan I (Ballet)

First Year	Second Year	Third Year	Fourth Year
DAN 1102	DAN 1107-301	DAN 1204-301	DAN 1204-302
DAN 1103-301	DAN 1304-302	DAN 1204-302	DAN 1304-303
DAN 1304-301	(2 semesters)	DAN 1304-303	(2 semesters)
(2 semesters)		(2 semesters)	DAN 4102
		DAN 3104	DAN 4104
		DAN 3209	DAN 4200
		DAN 3313	DAN 4207

Plan II (Modern Dance)

First Year	Second Year	Third Year	Fourth Year
DAN 1103-301	DAN 1107-301	DAN 1204-302	DAN 1204-303
DAN 1103-302	DAN 1204-301	DAN 1204-303	DAN 3201
DAN 1304-301	DAN 1204-302	DAN 3104	DAN 4104
(2 semesters)	DAN 1304-302	DAN 3207	DAN 4200
	DAN 2102	DAN 3209	DAN 4201
		DAN 3313	DAN 4107

Students seeking preprofessional training leading to a B.F.A. degree in theatre arts specialize either in acting or in design technology. Entrance to the B.F.A. program is by audition and interview. Students usually audition for the program in their sophomore year and are admitted at the discretion of the faculty. Continuance in the program is dependent upon annual review and the faculty's assessment of the student's timely progress. Students whose progress is found unsatisfactory will be placed on probation. Probationary students who fail to improve will be removed from the program. The minimum number of hours required for B.F.A. theatre majors is a total of 126-133, at least 40 of which must be at the junior and senior levels. All Bachelor of Fine Arts degrees are undergoing revisions to incorporate elements of new requirements in the College of Visual and Performing Arts. The following curriculum tables for the different degree tracks are for students who entered Texas Tech *prior to fall 2002*. Students entering Texas Tech in *fall 2002 or later* should consult an advisor in the Department of Theatre and Dance. Note that some of the following courses must be completed before entering the B.F.A.; students should consult advisors for details.

Core Requirements

TH A 1101, 1102, 1103, 1104, 2101, 2302, 2303, 3104, 3105, 3303, 3304, 3305, 3308, 3309, 3335, 4302, 4303, 4308.

Acting and Directing Specialization Courses

TH A 1301, 1302, 2312, 3105 (two times additional to core), 3106, 3302, 3306, 3307, 3322, 3332, 4000 (twice). In addition, students must complete 17 hours from the following: TH A 2305, 2306, 2310, 3310, DAN 1102, 1103*, 1107*, 1204*, 1304*, 2100, 2102, 3104, 3201, 3313, 4102, 4207, MUAP (voice) 1001, 1002, 1113, 1114, 2001, 2002, 3001, 3002.

Design and Technology Specialization Courses

TH A 2306, 3306, 3307, 4108 (twice), 4000 (twice), 4309 (twice), 4310 and 4311; ART 1320, 1324, 1325, and 2320 or 1331. Also 9 hours must be selected from TH A 3100, 3101, 3102, 3103, 4309, 4310, and 4311.

*Strongly recommended.
**Students with an emphasis in scenery, lighting, or costume design must take 6 of the additional 9 hours in their area of specialization.

Acting Curriculum (Recommended)

FIRST YEAR

Fall		*Spring*	
TH A 1101, Scenery & Props.	1	TH A 1102, Lighting & Sound	1
TH A 1301, Voice for the Actor	3	TH A 1302, Movement for the Actor	3
TH A 2302, Prin. of Acting I	3	TH A 2303, Intro. to Theatre	3
TH A 2101, Stage Makeup	1	TH A 2312, Prin. of Acting II	3
**Core Curriculum requirements	6-10	**Core Curriculum requirements	9-12
TOTAL	14-18	TOTAL	19-22

SECOND YEAR

Fall		*Spring*	
TH A 1103, Costume & Makeup	1	TH A 1104, Theatre Act. House Mgt.	1
TH A 3105, Rehearsal & Performance	1	TH A 3105, Rehearsal & Performance	1
TH A 3302, Acting Period Styles I	3	TH A 3322, Acting Period Styles II	3
TH A 3335, Script Analysis	3	TH A 3303, Prin. of Theatrical Scenery	3
**Core Curriculum requirements	9-12	TH A 3104, Adv. Act. House Mgt.	3
TOTAL	17-20	**Core Curriculum requirements	9-12
		TOTAL	20-23

SUMMER SESSION

First Term	
**Core Curriculum requirements	9-12

THIRD YEAR

Fall		*Spring*	
TH A 3304, Prin. of Lighting	3	TH A 3305, Prin. of Costuming	3
TH A 3105, Rehearsal & Performance	1	*DAN (any course)	1
TH A 3308, History of Theatre I	3	TH A 3309, History of Theatre II	3
TH A 3332, Acting Period Styles III	3	TH A 4312, Workshop in Theatre	3
*DAN (any course)	1	TOTAL	10
TOTAL	11		

SUMMER SESSION

First Term	
TH A 3306, Prac. in Theatre Rep. I	3
TH A 3307, Prac. in Theatre Rep. II	3
TOTAL	6

FOURTH YEAR

Fall		*Spring*	
TH A 4302, Stage Directing Meth.	3	TH A 4000, 4312, or 4313, Sr. Proj.	3
TH A 4000, Projects in The. & Dan.	3	TH A 4308, Prof. Career Mgt.	3
*DAN (any course)	1	TH A 4303, Th. & Prac. Playwriting	3
TH A 4312 or 4313, Special Topics	3	**Core Curriculum requirements	9-12
**Core Curriculum requirements	9-12	TOTAL	18-21
TOTAL	19-22		

*DAN 1102, 1107, or 1204 strongly recommended.
**See Core Curriculum requirements section of this catalog.

Teacher Education. Students desiring secondary certification in theatre arts must complete the following: TH A 1301, 2302, 2303, 3303, 3304, 3305, 3308, 3309, 4302, and one 3-hour elective. Students desiring secondary certification in dance must complete the following courses: DAN 1102 or 2102, 1103, 1107, 1204, 1304, 3104, 3207, 3209, 3313, 4200, 4201, 4207, and MUTH 1300 or 3336.

Dance (DAN)

1103. Jazz (1:0:3). A study of jazz techniques. May be repeated once for credit. [DANC 1147]

1107. Musical Stage Dance (1:0:3). An introduction to musical stage forms including hybrid forms of dance specifically for the Broadway, television, or musical stage. May be repeated once for credit.

1204. Modern Dance (2:0:41/2). A study of modern dance techniques. May be repeated for credit. [DANC 1245]

1304. Ballet (3:0:71/2). The academic study of ballet from its beginning to the most sophisticated forms. May be repeated for credit. [DANC 1341]

2100. Dance Activities in Theatre (1:0:2). Skills and knowledge in ballet, modern and jazz dance activities. Intended for students with limited dance experience. May be repeated for credit. [DANC 1131]

2102. Improvisation (1:0:2). Experiences in improvisation to develop spontaneity and heighten awareness so that movement response can become instantaneous. May be repeated once for credit.

3104. Dance Production Activities (1). Prerequisite: Consent of instructor. Participation in a dance production, either as a lighting designer, performer, choreographer, or crew head. May be repeated once for credit.

3201. Modern Dance Repertoire (2:0:4). Prerequisite: DAN 1204 and consent of instructor. Exposure to various modern dance choreography.

3207. Dance for Children (2:1:2). Creative movement, singing and rhythmic games, ballet, modern, and jazz dance for children.

3209. Pedagogy (2:1:2). Prerequisite: Consent of instructor. Basic principles and guidelines for the teaching of ballet and modern dance.

3313. History of the Dance (3:3:0). History and philosophy of dance and the relationships of dance to allied arts. (Writing Intensive)

4102. Partnering (1:0:2). Prerequisite: Consent of instructor. An introduction to supported adagio—the assimilation of the easiest methods of partner relationship on the stage. May be repeated once for credit.

4104. Senior Concert (1). Prerequisite: DAN 4207. Senior presentation of an original dance composition, including selection of music, costume, and lighting designs.

4200. Ethnic Dance (2:1:2). A study of Spanish, Mexican, and Italian folk dance; also character dance.

4201. Special Topics in Dance (2:2:0). Prerequisite: Consent of instructor. Introduction to special topics in dance for in-depth study. (Writing Intensive)

4207. Choreography (2:1:2). Prerequisite: DAN 1204, 1304. The study of the craft of composing ballet and modern dances.

Theatre Arts (TH A)

1101. Theatre Activities: Scenery and Properties (1). Opportunity to participate extensively in theatre activities in scenery and properties. [DRAM 1120]

1102. Theatre Activities: Lighting and Sound (1). Opportunity to participate extensively in theatre activities in lighting and sound. [DRAM 1121]

1103. Theatre Activities: Costume and Makeup (1). Opportunity to participate extensively in theatre activities in costume and makeup. [DRAM 2120]

1104. Theatre Activities: House Management (1). Opportunity to participate extensively in theatre activities in the area of house management.

1301. Voice for the Actor (3:3:3). Explores "freeing" the natural resources of the human voice with emphasis on characterization and vocal flexibility. Required of B.F.A. acting and/or directing majors. [DRAM 2337, DRAM 1322]

1302. Movement for the Actor (3:3:3). Explores the physical skills necessary for the actor with emphasis on individual physical creativity and imagination. Required of B.F.A. acting and/or directing majors.

2101. Stage Makeup (1:0:3). [DRAM 1141]

2301. Introduction to Acting (3:3:0). Fundamental principles of acting for *nonmajors*, with emphasis on establishing a working vocabulary and basic acting process.

2302. Principles of Acting I (3:3:3). Explores the fundamental principles of acting for the theatre major. Emphasis on establishing a process and working vocabulary necessary for the profession. Required of B.F.A. acting and/or directing majors. [DRAM 1351]

2303. Introduction to Theatre (3:3:0). A study of the modern theatre art form, its backgrounds and values. Attendance at representative plays is required. Applies toward fine arts requirement for B.A. degree. [DRAM 1310, HUMA 1315]

2304. Introduction to Cinema (3:3:1). A study of the cinematic art form. Three-hour lecture and viewing session plus one hour discussion each week. Applies toward fine arts requirement for the B.A. degree.

2305. Fundamentals of Oral Interpretation (3:3:0). Major emphasis is placed on the appreciation of good literature and its effective oral interpretation from the printed page. [SPCH 2341]

2306. Stage Management (3:3:0). Prerequisite: TH A 2303. An in-depth study of the functions and responsibilities of the stage manager in the performing arts.

2310. Avant-Garde Theatre (3:3:0). An examination of the works of European and American 20th century artists who have challenged the boundaries of what is generally considered theatre. (Writing Intensive)

2312. Principles of Acting II (3:3:3). Prerequisite: TH A 2302. Explores representative acting theories in practice with emphasis on given circumstances and character development. Required of B.F.A. acting and/or directing majors.

3100. Advanced Theatre Activities: Stage Management (1). Prerequisite: TH A 2306. Opportunity to participate extensively in theatre activities in stage management in University Theatre productions.

3101. Advanced Theatre Activities: Scenery and Properties (1). Opportunity to participate extensively in theatre activities in scenery and properties with emphasis on leadership experiences.

3102. Advanced Theatre Activities: Lighting and Sound (1). Prerequisite: TH A 3304. Opportunity to participate extensively in theatre activities in lighting and sound with emphasis on leadership experiences.

3103. Advanced Theatre Activities: Costume and Makeup (1). Prerequisite: TH A 3305. Opportunity to participate extensively in theatre activities in costume and makeup with emphasis on leadership experiences.

3104. Advanced Theatre Activities: House Management (1). Opportunity to participate extensively in theatre activities in house management with emphasis on leadership experiences.

3105. Rehearsal and Performance (1). Credit for acting in University Theatre and Laboratory Theatre productions. May be repeated for credit.

3106. Auditioning (1:0:2). Prerequisite: TH A 1301 and 2302. A practicum for developing audition techniques and examining guidelines for audition procedures, with emphasis on resume organization and audition material selection and performance.

3302. Acting Period Styles I (3:3:3). Prerequisite: TH A 2312. Scene study in a spectrum of periods and styles, from the Greeks to Renaissance theatre. Required of B.F.A. acting and/or directing majors. (Writing Intensive)

3303. Principles of Theatrical Scenery (3:2:3). Prerequisite: TH A 2303 or equivalent. The study of technical problems of play production. Design, construction, and painting of scenery and properties and special effects. [DRAM 1330]

3304. Principles of Theatrical Lighting (3:2:3). Prerequisite: TH A 2303 and 3303 or equivalent. Study of the theory and practice of theatrical stage lighting. Elementary electricity, lighting control and instruments, lighting design.

3305. Principles of Theatrical Costuming (3:2:3). Prerequisite: TH A 2303 or equivalent. Study and application of the theories and techniques of theatrical costuming. Survey of historical dress. Design for the stage. Construction of theatrical clothing.

3306, 3307. Practicum in Repertory Theatre I, II (3:0:9 each). Prerequisite: TH A 1301, 2302, 2303, or equivalent. Practical work in the organization, mounting, and presentation of plays in a repertory situation. May be repeated for credit.

3308. History of Theatre I (3:3:0). A comprehensive review of world theatre from its beginning to the 17th century. May be applied toward fulfillment of fine arts requirement for the B.A. degree. [DRAM 2361] (Writing Intensive)

3309. History of Theatre II (3:3:0). A comprehensive overview of world theatre from the 17th century to the present. May be applied toward fulfillment of fine arts requirement for the B.A. degree. [DRAM 2362] (Writing Intensive)

3310. Introduction to Performance Studies (3:3:0). An introduction to the discipline of performance studies that draws on American, European, Asian, and African performance-related material. (Writing Intensive)

3311. Principles of Performing Arts Management (3:3:0). Study of the management principles of various types of performing arts, including planning, organizing, leading, controlling, fund-raising, marketing, audience development, etc.

3312. Creative Drama (3:3:0). The study of the principles of creative drama, including exercises in pantomime, concentration, story-building, verbal activities, and story dramatization.

3322. Acting Period Styles II (3:3:3). Prerequisite: TH A 2312. Scene study in a spectrum of periods and styles from Restoration to contemporary theatre. Required of B.F.A. acting and/or directing majors. (Writing Intensive)

3332. Acting Period Styles III (3:3:3). Prerequisite: TH A 2312. Scene study in the performance of Shakespearean texts and the conventions and performance styles of Elizabethan theatre. Required of B.F.A. acting and/or directing majors. (Writing Intensive)

3335. Script Analysis (3:3:0). An introduction to dramatic structure and methods of script analysis as a preparation for writing, directing, designing, performing, and criticizing plays. (Writing Intensive)

4000. Projects in Theatre and Dance (V1-6). Prerequisite: Junior or senior standing and 9 hours of theatre or dance and consent of instructor. Individual study, under the guidance of a faculty member. Repeatable for credit.

4108. Scene Painting (1). Prerequisite: TH A 2302, 3303, and 3304. Study of the art and craft of scene painting styles and techniques. Repeatable for credit.

4302. Stage Directing Methods (3:2:3). Prerequisite: Junior standing, TH A 2302, 2303, 3303, 3304, and 3305. Study and practice of fundamental principles and techniques of directing. Student direction of representative plays. (Writing Intensive)

4303. Theory and Practice of Playwriting (3:3:0). Prerequisite: TH A 3335. Study of the techniques of dramaturgy. Practical work in the writing of drama. May be repeated for credit. (Writing Intensive)

4308. Professional Career Management (3:3:0). An overview of the various aspects of developing and managing a career in the performing arts including auditioning, resumé writing, portfolio development, and contract evaluation.

4309. Principles of Scene Design (3:0:9). Prerequisite: TH A 2303, 3303, and 3304. Study of theory and practice of theatrical scene design. May be repeated for credit.

4310. Costume Design (3:0:9). Prerequisite: 2303 and 3305. Theory and practice of costume design for technical production. Repeatable for credit.

4311. Theory and Practice of Lighting Design (3:0:9). Prerequisite: TH A 2303, 3303, and 3304. Study of the theory, process, and practice in lighting design for theatre, opera, and dance. Repeatable for credit.

4312. Workshop in Theatre (3:3:3). Prerequisite: Consent of instructor. In-depth instruction and practice in specific areas of performance, design, and production. Repeatable for credit.

4313. Seminar in Theatre (3:3:0). Prerequisite: Consent of instructor. In-depth study of selected topics in theatre and dance.

Health Sciences Center

Web Site: www.ttuhsc.edu

School of Allied Health

Professor Paul P. Brooke Jr., *Dean*

The Health Sciences Center School of Allied Health offers the following degree programs: CLINICAL LABORATORY SCIENCE, *Bachelor of Science;* EMERGENCY MEDICAL SERVICES, *Bachelor of Science*; COMMUNICATION DISORDERS, *Bachelor of Science, Master of Science in Communication Disorders;* MOLECULAR PATHOLOGY, *Master of Science;* AUDIOLOGY, *Doctor of Audiology;* PHYSICIAN ASSISTANT, *Master of Physician Assistant Studies;* ATHLETIC TRAINING, *Master of Athletic Training;* OCCUPATIONAL THERAPY, *Master of Occupational Therapy;* PHYSICAL THERAPY, *Master of Physical Therapy;* and VOCATIONAL REHABILITATION, *Master of Vocational Rehabilitation.* All programs are fully accredited and include both didactic and clinical practice components.

Admission to School of Allied Health programs is competitive and by application to the school. Admission and application deadlines vary for each program. Inquiries and requests for applications should be directed to the following:

Texas Tech University Health Sciences Center
School of Allied Health
Office of Admissions and Student Affairs
3601 4th St., Suite 2BC 194
Lubbock, TX 79430
(806) 743-3220; (806) 743-3249 FAX
www.ttuhsc.edu/pages/alh
Email: alhadm@ttuhsc.edu

Admission to Texas Tech University does not confer admission to the Texas Tech University Health Sciences Center School of Allied Health nor does admission to the School of Allied Health confer admission to Texas Tech University.

Prospective students and other interested persons are encouraged to contact the Office of Admissions and Student Affairs for information on allied health careers and educational programs. Students who are attending Texas Tech University and wish to take the courses to satisfy prerequisite requirements for these professional programs may enroll in the College of Arts and Sciences as allied health majors. These students will be advised through the Office of Preprofessional Health Careers at Texas Tech University, Room 340, Chemistry Building, (806) 742-3078.

Clinical Laboratory Science Program. Medical Technologists (MT) or Clinical Laboratory Scientists (CLS) perform diagnostic laboratory procedures in hospital, clinic or veterinary laboratories. Diagnostic analyses in hematology, chemistry, microbiology, immunology, and urinalysis yield information which is of vital importance in establishing a medical diagnosis.

The clinical laboratory science program at Texas Tech requires students to complete two years of lower division courses followed by a two-year upper-division professional curriculum at Texas Tech University Health Sciences Center. Admission is by application only. Transfer students may also apply.

The program in Clinical Laboratory Science offers four options: a standard option, a premedical (dental, veterinary, pharmacy) option, a business option, and a pre-physician assistant option. Students enrolled in the premedical option are assigned to a faculty advisor. Particular attention is given in the areas of course selection, MCAT preparation, recommendations, and personal expectations. Students enrolled under this option will also have the opportunity to attend lectures in the TTUHSC School of Medicine and tour different areas of the medical complex.

The business option is designed for students who want a business education focused on the health care (especially clinical laboratory) sector. Students receive a bachelor of science degree in clinical laboratory science with a business emphasis.

Honors College students accepted into the CLS program may complete Honors College credit in the School of Allied Health and graduate with the honors designation.

Professional level courses are listed and described in the *School of Allied Health Catalog.*

STANDARD OPTION

Content Area	*Equivalent TTU Courses*	*Semester Hours*
Biology or *Anatomy and Physiology	BIOL 1403 and 1404; or ZOOL 2403 and 2404	8
Science Elective		3-4
Chemistry	CHEM 1307 & 1107, 1308 & 1108, and 2303 & 2103	12
English	ENGL 1301 and 1302	6
History	HIST 2300 and 2301	6
Political Science	POLS 1301 and 2302	6
Mathematics (College Algebra)	MATH 1320	3
Microbiology	MBIO 3401	4
**Social Science Electives		6
Electives		6
TOTAL		60-61

*Genetics recommended if pursuing the Master of Science in molecular pathology.
**Social science electives may be selected from the following: ANTH 1301, 2301, 2302; ECO 2305; PSY 1300; SOC 1301, 1320.

PREMEDICAL OPTION

Content Area	*Equivalent TTU Courses*	*Semester Hours*
Biology	BIOL 1403 and 1404	8
Chemistry	CHEM 1307 & 1107, 1308 & 1108, 2305 & 2105, and 2306 & 2106	16
English	ENGL 1301 and 1302	6
History	HIST 2300 and 2301	6
Statistics-Mathematics	MATH 1351 or 2300	3
Microbiology	MBIO 3401	4
Physics	PHYS 1306 & 1103 and 1307 & 1104	8
Political Science	POLS 1301 and 2302	6
*Social Science Elective		3
**Science Elective		3-4
Elective		3
TOTAL		66-67

*Social science electives selected from ANTH 1301, 2302, 2302; ECON 2305; PSY 1300; SOC 1301, 1320
**Genetics recommended if pursuing the Master of Science in molecular pathology.

BUSINESS OPTION

Content Area	*Equivalent TTU Courses*	*Semester Hours*
Economics	ECO 2301, 2302, and 3311	9
Biology or Anatomy and Physiology	BIOL 1403 and 1404 or ZOOL 2403 and 2404	8
*Business Law	BLAW 3391	3
Chemistry	CHEM 1307 & 1107, 1308 & 1108, and 2301 & 2303	12
English	ENGL 1301 and 1302	6
History	HIST 2300 and 2301	6
Information Systems and Quantitative Sciences	ISQS 2440 and *3344	10
Mathematics (Business Math)	MATH 1330, 1331, and 2345	6
Microbiology	MBIO 3401	3
Political Science	POLS 1301 and 2302	6
TOTAL		69

*Six hours of business courses may be taken during the summer of the junior-senior year.

PREPHYSICIAN ASSISTANT OPTION

Content Area	*Equivalent TTU Courses*	*Semester Hours*
Biology	BIOL 1403 and 1404	8
Anatomy and Physiology	ZOOL 2403 and 2404	8
Microbiology	MBIO 3401	4
Chemistry	CHEM 1307 & 1107, 1308 & 1108, and 2305 & 2105	12
English	ENGL 1301 and 1302	6
Mathematics (College Algebra)	MATH 1320	3
Sociology	SOC 1301	3

Communication Studies	COMS 2300 or 3365	3
History	HIST 2300 and 2301	6
Political Science	POLS 1301 and 2302	6
Nutrition	F&N 3320 or 3340	3
Psychology	PSY 1301, 4301 or 4305	6
Social Science Elective		3
TOTAL		71

Students who wish to apply should contact the Office of Admissions and Student Affairs at the School of Allied Health for information and forms.

Contact Information: Lori Rice-Spearman, Program Director, (806) 743-3252.

Emergency Medical Services (EMS) Management Program. The Emergency Medical Services Program at Texas Tech University Health Sciences Center offers an accredited bachelor's degree in EMS Management as well as four certificate level programs at the ECA, EMT-Basic, EMT-Intermediate and Paramedic levels. Students seeking college credits for the certificate courses and/or an applied sciences degree in emergency medical services may do so through an educational cooperative agreement between TTUHSC and South Plains College. TTUHSC retains responsibility for direction, administration, medical oversight, design, instruction, continuing evaluation, and modification of all EMS courses. The Health Sciences Center provides all instructors, instructional equipment, supplies, and classroom support for these courses and maintains the clinical affiliations necessary to support the program of instruction. TTUHSC is also responsible for maintaining accreditation of the EMS instructional program through CAAHEP. The EMS program's administrative and faculty offices are located at the Health Sciences Center. Each program level has specific requirements and prerequisites. Further information may be obtained by contacting the EMS Program Office at 806-743-3218 or at www.ems.ttuhsc.edu.

Bachelor of Science in EMS Management. This program is designed for the nontraditional student and can be completed in the student's home area through the Internet in WEBCT from TTUHSC and TTU and the transfer of credits from colleges and universities in the student's home area. Based in the School of Allied Health's Department of Diagnostic and Primary Care, this EMS degree is an opportunity for students with EMS experience to answer their educational needs in a variety of areas requiring an understanding of administrative skills and/or management. Students come from a broad area of disciplines including ambulance, police, fire and military backgrounds. The program may be completed on a part-time basis.

Students may enter the program at any time in their educational career and earn a Bachelor of Science degree in EMS Management after completing all courses. The degree requires a total of 131 credits with a maximum of 67 credit hours that can be accepted from an accredited two-year educational institution. AHEM courses make up 34 credit hours while an additional 30 hours may be taken at any college or university. All courses require approval from the Program Director and the degree plan can be tailored to meet each student's long-term goals. Each student must take one course in finance, economics, accounting, and statistics before entering AHEM 4350.

The following table illustrates the required general education and technical credits for the Bachelor of Science in EMS Management. Substitutions may be considered for some courses on an individual basis. Students must maintain an overall GPA of 2.5 with a grade of C or better in each course.

Content Area	*Equivalent TTU Courses*	*Semester Hours*
Introduction to Computers	EDIT 2318 or C S 1300	3
*College Algebra	MATH 1320	3
U.S. History	HIST 2300 and 2301	6
Political Science	POLS 1301 and 2302	6
English	ENGL 1301 and 1302	6
General Psych. or Sociology	PSY 1300 or SOC 1301	3
Speech or Public Speaking	COMS 2300 or 3358	3
Anatomy and Physiology I & II	ZOOL 2403 and 2404	8
or		
Anatomy & Physiology I **and**	ZOOL 2403	
Biology or Chemistry	BIOL 1403, CHEM 1307 & 1107 (lab)	
**Technical Education		29
TOTAL		67

*Students may be required to complete a higher level mathematics course as a prerequisite for statistics.
**Technical credits can be earned in EMS, premedicine, fire, public safety, business, or other classes upon evaluation by the Program Director.

Students in this program pay adjusted fees to reflect the distance education aspect of the program. Out-of-state students interested in this program will be charged a program fee for each course taken at TTUHSC that is not equivalent to out-of-state tuition. Contact the EMS office for current costs.

Physician Assistant Program. The Department of Diagnostic and Primary Care offers study towards a graduate degree in Physician Assistant Studies. The master's degree program is offered at a TTUHSC site located on the campus of Midland College in Midland, Texas. To be considered for admission, the applicant must have completed at least 66 semester hours of prerequisite courses with a cumulative GPA of 2.75 or above. A baccalaureate degree is not required for admission. Individuals already holding a baccalaureate or graduate degree in another field are eligible, but they must meet the same prerequisite course and grade requirements as all other applicants. Contact the School of Allied Health Admissions and Student Affairs Office or the Physician Assistant Program for specific requirements.

Applications are accepted beginning September 1 preceding the year of expected matriculation. New classes begin each year in late May. Applications must be received by the School of Allied Health Admissions and Student Affairs Office by December 15 to be considered for admission into the professional curriculum, beginning the following June. It is the applicant's responsibility to ensure that all required supporting documentation is received by the deadline.

Upon successful completion of the professional program, students are eligible to take the Physician Assistant National Certification Examination required for state licensure to practice as a physician assistant in Texas. Further information about the program, school requirements, and other related matters may be obtained from the School of Allied Health Admissions and Student Affairs Office or the Physician Assistant Program.

The following table illustrates the prerequisites for the Allied Health Physician Assistant Program.

Content Area	*Equivalent TTU Courses*	*Semester Hours*
English	ENGL 1301 and 1302	6
College Algebra	MATH 1320 (or higher level math)	3
Biology	BIOL 1403 and 1404	8
Microbiology	MBIO 3401	4
Anatomy and Physiology	ZOOL 2403 and 2404	8
General Chemistry	CHEM 1307 & 1107 and 1308 & 1108	8
Behavioral/Social Science		9
Nutrition	F&N 3320 or 3340	3
Statistics	MATH 2300 or PSY 3400	3
*Electives		14
TOTAL		66

*Computer Basics & Medical Terminology recommended but not required.

Communication Disorders (Speech-Language Pathology and Audiology) Program. The ability to communicate is our most basic human characteristic. Communication is essential to learning, working, and social interactions. However, one in 10 Americans has a communication disorder because of a stroke, an undetected hearing loss, a stuttering problem, a language disorder, a movement or muscle problem, or some other problem that interferes with speech, language, or hearing. This makes them the single largest population of challenged Americans. To meet these needs, speech-language pathologists and audiologists are educated to diagnose and treat all communication disorders and their related problems. Diagnostic techniques include many behavioral, cognitive, physiological, and technological procedures designed to assess speech, language, and hearing. Treatment for communication disorders is varied and often employs an interdisciplinary approach. Working closely with physicians, dentists, psychologists, educators, engineers, physical therapists, occupational therapists, and dietitians, the speech-language pathologist or audiologist is solely responsible for treating the patients' communicative needs.

Speech-language pathologists and audiologists provide professional services in many different types of facilities such as hospitals, rehabilitation centers, nursing care facilities, community clinics, colleges and universities, burn clinics, private offices, state and local health departments, public and private schools, and state and federal governmental agencies. Services are provided for all ages and may be administered over a brief period or continue for several years.

Admission to the Bachelor of Science Program. Admission to the baccalaureate program begins in March of each year for the following fall class. Class enrollment is limited. Admission guidelines include 1) a formal application, 2) a cumulative 3.0 GPA, 3) a grade of C or better in all prerequisite courses, 4) demonstration of superior communication skills, and 5) proof of appropriate immunizations against infectious diseases. Applicants whose native language is not English must earn a score of at least 550 on the Test of English as a Foreign Language prior to admission. Applicants whose prerequisite courses were taken longer than seven years ago should contact the department to determine current acceptability. Students are required to adhere to all policies as outlined by the department, the School of Allied Health, and Texas Tech University Health Sciences Center. Students also have specific rights as outlined in the Student Handbook.

Prerequisite courses for entry into the bachelor's program include those on the accompanying table or their approved equivalents for a total of 66 hours. These courses may be completed at any accredited college or university. Course requirements may change without notice.

Content Area	***Equivalent TTU Courses***	***Semester Hours***
Writing Courses		9
*English	ENGL 1301, 1302, and 2311 or 3365, or 3366	
U.S. History	HIST 2300 and 2301	6
U.S. Political Science	POLS 1301 and 2302	6
Sciences		6
**Mathematics	MATH 1321 (or higher level) and 2300 or PSY 3400 or SOC 3391	
Basic Sciences (with labs)	Any Lab. Sciences—suggested courses are BIOL 1402, ZOOL 2403, PHYS 1303 and 1101	12
***Behavioral Education	Any courses from anthropology, communication, education, human development and family studies, health, philosophy, psychology, or sociology.	15
General Electives		12
TOTAL		66

*One technical writing course is required.
**One course in trigonometry (or calculus) and one course in statistics are required.
***One course addressing life span issues and one course addressing multicultural issues are required.

Students should be aware that the terminal degree for licensure in speech-language pathology is at the master's level and licensure in audiology is at the doctor's level. For further information on these advanced degrees, contact the admissions office at the School of Allied Health.

Athletic Training Program. An athletic trainer is an educated and skilled professional specializing in the prevention, treatment, and rehabilitation of injuries common to participation in sport activities as described by the National Athletic Trainers' Association. Athletic trainers are integral members of the health care team, working in cooperation with physicians and other allied health personnel in settings such as secondary schools, colleges and universities, sports medicine clinics, professional sports programs, industrial settings and other healthcare environments.

The master's degree in athletic training is an entry-level program offered at the TTUHSC-Lubbock campus only. To be considered for admission, the candidate must hold a bachelor's degree, including prerequisites (Anatomy and Physiology, 6-8 hours; Statistics, 3 hours), with a minimum cumulative GPA of 2.7 or above.

Applications are accepted beginning September 1 preceding the year of expected matriculation. Applications must be received in the School of Allied Health Admissions and Student Affairs Office by February 1 to be considered for admission into the professional curriculum the following summer. It is the applicant's responsibility to ensure that all required supporting documentation is received by the deadline.

Upon successful completion of the professional program, students must sit for the National Athletic Trainers' Association Board of Certification examination, which is required to practice athletic training in every state except Texas. Upon successful completion of the certification examination, students will be eligible to sit for the Texas State Licensure Examination, which is required to practice athletic training in the State of Texas. Additional athletic training licensure registration requirements vary from state to state according to athletic training practice acts and state regulations governing athletic training.

Occupational Therapy Program. Occupational therapy is a challenging profession that uses creative abilities in imaginative ways to meet each individual client's unique needs. Occupational therapists work with individuals whose life patterns have been changed due to cognitive or developmental problems, injury or illness, social or emotional deficits, or the aging process. Our focus is on helping people to achieve a healthy and satisfying balance between work, self-care, play, leisure, and rest. Occupational therapy is unique in that it uses meaningful occupations as therapeutic tools.

Our goal is to help individuals engage in their chosen occupations. Occupational therapy enables clients to develop or maintain the physical, cognitive, and emotional abilities needed to meet the demands of work, home, and community environments. It may also modify tasks and environments to facilitate optimal performance. The occupational therapist assesses the individual's strengths and weaknesses, determines how these affect ability to function in daily life, and then develops prevention, maintenance, or rehabilitation programs. Therapists are involved in collaboration with parents, families, and significant others; treatment planning and implementation; administration; research; education; consultation; and service. They also offer services focusing on prevention of impairment and disability.

Practitioners must complete supervised clinical internships in a variety of health care settings and pass a national examination. Most states also regulate occupational therapy practice.

The Office of Admissions and Student Affairs accepts applications each year between September 1 and March 1 for admission into the class beginning the following May. Applicants wishing to apply for early admission to the program should submit their application by October 15. This degree will be offered at three of the four TTUHSC campuses: Amarillo, Lubbock, and the Permian Basin. The first year

summer semester courses are offered in Lubbock only. Class size is limited and all admissions are competitive.

Prerequisite courses for entry into the master's program include those listed below or their approved equivalents for a total of 90 hours. Applicants may begin the program with 78 hours. However, the 12 hours that are not completed may only be elective hours. The 12 elective hours must be completed by the end of the summer after the first year in the program.

	Semester Hours
English	6
Physics	3
Anatomy and Physiology w/lab.	6-8
Introductory Psychology	3
Abnormal Psychology	3
Introductory Sociology	3
Statistics	3
Electives	61-63
TOTAL	90

Physical Therapy Program. The entry level degree is the Master of Physical Therapy degree. This degree will be offered at three of the four Texas Tech University Health Sciences campuses: Amarillo, Lubbock, and the Permian Basin.

Physical therapy is a health profession with the primary purpose of promoting optimal human health and function through the application of scientific principles to prevent, identify, assess, correct, and alleviate acute or prolonged movement dysfunction. As members of the health care team, physical therapists evaluate, treat, and instruct human beings to alleviate and/or limit physical disability and pain from injury, disease, and other conditions. Physical therapists may use physical elements such as heat, cold, sound, light, water, exercise, electricity, massage, mobilization, and positioning to reach patient goals.

The Office of Admissions and Student Affairs accepts applications each year between September 1 and January 31 for admission into the class beginning the following June. Applicants wishing to apply for early admission to the program should submit their application by October 1. Class size is limited and all admissions are competitive.

Prerequisite courses for entry into the master's program include those listed below or their approved equivalents for a total of 90 hours. These courses may be completed at any accredited college or university, but only 66 hours may transfer from a two-year college.

	Semester Hours
Psychology and Sociology	6
Mathematics	3
Statistics	3
General Biology	8
Anatomy and Physiology (1 course must be upper division)	6-8
General Chemistry (for majors, lab. required)	8
General Physics (for majors, lab. required)	8
Electives	46-48
TOTAL	90

Recommended courses: Technical writing, speech, developmental and general psychology.

Vocational Rehabilitation (VR) Program. The entry level degree is the Master of Vocational Rehabilitation degree. This degree is offered in a distance education format, primarily through online instruction. Full-time attendance on campus is **not** required.

The last few decades have seen an increasing recognition of the need and right of persons with disabilities to access meaningful work and employment. Vocational rehabilitation specialists work in assisting persons with disabilities to make vocational decisions, obtain employment, and gain independence. Federal legislation, changes in the labor market, and an increasing awareness of the skills and abilities possessed by persons with disabilities have resulted in excellent employment opportunities in this field. State agencies, nonprofit organizations, health care facilities, private rehabilitation firms, insurance companies, health management organizations, probation and corrections, educational institutions, private industry, and research organizations all offer employment to VR professionals.

Application materials can be obtained from the Office of Admissions and Student Affairs or the Vocational Rehabilitation Program office. Students will normally submit a completed application form, transcripts, a letter from the applicant outlining their rationale for applying to the program, 3 letters of reference, and a

resume or summary of previous work or voluntary experience in rehabilitation. Qualified candidates will be contacted for an interview. Applications for degree-seeking students must be submitted by April 1 for admission to the fall semester and August 1 for admission to the spring semester. Applications for nondegree seeking students are accepted up to three weeks prior to the start of the semester.

Molecular Pathology Program. The diagnostic molecular scientist is a professional who is qualified by academic and applied education to provide service in the molecular diagnosis of acquired, inherited and infectious diseases. The goal of molecular diagnostics is to enhance the value of clinical laboratory services by providing an environment in which new tests based on the application of knowledge and new techniques at the most basic cellular level (i.e., molecular techniques) can be established, validated, and applied to the testing of patient specimens.

The entry level degree is the Master of Molecular Pathology. To qualify for admission to the program, applicants must have completed or plan to complete a bachelor's degree with all prerequisite courses from an accredited U.S. college or university prior to enrollment. A cumulative grade point average of 3.0 or above is necessary to qualify for admission. Applications may be submitted at any time; however, applications must be received by February 1 to be considered for enrollment when course work begins the following summer. All qualified candidates selected by the admissions committee will be invited for an on-campus interview. Prerequisite requirements include the following:

- Graduate of a NAACLS** accredited Clinical Laboratory Science Program (cumulative 3.0 GPA including a 3 credit hour genetics course) or
- Graduate of a NAACLS** accredited Clinical Laboratory Technician Program with a bachelor's degree (cumulative 3.0 GPA including a 3 credit hour genetics course) or
- Graduate of an accredited university with a bachelor's degree in chemistry, biology, biochemistry, or microbiology that includes the following courses:

	Semester Hours
General Chemistry with Lab	8
Genetics	3-4
Microbiology	4
Biochemistry	3-4
Cell Biology	4
Anatomy & Physiology	8
College Algebra	3
General Biology	8
Organic Chemistry	8
Immunology*	3

*Course may be taken via WEBCT through the School of Allied Health; contact the Program Director.
**National Accrediting Agency for Clinical Laboratory Science.

School of Nursing

Professor Alexia Green, *Dean*

The School of Nursing is an integral part of the Texas Tech University Health Sciences Center and is committed to improving the quantity and quality of nursing care available in West Texas. The ultimate goal of the School of Nursing is to prepare nurses who will develop into leaders for the future as they provide competent, compassionate patient care in the rapidly changing health care environment. Integral to the attainment of this goal is the development of interdisciplinary approaches created when nursing, medicine, allied health, and pharmacy work together. The faculty and staff of the School of Nursing are committed to excellence in nursing education, research, practice, and service.

The School of Nursing offers a Bachelor of Science in Nursing degree at the Lubbock campus and an RN to B.S.N. degree completion program for registered nurses at the Lubbock and Permian Basin campuses, as well as at six distance learning sites. Additionally, the school offers a Master of Science in Nursing degree in several specialties, such as Family Nurse Practitioner and Critical Care Nurse Practitioner. The school's programs are accredited by the National League for Nursing Accrediting Commission and the Commission on Collegiate Nursing Education.

Bachelor of Science in Nursing. For students who are not currently licensed registered nurses (non-licensed student), the baccalaureate degree program at TTUHSC offers the opportunity to complete

the degree in two calendar years, with admission once each year, during the second summer session. All non-nursing course requirements should be completed prior to enrollment in the School of Nursing, and a grade of C or better is required in each course. A minimum grade point average of 2.25 is required to be considered for admission to the School of Nursing. Admission to the program is competitive.

General requirements for both the non-licensed and RN to B.S.N. students include:

	Semester Hours
English	3
Statistics	3
Anatomy and Physiology	8
Chemistry	4
Microbiology	4
Food and Nutrition	3
Humanities-Fine Arts Elective	3
U. S. History	6
Political Science	6
Introductory Psychology	3
Introductory Sociology	3
Human Growth and Development	3
TOTAL	49

Courses can be taken at any accredited community college or institution of higher education that provides comparable courses. Other options are TTU College Level Examination Program (CLEP) or TTU Extended Learning Division.

Suggested Pre-Nursing Course Sequence for the Non-Licensed Student*

1st Semester		*Semseter Hours*
ENGL 1301	Ess. College Rhetoric	3
SOC 1301	Intro. Sociology	3
OR		
ANTH 2302	Cultural Anthropology	3
ZOOL 2403	Human Anat/Phys I	4
HIST 2300	US History to 1877	3
TOTAL		13
2nd Semester		
ENGL 1302	Adv. College Rhetoric	3
PSY 1300	General Psychology	3
ZOOL 2404	Human Anat/Phys II	4
HIST 2301	U.S. History Since 1877	3
TOTAL		13
3rd Semester		
CHEM 1305	Chem. & Society I	3
CHEM 1105	Chem. & Society I Lab	1
OR		
CHEM 1307	Prin. of Chemistry I	3
CHEM 1107	Prin. of Chemistry I Lab	1
Food & Nutrition		3
POLS 1301	Am. Gov't. Organization	3
HDFS 2303	Life Span Hum. Dev.	3
TOTAL		13
4th Semester		
MBIO 3400	Microbiology	4
POLS 2302	American Public Policy	3
MATH 2300	Statistical Methods	3
OR		
PSY 3400	Statistical Methods	4
OR		
SOC 3391	Intro. to Social Research	3
Humanities/Fine Arts		3
TOTAL		13-14

*Texas Tech University course numbers

Bachelor of Science in Nursing Degree Plan (For Non-Licensed Students). Once students have applied and been accepted to the School of Nursing, they will be able to enroll in nursing courses. Students are classified as full-time students throughout the degree program and must maintain a 2.0 cumulative grade point average to continue in the nursing program.

Bachelor of Science in Nursing Degree Course Sequence

1st Semester-Summer		**Credits**
NURS 3203	Basic Assessment	2
NURS 3204	Basic Phys. Assessment	2
NURS 3301	Care of Aging Adult	3
TOTAL		7
2nd Semester-Fall		
NURS 3303	Mgmt-Pharm. Therapy	3
NURS 3602	Nsg. in Wellness/Illness I	6
NURS 3302	Pathophysiology	3
TOTAL		12
3rd Semester-Spring		
NURS 3603	Nsg. in Wellness/Illness II	6
NURS 3305	Persp., Issues, Trends	3
NURS	Nursing Elective	3
TOTAL		12
4th Semester-Summer		
NURS 3400	Childbearing Family Nsg.	4
NURS 3401	Mental Health Nursing	4
TOTAL		8
5th Semester-Fall		
NURS 3202	Mgmt-Complex Pharm.	2
NURS 3402	Complex Health Probs.	4
NURS 3601	Role-Complex Health Sit.	6
TOTAL		12
6th Semester-Spring		
NURS 4220	Consumer of Research	2
NURS 4304	Adv. Clinical Concepts	3
NURS 4601	Leader and Manager	6
NURS 4301	Prov. & Cons. of Ed.	3
TOTAL		14
7th Semester-Summer		
NURS 4101	Synth. of Nsg. Knowledge	1
NURS 4305	Role-Professional Nurse	3
NURS 4500	Role-Community Health	5
TOTAL		9

Application Information. Applications for admission to the Bachelor of Science in Nursing program for students who are not currently licensed as registered nurses may be submitted at any time with a deadline of March 1 for the following summer semester.

Registered Nurse–Bachelor of Science in Nursing Program. Nurses with a B.S.N. are in higher demand because of their broader education, critical information, futuristic experiences, and leadership skills. Additionally, baccalaureate education provides a natural progression to graduate nursing education and advance practice roles such as nursing faculty, advanced nurse practitioners, and nursing managers. Texas Tech University Health Sciences Center School of Nursing offers an exciting baccalaureate degree program to enable nurses to meet health care challenges. These courses are accessible on the Web, allowing students to access academic education by computer at work or at home.

A total of 126 credit hours are needed for this degree, including the following: 52 credits of general education requirements, 30 credits of RN-BSN course sequence, and 44 advanced placement credit hours (basic nursing program). The program length is two semesters for a full-time student. Enrollment can begin in either the fall or spring semester. There are no course offerings for the RN to B.S.N. student in the summer. Part-time enrollment is available. Degree plans are individualized.

After students receive an admission letter, they will be asked to submit a portfolio to validate their nursing experience. Then the student and the RN-BSN coordinator will review the information and discuss an individualized degree plan. The portfolio is a collection of the student's nursing experiences and assists with advance placement decisions, selection of a nursing elective, and possible substitution of graduate courses for some undergraduate courses.

The following example illustrates a sample full-time program for fall students. The spring enrollment sequence will vary slightly.

Registered Nurse–Bachelor of Science in Nursing Course Sequence

1st Semester-Fall		**Semester Hours**
NURS 4801	Professional Nursing Practice	8
NURS 4601	The Nurse as Leader and Manager	6
NURS 4220	The Nurse as a Consumer of Research	2
NURS 4304	Advanced Clinical Concepts	3*
2nd Semester-Spring		
NURS 4500	The Role of the Nurse in Community Health	5
NURS 4301	The Role of the Nurse as Provider & Consumer of Education	3
NURS 4305	The Role of the Professional Nurse	3
NURS	Elective/Independent Study	3
TOTAL		30

*This course is often counted with advanced placement hours so is not calculated in total hours of nursing courses at TTUHSC.

Course work is also offered from the Lubbock and Odessa campuses. Other sites for the program include Alpine, Brownwood, Cuero, Kerrville/Fredericksburg, McCamey, and Sweetwater. A minimum of five students should be enrolled per site to promote success and educational support among the students.

Opportunities for Involvement in Student Organizations

Texas Nursing Students' Association. TTUHSC School of Nursing claims one of the most active chapters in the state. The chapter has won numerous awards and honors.

Nursing Ambassadors. This organization represents the School of Nursing at various events such as the student recruitment, open houses, and community service.

Undergraduate Dean's Advisory Council. Students serve in an advisory role on this council. The primary purpose is to maintain open communication between students, administration, faculty, and staff.

TTUHSC Student Senate. This organization's primary purpose is to allow students from all HSC schools to have a voice in events and policies affecting student life.

Professional Associations. Students with high academic achievements may become members of Sigma Theta Tau, the International Honor Society for Nursing, and Phi Kappa Phi, an interdisciplinary society.

Contact Information

Web site: www.nursing.ttuhsc.edu

TTUHSC School of Nursing-Lubbock Campus Undergraduate Program Office
1-800-493-3954 or (806) 743-2737

Recruitment and Admissions Counselor
(806) 743-3056

Director of Student Affairs-Undergraduate Program (806) 743-4235

Associate Dean for the Undergraduate Program (806) 743-2279

RN-BSN Coordinator-Lubbock Campus
(806) 743-2730

TTUHSC School of Nursing-Permian Basin Campus (915) 335-5150

Mailing Address:

TTUHSC School of Nursing
Undergraduate Program Office
3601 4th Street, MS 8331
Lubbock, TX 79430

Directory of Faculty

Horn Professorships

Appointed 1977
Magne Kristiansen, Electrical Engineering

Appointed 1978
M. M. Ayoub, Industrial Engineering

Appointed 1979
Robert J. Baker, Biological Sciences

Appointed 1981
William J. Conover, Information Systems and Quantitative Sciences

Appointed 1983
David Leon Higdon, English
Shelby D. Hunt, Marketing

Appointed 1984
James G. Hunt, Management

Appointed 1986
John A. Gillas, Music
Janet W. Pérez, Classical and Modern Languages and Literatures

Appointed 1987
David B. Knaff, Chemistry and Biochemistry
Walter R. Mcdonald, English

Appointed 1988
Richard A. Bartsch, Chemistry and Biochemistry

Appointed 1989
Mary Jeanne Van Appledorn, Music

Appointed 1990
Allan J. Kuethe, History

Appointed 1991
Clyde F. Martin, Mathematics and Statistics
Kishor C. Mehta, Civil Engineering

Appointed 1992
Purnendu K. Dasgupta, Chemistry and Biochemistry

Appointed 1994
Sankar Chatterjee, Museum Science and Geosciences

Appointed 1996
Clyde Hendrick, Psychology

Appointed 1997
Roland Menzel, Physics
Henry Nguyen, Plant and Soil Science

Appointed 1999
Clyde Jones, Biological Sciences
Kenneth Ketner, Institute for Studies in Pragmaticism

Appointed 2000
Daniel Benson, Law
Stefan Estreicher, Physics
Gerald Skoog, Education
Henryk Temkin, Electrical Engineering

Appointed 2001
Frits Ruymgaart, Mathematics and Statistics
William Westney, Music

Teaching Faculty

(Date following rank indicates calendar year of initial appointment to Texas Tech)

Margaret (Peggy) Willis Aarnio, Professor of Theatre and Dance, 1972. B.F.A., Texas Christian, 1970; M.F.A., 1972.

James R. Abbott, Associate Professor of Chemical Engineering, 2000. B.S., California (Davis), 1986; Ph.D., Massachusetts Inst. Tech., 1993.

J. R. Abernathy, Professor of Weed Science and Dean, College of Agricultural Sciences and Natural Resources, 1997. B.S., Oklahoma State, 1967; M.S., 1969; Ph.D., Illinois, 1972.

Noureddine Abidi, Adjunct Faculty in Plant and Soil Science, 2001. B.S., Univ. Oujda (Morocco), 1991; M.S., 1992; Ph.D., Univ. Montpelier II (France), 1996.

Azmy Ackleh, Associate Professor of Mathematics and Statistics, 2001. B.S., Cumberland Coll., 1988; M.S., Tennessee, 1990; Ph.D., 1993.

Veronica Acosta-Martinez, Adjunct Faculty in Plant and Soil Science, 2002. B.S., Puerto Rico, 1994; M.S., Purdue, 1997; Ph.D., Iowa State, 2000.

Charlie Adams, Assistant Professor of Education, Nutrition, and Restaurant-Hotel Management, 1997. B.G.S., Texas Tech, 1987; B.S., 1988; M.S., 1990; Ph.D, 1997.

Paulus S. Adisoemarta, Lecturer in Petroleum Engineering, 1999. B.S., Bandung Inst. Tech., 1987; M.S., Texas (Austin), 1995; Ph.D., Texas Tech, 1999.

Terence C. Ahern, Associate Professor of Education, 1991. B.A., California (Santa Cruz), 1974; M.A., Graduate Theological Union, 1978; M.A., Chicago, 1981; M.A., San Francisco State, 1983; Ph.D., Pennsylvania State, 1991.

Nural Akchurin, Associate Professor of Physics, 2000. B.A., Vassar College, 1982; Ph.D., Iowa, 1990.

Cynthia L. Akers, Assistant Professor of Agricultural Education and Communications, 1997. B.S., Texas Tech, 1991; M.S., 1992; Ed.D., 2000.

Future Akins, Lecturer in Architecture, 2000. B.A., Texas Tech, 1977; M.F.A., 1977.

Mujahid H. Akram, Assistant Professor of Engineering Technology, 1999. B.S.C.E., Pakistan, 1983; M.S.C.E., West Virginia, 1992; Ph.D., 1995.

Sudqi Alayyan, Associate Professor of Engineering Technology, 1984. B.S., Texas Tech, 1977; M.S., West Texas A&M, 1993.

Robert Custer Albin, Professor of Animal Science, 1964. B.S., Texas Tech, 1961; M.S., 1962; Ph.D., Nebraska, 1965.

Theresa C. Alexander, Instructor in Fashion Design, 2000. B.S., Texas Tech, 1996; M.A., Nottingham Trent (England), 1999.

Kwamé Alford, Assistant Professor of History, 2000. B.S., Morgan State, 1979; M.A., 1994; Ph.D., Missouri (Columbia), 1998.

Bonnie L. Allen, Rockwell Professor of Soils, 1959. B.S., Texas Tech, 1948; M.S., Michigan State, 1951; Ph.D., 1960.

Edward J. Allen, Professor of Mathematics and Statistics, 1985. B.S., Wisconsin-Madison, 1971; M.S., 1972; Ph.D., Tennessee, 1983.

Linda Joy Svoboda Allen, Professor of Mathematics and Statistics, 1985. B.A., Coll. of St. Scholastica, 1975; M.S., 1978; Ph.D., Tennessee At Knoxville, 1981.

Randy D. Allen, Professor of Biological Sciences and of Plant and Soil Sciences, 1989. B.S., Southwestern Union Coll., 1978; M.S. Texas (Arlington), 1981; Ph.D., Texas A&M, 1986.

Roberta S. Allen, Lecturer in Accounting, 1999. B.S., Coll. of Charleston, 1991; M.S.A., Texas Tech, 1996.

Vivien G. Allen, Thornton Distinguished Professor of Plant and Soil Science, 1995. B.S., Tennessee (Martin), 1962; M.S., Louisiana State, 1973; Ph.D., 1979.

Cherif M. Amor, Assistant Professor of interior Design, 2000. B.Arch., Conitantine (Algeria), 1984; M.Phil. New Castle Upontyne (U.K.), 1987; Ph.D., Missouri (Columbia), 2000.

Amy Brisco Anderson, Associate Professor of Music, 1995. B.M., North Texas, 1978; M.M., 1982.

Connie A. Anderson, Visiting Associate Professor of Education, 2001. B.S., Northeastern State, 1973; M.Ed., 1975; Ed.D., Oklahoma State, 1998.

Dianne Anderson, Lecturer in Managerial Communications, 1998. B.S., Brigham Young, 1963; M.S., 1964.

Edward E. Anderson, Professor of Mechanical Engineering and Associate Director, Teaching, Learning, and Technology Center, 1986. B.S.M.E., Iowa State, 1964; M.S.M.E., 1966; Ph.D., Purdue, 1972; Reg. Prof. Engr. (Iowa).

Lane Kent Anderson, Professor of Accounting, 1978. B.S., Brigham Young, 1965; M. Accy., 1966; M.B.A., Wisconsin (Madison), 1970; Ph.D., 1970; Cpa, Cma.

Ronald Myles Anderson, Professor of Mathematics and Statistics and Dean, Graduate School, 1965. B.A., Luther Coll., 1957; M.S., Iowa State, 1959; Ph.D., 1962.

Todd A. Anderson, Associate Professor of Environmental Toxicology, 1997. B.S., Peru State, 1986; M.S., Tennessee, 1988; Ph.D., 1991

Solomon R. Antony, Assistant Professor of Management information Systems, 1998. B.E., Bits (Pilani india), Ph.D., Florida Int'l., 1997.

***Joseph Leslie Aranha,** Associate Professor of Architecture, 1981. B.Arch., indian Inst. of Technology (Kharagpur), 1978; M.Arch., Iowa State, 1981; Reg. Arch. (india).

Thomas L. Archer, Adjunct Faculty in Entomology, 1978. B.S., California State Polytechnic, 1966; Ph.D., California (Riverside), 1971.

J. Scott Armstrong, Associate Professor of Entomology, 1999. B.S., Texas Tech, 1982; M.S., Oklahoma State, 1985; Ph.D., Colorado State, 1994.

Dennis B. Arnett, Assistant Professor of Marketing, 2000. B.A., Occidental Coll., 1986; M.A., United States Int'l, 1992; Ph.D., Texas Tech, 1998.

Sue Arnold, Associate Professor of Music, 1971. B.A., Campbell Coll., 1969; M.M., Illinois, 1971.

Joyce A. Davis Arterburn, Assistant Professor of Health, Exercise, and Sport Sciences, 1959. B.S. in Ed., Texas Tech, 1954; M.Ed., 1966.

Christina M. Ashby-Martin, Lecturer in History, 2000. B.F.A., New Mexico, 1984; M.A., California (Riverside), 1987; Ph.D., Bowling Green State, 1998.

Billy Earl Askins, Professor and Chairperson, Division of Curriculum and instruction, 1967. B.S., East Texas State, 1953; M.Ed., Midwestern, 1959; Ed.D., North Texas, 1967.

George B. Asquith, Professor of Geosciences, Pevehouse Chair of Petroleum Geology, 1988. B.S., Texas Tech, 1961; M.S. Wisconsin-Madison, 1963; Ph.D., 1966.

Dick L. Auld, Professor and Chairperson, Department of Plant and Soil Science, 1991. B.S., New Mexico State, 1970; M.S., 1973; Ph.D., Montana State, 1976.

Edward W. Averill, Professor of Philosophy, 1980. A.B., Harvard, 1956; Ph.D., California (Santa Barbara), 1976.

Wendell Marshall Aycock, Professor of English and Comparative Literature and Associate Dean of The Graduate School, 1969. B.A., Texas Tech, 1962; M.A., 1965; Ph.D., South Carolina, 1969.

Kenneth R. Baake, Assistant Professor of English, 2000. B.A., Maryland, 1978; M.S., Texas (El Paso), 1995; Ph.D., New Mexico State, 2000.

Craig M. Baehr, Assistant Professor of English, 2002. B.A., New Mexico, 1992; M.A., 1995; Ph.D., 2002.

Donald Joseph Bagert Jr., Professor of Computer Science, 1988. B.S., Tulane, 1977; M.S., Southwestern Louisiana, 1979; Ph.D., Texas A&M, 1986; Reg. Prof. Engr. (Texas).

Dorothy Caroline Bagwell, Assistant Professor of Family Financial Planning, 2000. B.S., Louisiana State, 1989; M.S., Texas Woman's, 1996; Ph.D., Virginia Polytechnic I., 2000.

Yong Bai, Assistant Professor of Engineering Technology, 1999. B.Eng., Tsinghua, 1986; M.S., Clemson, 1992; Ph.D., North Carolina State, 1996.

Lawrence A. Baines, Professor of Education, 2000. B.S., Texas (Austin), 1978; M.S., North Texas, 1984; Ph.D., Texas (Austin), 1993.

Dick Baker, Adjunct Faculty in Law, 1994. B.S., New Mexico, 1967; J.D., Baylor, 1973.

Mary Catherine Baker, Associate Professor of Electrical Engineering, 1989. B.S., Texas Tech, 1983; M.S., 1985; Ph.D., Texas (Arlington), 1988.

Mathew T. Baker, Professor and Chairperson of The Department of Agricultural Education and Communications, 2000. B.S., Texas Tech, 1979; M.Ed., 1986; Ph.D., Ohio State, 1990.

Robert James Baker, Horn Professor of Biological Sciences and Director, Natural Science Research Laboratory, 1967. B.S., Arkansas (Monticello), 1963; M.S., Oklahoma State, 1965; Ph.D., Arizona, 1967.

Lester A. Ball, Major, U.S. Air Force, Assistant Professor of Aerospace Studies, 2001. B.A., Texas Tech, 1989.

Warren B. Ballard Jr., Associate Professor of Range, Wildlife, and Fisheries Management, 1998. B.S., New Mexico State, 1969; M.S., Kansas State, 1971; Ph.D., Arizona, 1993.

Mark Ballay, Lecturer in Architecture, 2001. D.E.F.A., 1995; D.P.L.G., Bordeaux, 1999.

Lucia Barbato, Instructor in Geography, 2000. B.A., California State, 1984; M.A., California (Los Angeles), 1988.

Gail G. Barber, Professor of Music, 1966. B.M., Eastman School of Music, 1959; M.D. (M.A.), 1996.

Alan A. Barhorst, Associate Professor of Mechanical Engineering, 1991. B.S., Texas A&M, 1984; M.S., 1989; Ph.D., 1991.

John Barkdull, Associate Professor of Political Science, 1993. B.A., Alaska, 1984; M.A., Wisconsin, 1986; Ph.D., 1993.

Thomas T. Barker, Professor of English, 1982. B.A., Texas (Austin), 1971; M.A., 1973; Ph.D., 1980.

Roger W. Barnard, Professor of Mathematics and Statistics, 1973. B.S., Kent State, 1965; M.S., 1968; Ph.D., Maryland, 1971.

Calvin Glenn Barnes, Professor of Geosciences, 1982. B.S., Nebraska (Lincoln), 1975; M.S., Oregon, 1978; Ph.D., 1982.

Robert E. Barnhill, Part-Time Instructor in Family Financial Planning, 1988. B.B.A., Texas Tech, 1976; M.B.A., 1980; J.D., 1980.

Chester Alwyn Barr, Professor of History, 1969. B.A., Texas (Austin), 1959; M.A., 1961; Ph.D., 1966.

James E. Barrick, Professor of Geosciences, 1980. B.S., Ohio State, 1973; M.S., Iowa, 1975; Ph.D., 1978.

Richard Allen Bartsch, Horn Professor and Chairperson, Department of Chemistry and Biochemistry, 1974. B.A., Oregon State, 1962; M.S., 1963; Ph.D., Brown, 1967.

Howard A. Bass, Major, U.S.A.F., Assistant Professor of Aerospace Studies, 1999. B.S., Central Washington, 1986; M.S., Air Force Inst. Tech., 1990.

Todd Baughman, Adjunct Faculty in Plant and Soil Science, 2000. B.S., Oklahoma State, 1989; M.S., 1992; Ph.D., Mississippi State, 1994.

Laura Jean Beard, Associate Professor of Spanish and Comparative Literature, 1995. B.A., Carleton Coll., 1984; M.A., Johns Hopkins, 1989; Ph.D., 1994.

Keith Bearden, Professor of Music, 1980. B.M.Ed., Texas Tech, 1969; M.Ed., 1975.

Klaus Becker, Associate Professor of Economics, 1989. Volkswirt (Grad.), U. Hamburg, 1979; M.A., Kansas, 1980; Ph.D., 1987.

Gary M. Bell, Professor of History, Dean of Honors College, and Associate Vice Provost, 1993. B.A., Brigham Young, 1966; M.A., 1968; Ph.D., California (Los Angeles), 1974.

Nancy J. Bell, Professor of Human Development and Family Studies, 1974. B.A., Allegheny, 1963; M.A., Northern Illinois, 1971; Ph.D., Northwestern, 1973.

***Liliana O. Beltrán,** Assistant Professor of Architecture, 1997. B.Arch, Nacional De ingenieria (Lima Peru), 1983; M.Arch., Oregon, 1985; Ph.D., California (Berkeley), 1997.

Harold R. Bennett, Professor of Mathematics and Statistics, 1968. B.S., Idaho State, 1963; M.A., Arizona State, 1965; Ph.D., 1968.

Daniel H. Benson, Horn Professor of Law and Adjunct Professor of Sociology, 1973. B.A., Texas (Austin), 1958; J.D., 1961; M.A., Texas Tech, 1974; Member State Bar (Texas and District of Columbia).

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D. Andrew Vernooy, Professor and Dean of the College of Architecture, 2002. B.S., Princeton, 1970; M.Arch., Texas (Austin), 1978; M.S., 1990; M.D.S., Harvard, 1991.

Ralph E. Viator, Professor of Business Administration, 2000. B.S., Houston, 1973; M.B.A., Lamar, 1976; Ph.D., Texas A&M, 1986.

Harold Dean Victory Jr., Professor of Mathematics and Statistics, 1974. B.A., Rice, 1968; M.S., Purdue, 1970; Ph.D., 1974.

Carlos Villalobos, Associate Professor of Range, Wildlife, and Fisheries Management, 1996. B.S., Chihuahua, 1980; M.S., 1988; Ph.D., Texas Tech, 1995.

Jorge Vizcarra, Assistant Professor of Animal Science, 2001. B.S., Montevideo (Uruguay), 1981; M.S., Oklahoma State, 1991; Ph.D., 1994.

Eleanor Theresa Von Ende, Associate Professor of Economics, 1990. B.A., Kansas, 1979; M.A., 1982; Ph.D., 1990.

Donald Roy Walker, Associate Professor of History, 1987. B.A., Texas (Austin), 1969; M.A., Lamar, 1974; Ph.D., Texas Tech, 1983.

Mark C. Wallace, Associate Professor of Range, Wildlife, and Fisheries Management, 1996. B.S., Washington, 1981; M.S., Arizona, 1984; Ph.D., 1991.

Tamra Walter, Assistant Professor of Anthropology, 2000. B.A., Austin, 1991; M.A., Montana, 1997; Ph.D., Texas, 2000.

Karen Smith Wampler, Professor of Human Development and Family Studies, 1989. B.A., Indiana, 1964; M.A., Pennsylvania, 1967; Ph.D., Purdue, 1979.

Richard S. Wampler, Associate Professor of Human Development and Family Studies (Marriage and Family Therapy), 1989. B.A., Indiana, 1964; M.S.W., Georgia, 1981; Ph.D., Pennsylvania, 1970.

Alex Wang, Associate Professor of Mathematics and Statistics, 1989. B.S., Northwest Telecommunication Engineering Inst. (China), 1982; M.S., 1984; Ph.D., Arizona State, 1989.

Jia-Sheng Wang, Associate Professor of Environmental Toxicology, 2000. M.B., Shanghai First Medical College, 1978; M.D., 1982; Ph.D., Boston, 1994.

Donald F. Wanjura, Adjunct Faculty in Plant and Soil Science, 1986. B.S., Texas A&M, 1961; M.S., Clemson, 1963; Ph.D., Arizona, 1971.

J. B. Ward, Instructor in Education, Nutrition, and Restaurant-Hotel Management, 2001. B.S., Texas Tech, 1993; M.S., 2001.

Marvin Washington, Assistant Professor of Management, 2002. B.S., Northwestern, 1989; Ph.D., 1999.

Kevin Wass, Visiting Assistant Professor of Music, 2001. B.S., Dana Coll., 1993; M.M., Indiana, 1995; A.Mus.D., Michigan, 2002.

Sara Waters, Professor of Art, 1977. B.F.A., Spalding, 1974; M.F.A., Indiana, 1977.

James C. Watkins, Professor of Architecture, 1983. B.F.A., Kansas City Art Inst., 1974; M.F.A., Indiana, 1977.

Richard G. Watson, Assistant Professor of Computer Science, 1999. B.S., Texas (El Paso), 1990; M.S., 1994; Ph.D., 1999.

Elizabeth A. Watts, Associate Professor of Mass Communications, 1992. B.A., Adams State College, 1970; Ed.S., Northern Colorado, 1976; Ph.D., Ohio, 1992.

Anthony Biden Way, Adjunct Faculty in Anthropology and Family and Community Medicine, 1972. B.A., Williams, 1962; M.D., Pennsylvania, 1967; Ph.D., Wisconsin (Madison), 1972.

Shannon E. Weaver, Assistant Professor of Human Development and Family Studies, 2000. B.S., Missouri, 1995; M.S., 1997; Ph.D., 2000.

Mark. O. Webb, Assistant Professor of Philosophy, 1994. B.A., Texas Tech, 1982; M.A., 1985; M. A., 1986; Ph.D., Syracuse, 1991.

David A. Weinberg, Associate Professor of Mathematics and Statistics, 1980. S.B., Chicago, 1974; Ph.D., Wisconsin (Madison), 1980.

Robert A. Weninger, Professor of Law, 1974. B.B.A., Wisconsin, 1955; Ll.B., 1960; Ll.M., Chicago, 1964; Member State Bar (Wisconsin and California).

William J. Wenthe, Associate Professor of English, 1992. B.A., Holy Cross, 1979; M.A., Virginia, 1985; Ph.D., 1992.

Marijane Wernsman, Instructor in Mass Communications, 1999. B.A., Texas A&M, 1975; M.A., 1977; Ph.D., Tennessee (Knoxville), 1986.

Robert Wernsman, Instructor in Mass Communications, 1999. B.S., Peru State (Nebraska), 1974; M.A., Northern Arizona, 1982.

David B. Wester, Professor of Range, Wildlife, and Fisheries Management, 1983. B.S., Colorado State, 1976; M.S., Texas Tech, 1979; Ph.D., 1984.

Peter Westfall, Professor of Statistics, 1983. B.S., California (Davis), 1979; M.S., 1981; Ph.D., 1983.

Emilia S. Westney, Lecturer in Management, 1996. B.A., Queens Coll., 1970; M.M., Yale, 1974; M.B.A., Texas Tech, 1989.

William F. Westney, Horn Professor of Music, Browning Artist in Residence, 1978. B.A., Queens (City U. of New York), 1968; M.M.A., Yale, 1971; D.M.A., 1976.

James C. Wetherbe, Professor and Stevenson Chairperson of information Technology. B.B.A., New Mexico State, 1971; M.B.A., Texas Tech, 1974; Ph.D., 1976.

Terry A. Wheeler, Adjunct Faculty in Plant and Soil Science, 1994. B.S., Worcester Polytechnic Inst., 1982; M.S., Texas A&M, 1987; Ph.D., North Carolina State, 1990.

James Edmund White, Professor of Architecture, 1971. B.Arch., Texas (Austin), 1957; M.S., Texas Tech, 1973; Reg. Arch. (Texas).

John Poston White, Professor of Architecture, 1973. B.Arch., Texas (Austin), 1957; M.Arch., Nebraska, 1973; Reg. Arch. (Texas).

John Thomas White, Associate Professor of Mathematics and Statistics, 1965. B.A., Texas (Austin), 1952; M.A., 1953; Ph.D., 1962.

Carlton J. Whitehead, Professor of Management, 1965. B.S., Southeastern Louisiana, 1959; M.B.A., Louisiana State, 1962; Ph.D., 1964.

James S. Whitlark, Professor of English, 1979. B.A., Wayne State, 1971; M.A., 1973; Ph.D., Chicago, 1976.

Bruce Rodman Whittlesey, Associate Professor of Chemistry and Biochemistry, 1987. B.A., New Coll. of The U. of South Florida, 1978; Ph.D., Texas (Austin), 1985.

Theodore Wiesner, Associate Professor of Chemical Engineering, 1996. B.S., Kansas State, 1977; M.S., Houston, 1985; Ph.D., Georgia Inst. Tech., 1994.

Richard Wigmans, Professor and Bucy Chair of Physics, 1992. Ph.D. Vrije Universiteit Amsterdam, 1975.

James B. Wilcox, Professor of Business Administration, 1975. B.S., Pennsylvania State, 1967; M.B.A., Indiana, 1970; D.B.A., 1972.

Gene R. Wilde, Associate Professor of Range, Wildlife, and Fisheries Management, 1995. B.S., Nevada (Las Vegas), 1978; M.S., 1984; Ph.D., Oklahoma State, 1994.

Jennifer A. Wilhelm, Assistant Professor of Education, 2001. B.S., Bowling Green State, 1988; M.S., Michigan State, 1991; Ph.D., Texas, 2002.

Ronald Joseph Wilhelm, Assistant Professor of Physics, 2002. B.S., Bowling Green State, 1985; M.S., 1989; Ph.D., Michigan State, 1995.

Robert Edward Wilkes, Professor of Business Administration, 1976. B.S.B.A., Samford, 1963; M.B.A., Alabama, 1969; Ph.D., 1971.

Julie A. Willett, Associate Professor of History, 1997. A.B., Missouri (Columbia), 1989; M.A., 1992; Ph.D., 1996.

David A. Williams, Assistant Professor of Theatre and Dance, 2000. B.A., Evangel U., 1988; M.A., Southwest Missouri State, 1991; Ph.D., California (Davis), 1998.

David E. Williams, Associate Professor of Communication Studies, 1991. B.A., Otterbein Coll., 1985; M.A., Northern Illinois, 1987; Ph.D., Ohio, 1990.

George Brock Williams, Assistant Professor of Mathematics, 2001. B.S., Mississippi State, 1993; Ph.D., Tennessee, 1999.

James S. Williams, Assistant Professor of Health, Exercise, and Sport Sciences, 2000. B.S., Lamar, 1979; M.S., Texas (Tyler), 1983; Ph.D., Texas A&M, 1997.

Michael R. Willig, Professor of Biological Sciences, 1983. B.S., Pittsburgh, 1974; Ph.D., 1982.

David B. Willis, Assistant Professor of Agricultural and Applied Economics, 1999. B.S., Rocky Mountain (Montana), 1975; M.A., Washington State, 1987; Ph.D., 1993.

Jane Ann Henry Wilson, Associate Professor of Music, 1970. B.M., Texas Tech, 1962; M.M., Indiana, 1965; D.Mus., 1982.

Joann Wilson, Associate Professor of interior Design, 2001. B.S., Utah, 1969; M.F.A., 1972.

Jane Louise Winer, Professor of Psychology and Dean, College of Arts and Sciences, 1975. B.A., State U. of New York (Albany), 1969; M.L.S., 1970; M.A., Ohio State, 1971; Ph.D., 1975.

Mitchel L. Winick, Lecturer and Assistant Dean of The School of Law, 1999. B.A., U. of The Pacific, 1976; J.D., Houston, 1978. Admitted To Practice in Texas.

Jon (Don) Wink, Professor and Director, School of Art, 2002. B.F.A., Texas (Austin), 1960; M.F.A., Washington (Seattle), 1962.

Jerome C. Winslow, Assistant Professor of Range, Wildlife, and Fisheries Management, 2000. B.S., Michigan, 1971; B.S., Pennsylvania State, 1981; Ph.D., Wyoming, 1999.

Aliza S. Wong, Assistant Professor of History, 2001. B.A., Amherst College, 1994; M.A., Colorado, 1997; Ph.D., 2001.

Diane Sylvia Wood, Professor of French, 1976. B.A., Northern Iowa, 1968; M.A., 1971; Ph.D., Wisconsin, 1975.

Kevin Scott Woolverton, Adjunct Faculty in Electrical Engineering, 2001. B.S., Kansas State, 1990; M.S., Oklahoma State, 1994; Ph.D., Texas Tech, 1997.

Kenny C. Wu, Assistant Professor of Education, Nutrition, and Restaurant-Hotel Management, 1995. B.S., Tunghai U. (Taiwan), 1981; M.B.A., Sul Ross State, 1985; M.S., Texas Tech, 1988; Ph.D., 1992.

Zhangou Xin, Adjunct Faculty in Plant and Soil Science, 2002. B.S., Beijing Ag., 1982; M.S., Kansas State, 1985; Ph.D., Minnesota, 1993.

Hong (Shelley) Xu, Assistant Professor of Education, 1997. B.A., East China Normal (Shanghai), 1987; M.Ed., Nevada (Las Vegas), 1993; Ed.D., 1997.
Wenwei Xu, Assistant Professor of Corn Breeding and Genetics, 1998. B.S., Ag. U. of Gansu Province, 1982; M.S., Chinese Academy of Ag. Science, 1985; Ph.D., Missouri (Columbia), 1992.
Surya B. Yadav, Area Coordinator and James and Elizabeth Sowell Professor of Telecom-Technology, 1981. B.Sc.E.E., Banaras U. (india), 1972; M.Tech., indian Inst. of Technology Kanpur (india), 1974; M.B.I.S., Georgia State, 1978; Ph.D., 1981.
Song Yang, Professor of Statistics, 1988. B.S., Sichuan, 1982; Ph.D., Michigan State, 1988.
Yung-Nien Yang, Assistant Professor of industrial Engineering, 1999. B.S.E.E., Hwa-Hsia College of Technology, 1986; M.S., National Taiwan U. of Science and Technology, 1993; M.S., Louisville, 1998; Ph.D., 1998.
Seulhee (Lori) Yoo, Assistant Professor of Fashion Design, 1999. B.S., Seoul Women's (South Korea), 1991; A.A.S., Fashion Institute of Technology, 1993; M.S., Texas Tech, 1996; Ph.D., 1999.
Aaron Yoshinobu, Assistant Professor of Geosciences, 1999. B.S., San Diego State, 1992; M.S., 1994; Ph.D., Southern California, 1999.
Ed Youngblood, Assistant Professor of Mass Communications, 2002. B.A., Southwestern, 1987; M.A., Southwest Texas, 1990.
Zhuang Yu, Assistant Professor of Computer Science, 2001. B.S., Zhejiang, 1990; M.S., Louisiana State, 1995; M.S., 1998; Ph.D., 2000.
John Charles Zak, Professor of Biological Sciences, 1986. B.S., Pittsburgh, 1974; M.S., 1976; Ph.D., Calgary, 1981.
Jorge Zamora, Assistant Professor of Spanish, 2001. J.D., Universidad Nacional Autonoma De Mexico, 1984; M.A., Texas Tech, 1994; Ph.D., 1999.
Richard E. Zartman, Professor of Soil Physics, 1974. B.S., Ohio State, 1968; Ph.D., Kentucky, 1974.
Hong Zhang, Associate Professor of Biological Sciences, 1995. Sc.B., Sichuan Univ., 1982; Ph.D., Michigan State, 1989.
Hong-Chao Zhang, Professor of industrial Engineering, 1990. B.S., China, 1976; M.S., Denmark, 1986; Ph.D., Technical U. of Denmark, 1989; Reg. Prof. Engr. (Texas).
Klaus W. Zieher, Associate Professor of Electrical Engineering, 1986. Dipl. Phys. Physics, Eberh-Karls U., 1966; M.Sc., Washington (Seattle), 1969; Dr.Rer.Nat., U. Karlsruhe, 1974.
Ted M. Zobeck, Adjunct Faculty in Plant and Soil Science, 1992. B.S., Michigan, 1973; M.S., Michigan State, 1976; Ph.D., New Mexico State, 1980.
Phillip J. Zwank, Professor of Range, Wildlife, and Fisheries Management, 1997. B.A., Central Coll., 1966; M.S., Missouri, 1975; Ph.D., Utah State, 1978.
*On Leave 2001-2002.
**On Leave Fall 2002.

Emeritus Faculty and Administrative Officers

(Dates indicate years at Texas Tech)

Burl Monroe Abel, Associate Professor of Business Administration, Emeritus, 1955-1973.
Joe Alfred Adamcik, Associate Professor of Chemistry, Emeritus, 1957-1988.
Charles Leonard Ainsworth, Professor of Education and Vice Provost For Academic Affairs, Emeritus, 1967-1995.
Eugene Raymond Alesch, Associate Professor of Art, Emeritus, 1969-1992.
Beatrice Witte Alexander, Associate Professor of Romance Languages, Emeritus, 1945-1984.
Archie Cornelious Allen, Associate Professor of Biological Sciences, Emeritus, 1963-1986.
Louise Crawford Allen, Associate Professor of Journalism, Emeritus, 1928-1963.
Ali Reza Amir-Moez, Professor of Mathematics, Emeritus, 1965-1988.
John Arthur Anderson, Professor of Chemistry and Biochemistry, Emeritus, 1961-1993.
Robert Henry Anderson, Professor and Dean of Education, Emeritus, 1973-1983.
Robert Paul Anderson, Professor of Psychology, Emeritus, 1955-1986.
Norwood Henry Andrews, Jr., Professor of Classical and Modern Languages and Literatures, Emeritus, 1970-2001.
James Elson Archer, Professor of Systems and Computer Science, Emeritus, 1968-1991.
Marion Denson Arnold, Professor of Petroleum Engineering, Emeritus, 1984-1998.
Clifford Charles Ashby, Professor of Theatre Arts, Emeritus, 1963-1989.
Donald Ashdown, Professor of Entomology, Emeritus, 1952-1984.
Elizabeth Carolyn Ater, Associate Professor of Merchandising, Environmental Design, and Consumer Economics, Emeritus, 1969-1996.
Larry Morton Austin, Professor of Business Administration, Emeritus, 1976-1996.
Mohamed Mohamed Ayoub, Horn Professor of industrial Engineering, Emeritus, 1961-2002.
Thomas Ivey Bacon, Associate Professor of Classical and Modern Languages and Literatures, Emeritus, 1974-1996.
Frank Lorenzo Baird, Associate Professor of Political Science, Emeritus, 1968-1981.
James Joseph Barber, Professor of Music, Emeritus, 1966-1995.
Nolan Ellmore Barrick, Kleinschmidt Professor of Architecture, Emeritus, 1953-1979.
Richard Fleming Barton, Professor of Management, Emeritus, 1967-1990.
Harold Marion Bateman, Professor of Law, Emeritus, 1972-1990.
Weldon Earnest Beckner, Professor of Education, Emeritus, 1965-1992.
Jean Camille Graves Bell, Professor of Home Economics Education, Emeritus, 1963-1985.
James Wayland Bennett, Thompson Professor of Agricultural Finance, Emeritus, 1948-1989.
Gerard Joseph Bensberg, Professor of Education, Emeritus, 1971-1990.
Robert Morrison Bethea, Professor of Chemical Engineering, Emeritus, 1966-1998.
Julian Lawson Biggers, Jr., Professor of Education, Emeritus, 1966-1992.
Lotus Berry Blackwell, Associate Professor of Business Administration, Emeritus, 1948-1981.

Lowell Lawrence Blaisdell, Professor of History, Emeritus, 1957-1990.
Brian Layton Blakeley, Professor of History, Emeritus, 1970-1999.
Francis Eldon Bloomer, Associate Professor of Education, Emeritus, 1971-1990.
Mary Middleton Boswell, Associate Professor of Home Economics Education, Emeritus, 1968-1985.
John Ross Bradford, Professor of Chemical Engineering and Dean of Engineering, Emeritus, 1943-1993.
Charles William Brewer, Associate Professor of English, Emeritus, 1972-1996.
Mary Louise Brewer, Associate Professor of English, Emeritus, 1941-1973.
Peggy Howard Bright, Associate Professor of Art, Emeritus, 1966-1986.
Raymond Hector Brogniez, Associate Professor of Architecture, Emeritus, 1965-1979.
Peter Drago Bubresko, Associate Professor of Classical and Romance Languages, Emeritus, 1964-1977.
Charles Louis Burford, Professor of industrial Engineering, Emeritus, 1957-1994.
Jane Offutt Burns, Professor of Accounting, Emeritus, 1986-1997.
Edna Walker Buster, Associate Professor of Clothing and Textiles, Emeritus, 1927-1955.
Charles Edward Butler, Associate Professor of Economics, Emeritus, 1971-1991.
Earl D. Camp, Professor of Biological Sciences, Emeritus, 1945-1985.
Truman Wildes Camp, Professor of English, Emeritus, 1935-1973.
Robert Gordon Campbell, Associate Professor of Anthropology, Emeritus, 1969-1993.
Mary Sue Carlock, Professor of English, Emeritus, 1952-1974.
Ila Mae Carpenter, Associate Professor of Mathematics, Emeritus, 1956-1981.
Herbert Jackson Carper, Jr., Professor of Mechanical Engineering, Emeritus, 1978-1997.
Ralph Marlin Carter, Associate Professor of Education, Emeritus, 1971-1991.
Walter Joseph Cartwright, Professor of Sociology, Anthropology, and Social Work, Emeritus, 1962-1995
Owen Laverne Caskey, Professor of Education, Emeritus, 1947-1983.
Lauro Fred Cavazos, President Emeritus, 1980-1988.
Stanley Edward Cebull, Professor of Geosciences, Emeritus, 1969-1999.
Valerie Meyer Chamberlain, Professor of Home Economics Education, Emeritus, 1971-1985.
Charles Ray Chandler, Associate Professor of Sociology, Anthropology and Social Work, Emeritus, 1966-2000.
Beverly Jane Cheatham, Associate Professor of Art, Emeritus, 1973-1998.
Frank Reagan Cheatham, Professor of Art, Emeritus, 1973-1998.
Carl John Childers, Jr., Professor of Architecture, Emeritus, 1959-1985.
Sam Whiten Chisholm, Professor of Business Administration, Emeritus, 1941-1981.
Key Ray Chong, Associate Professor of History, Emeritus, 1970-1995.
Aubry Duane Christian, Associate Professor of Curriculum and instruction, Emeritus, 1971-1994.
Alfred Cismaru, Professor of Classical and Modern Languages and Literatures, Emeritus, 1970-1995.
Billy Joe Claborn, Professor of Civil Engineering, Emeritus, 1963-1992.
E. Dale Cluff, Professor of Education and Dean of Libraries, Emeritus, 1982-2001.
John William Cobb, Professor of Health, Exercise, and Sport Sciences, Emeritus, 1977-1993.
Jacquelin Collins, Associate Professor of History and Associate Dean, College of Arts and Sciences, Emeritus, 1962-1998.
Seymour Vaughan Connor, Professor of History, Emeritus, 1953-1979.
Joe D. Cornett, Professor of Educational Psychology and Leadership, Emeritus, 1968-1997.
Murray Whitfield Coulter, Associate Professor of Biological Sciences, Emeritus, 1964-1998.
John Paul Craig, Professor of Electrical Engineering, Emeritus, 1957-1989.
Duane Austin Crawford, Associate Professor of Petroleum Engineering, Emeritus, 1958-1992.
John Richard Crider, Associate Professor of English, Emeritus, 1966-1996.
James William Culp, Professor of English, Emeritus, 1967-1984.
David Charles Cummins, Professor of Law, Emeritus, 1970-2000.
Samuel Everett Curl, Professor of Animal Science and Dean, College of Agricultural Sciences and Natural Resources, Emeritus, 1961-1997.
Paul Frederick Cutter, Professor of Music, Emeritus, 1968-2000.
Charles Edwin Dale, Professor of Business Administration, Emeritus, 1956-1983.
Kamalaksha Das Gupta, Professor of Physics, Emeritus, 1966-1985.
Monty E. Davenport, Vice President For Operations and Professor of Mechanical Engineering, Emeritus, 1956-1998.
Claud Monroe Davidson, Professor of Geography, Emeritus, 1969-1998.
Lewis James Davies, Sr., Associate Professor of Sociology, Emeritus, 1962-1986.
Dale Waverly Davis, Associate Professor of English, Emeritus, 1968-1999.
Kenneth Waldron Davis, Professor of English, Emeritus, 1960-1994.
Robert Waldo Deahl, Professor of Music, Emeritus, 1966-1994.
John Fred Deethardt, Jr., Professor of Speech Communication, Emeritus, 1968-1989.
Joe Dennis, Professor of Chemistry, Emeritus, 1938-1976.
Donald Thaddeus Dietz, Professor of Classical and Modern Languages and Literatures, Emeritus, 1978-1993.
John Dixon Downes, Professor of Horticulture, Emeritus, 1970-1984.
Arthur Lincoln Draper, Associate Professor of Chemistry, Emeritus, 1959-1985.
Harold Ernest Dregne, Horn Professor of Plant and Soil Science, Emeritus, 1969-1985.
Leslie Drew, Professor of Biological Sciences, Emeritus, 1977-2000.
Lola Marie Drew, Associate Professor of Home and Family Life, Emeritus, 1946-1972.
Richard Albert Dudek, Horn Professor of industrial Engineering, Emeritus, 1958-1988.
Roy Sylvan Dunn, Associate Professor of Sociology, Emeritus, 1956-1977.
Donald Lewis Durland, Professor of Art, Emeritus, 1969-1996.
Marvin John Dvoracek, Associate Professor of Civil Engineering, Emeritus, 1962-1994.

Floyd Eugene Eddleman, Professor of English, Emeritus, 1958-1990.
James Hadley Edgar, Jr., Robert H. Bean Professor of Law, Emeritus, 1971-1992.
Wildring Sherrod Edwards, Associate Professor of Home and Family Life, Emeritus, 1962-1984.
Ulrich Lewis Eggenberger, Professor of Agricultural Education and Communications, Emeritus, 1961-1993.
George Oliver Elle, Professor of Horticulture, Emeritus, 1938-1977.
Arthur Mcauley Elliot, Professor of Biological Sciences, Emeritus, 1961-1995.
Raymond Pruitt Elliott, Professor of Music, Emeritus, 1950-1969.
Robert H. Ewalt, Associate Professor of Education and Vice President for Student Affairs, Emeritus, 1973-2000.
Billy Weldon Felty, Associate Professor of Architecture, Emeritus, 1958-1994.
Dorothy Jane Filgo, Associate Professor of Education, Emeritus, 1960-1986.
Patrice Margaret Catlin Fleming, Professor of Education, Emeritus, 1967-1978.
George Quitman Flynn, Professor of History, Emeritus, 1974-1999.
Eugene Paul Foerster, Associate Professor of Agricultural Engineering, Emeritus, 1969-1987.
Arthur Gail Follows, Associate Professor of Music, Emeritus, 1967-1996.
Wayne Timothy Ford, Professor of Mathematics and Statistics, Emeritus, 1967-1999.
Stanley Earl Fowler, Professor of Human Development and Family Studies, Emeritus, 1970-1991.
Elizabeth Fox, Associate Professor of Education, Nutrition and Restaurant-Hotel Management, Emeritus, 1982-2002.
Billy Gervice Freeman, Associate Professor of Agricultural and Applied Economics, Emeritus, 1973-1997.
Kenneth Howard Freeman, Professor of Education, Emeritus, 1969-1980.
Verne James Funk, Professor of Art, Emeritus, 1977-1997.
Robert Ellard Gades, Professor of Education, Emeritus, 1982-1992.
Mary Sue Gately, Professor of Accounting, Emeritus, 1981-1998.
Mary Agnes Gerlach, Associate Professor of Clothing and Textiles, Emeritus, 1955-1982.
Georgette Elizabeth Gettel, Associate Professor of Music, Emeritus, 1963-2000.
Beverly Brian Gilbert, Associate Professor of English, Emeritus, 1961-1993.
John Charles Gilliam, Professor of Economics, Emeritus, 1962-1992.
Edna Smith Glenn, Associate Professor of Art, Emeritus, 1968-1987.
Ulrich Goebel, Professor of Classical and Modern Languages and Literatures, Emeritus, 1979-2001.
James A. Goss, Professor of Anthropology, Emeritus, 1978-2000.
Preston Frazier Gott, Associate Professor of Physics, Emeritus, 1949-1989.
Lyman Moody Graham, Jr., Associate Professor of Engineering Technology, Emeritus, 1956-1984.
James Wilton Graves, Professor of Agricultural and Applied Economics, Emeritus, 1961-1998.
Lawrence Lester Graves, Professor of History and Dean of Arts and Sciences, Emeritus, 1955-1983.
Hiram Varner Greer, Associate Professor of Art, Emeritus, 1963-1982.
Walter Grub, Professor of Agricultural Engineering, Emeritus, 1966-1985.
William Barnett Guerrant, Jr., Professor of Chemistry, Emeritus, 1968-1984.
Arnold Jarvis Gully, Professor of Chemical Engineering and Engineering Technology, Emeritus, 1963-1982.
Donald Lloyd Gustafson, Professor of Computer Science, Emeritus, 1971-1999.
Marion Otho Hagler, Horn Professor of Electrical Engineering and Associate Dean, College of Engineering, Emeritus, 1967-2000.
James Walter Hanna, Associate Professor of Art, Emeritus, 1968-2001.
Paul Dean Hanna, Jr., Professor of Art, Emeritus, 1960-1993.
Margarette Leggitt Harden, Professor of Food and Nutrition, Emeritus, 1967-1992.
Rae Lawrence Harris, Jr., Professor of Geography, Emeritus, 1957-1989.
Clark Harvey, Professor of Plant and Soil Science, Emeritus, 1954-1979.
Murray Clark Havens, Professor of Political Science, Emeritus, 1973-1997.
Robert Ames Hayes, Professor of History, Emeritus, 1968-1998.
Hubert Reed Heichelheim, Professor of Chemical Engineering, Emeritus, 1961-1996.
Donald Jacob Helmers, Professor of Engineering Technology and Mechanical Engineering, Emeritus, 1948-1982.
Nancy Parrott Hickerson, Professor of Anthropology, Emeritus, 1972-1999.
David Leon Higdon, Horn Professor of English, Emeritus, 1971-2001.
Shelby Keith Hildebrand, Professor of Mathematics and Statistics, Emeritus, 1963-1997.
Lewis Edgar Hill, Professor of Economics and Geography, Emeritus, 1967-2000.
Lynwood M. Holland, Professor of Political Science, Emeritus, 1967-1971.
Edna Nawanna Houghton, Associate Professor of Art, Emeritus, 1932-1973.
James Dean Howze, Professor of Art, Emeritus, 1958-1992.
Hower J. Hsia, Professor of Mass Communications, Emeritus, 1970-1992.
Frank Alden Hudson, Professor of Animal Science, Emeritus, 1960-1988.
John Ray Hunter, Associate Professor of Range, Wildlife, and Fisheries Management, Emeritus, 1963-1999.
William Keith Ickes, Professor of Speech and Hearing Sciences, Emeritus, 1962-1986.
Alonzo D. Jacka, Professor of Geosciences, Emeritus, 1959-1997.
Raymond Carl Jackson, Horn Professor of Biological Sciences, Emeritus, 1971-1997.
Ray Curtis Janeway, Director of Library Services, Emeritus, 1949-1982.
William Loyd Jenkins, Associate Professor of industrial Engineering and Engineering Technology, Emeritus, 1946-1985.
Evan Kermit Jobe, Associate Professor of Philosophy, Emeritus, 1976-1991.
Melvin Hamilton Johnson, Associate Professor of Architecture, Emeritus, 1980-1994.
Lewis Norton Jones, Dean of Students, Emeritus, 1938-1978.
U. V. Jones, Professor of Law, Emeritus, 1966-1980.
James E. Jonish, Professor of Economics and Geography, Emeritus, 1973-1998.
Cliff Hutchinson Keho, Associate Professor of Civil Engineering, Emeritus, 1957-1988.

Virginia Katherine Kellogg, Professor of Music, Emeritus, 1963-1993.
Clyde E. Kelsey, Jr., Professor of Education, Emeritus, 1972-1987.
Rex Page Kennedy, Associate Professor of Agricultural Economics, Emeritus, 1967-1991.
Earl Eugene Kenney, Professor of Music, Emeritus, 1957-1982.
Marlin Dean Killion, Director of Bands, Emeritus, 1959-1985.
Young Nok Kim, Professor of Physics, Emeritus, 1964-1991.
Panze Butler Kimmel, Associate Professor of Education, Emeritus, 1969-1992.
Ramon Walter Kireilis, Professor of Health, Exercise, and Sport Sciences, Emeritus, 1950-1979.
Paul Arthur Knipping, Associate Professor of Health, Exercise, and Sport Sciences, Emeritus, 1976-1993.
Shirley Ann Koeller, Associate Professor of Curriculum and instruction, Emeritus, 1978-1996.
Lyle Carlton Kuhnley, Associate Professor of Biological Sciences, Emeritus, 1959-1981.
Martin Theodore Kyre, Jr., Associate Professor of Political Science, Emeritus, 1963-1990.
Mina Marie Wolf Lamb, Margaret W. Weeks Professor of Food and Nutrition, Emeritus, 1940-1975.
Carlon Sanford Land, Professor of Petroleum Engineering, Emeritus, 1983-1992.
Thomas Alexander Langford, Professor of English and Dean, Graduate School, Emeritus, 1961-2001.
Murl Alton Larkin, Maddox Professor of Law, Emeritus, 1968-1989.
Thomas Luther Leach, Professor of Agricultural Education, Emeritus, 1937-1978.
Truman Orville Lewis, Professor of Mathematics, Emeritus, 1966-1994.
Ivan Lee Little, Professor of Philosophy, Emeritus, 1946-1979.
Leona Mitchell Little Soldier, Professor of Education, Emeritus, 1969-1998.
Bill J. Locke, Professor of Psychology, Emeritus, 1969-1996.
Billy Clarence Lockhart, Professor of Art, Emeritus, 1955-1987.
Martha Morrow Logan, Associate Professor of Family Management, Housing, and Consumer Science, Emeritus, 1969-1985.
Robert Allen Long, Professor of Animal Science, Emeritus, 1976-1991.
Donald Sherman Longworth, Professor of Home and Family Life, Emeritus, 1966-1982.
Max Wayland Manley, Associate Professor of Education, Emeritus, 1970-1992.
Thomas Green Manning, Professor of History, Emeritus, 1956-1979.
William Robert Marlett, Associate Professor of Landscape Architecture, Emeritus, 1968-1995.
Annette Wilson Marple, Associate Professor of Law, Emeritus, 1973-1992.
Hugo Dixon Marple, Professor of Music, Emeritus, 1969-1985.
Robert Edward Martin, Associate Professor of Mechanical Engineering, Emeritus, 1949-1985.
Ruth Evelyn Martin, Professor of Education, Nutrition, and Restaurant-Hotel Management, Emeritus, 1986-1999.
Danny Raymond Mason, Associate Professor of Health, Physical Education and Recreation, Emeritus, 1964-2000.
Arthur Gerald Matches, Thornton Distinguished Professor of Plant and Soil Science, 1981- 1994.
Richard Benjamin Mattox, Professor of Geosciences, Emeritus, 1954-1982.
Bruce Douglas Mattson, Professor of Education, Emeritus, 1965-1983.
Henry James Maxwell, Professor of Spanish, Emeritus, 1963-1989.
Richard Wayne Maxwell, Associate Professor of Law, Emeritus, 1975-1991.
William James Mayer-Oakes, Professor of Anthropology, Emeritus, 1971-1989.
Judson Dana Maynard, Professor of Music, Emeritus, 1961-1992.
Mary Fletcher McBride, Associate Professor of English, Emeritus, 1972-1992.
Darrell Keith McCarty, Professor of Music, Emeritus, 1953-1988.
Joseph Thomas McCullen, Jr., Professor of English, Emeritus, 1949-1980.
Gordon Cartwright McCutchan, Professor of Architecture, Emeritus, 1962-1984.
Richard Allen McGowan, Associate Professor of Music, Emeritus, 1969-1994.
Martin Hugh McIntyre, Professor of Health, Exercise, and Sport Sciences, Emeritus, 1976-1994.
Thomas Graham McLaughlin, Professor of Mathematics and Statistics, Emeritus, 1973-2002.
James Faber McNally, Associate Professor of Health, Exercise, and Sport Sciences, Emeritus, 1952-1989.
Clara Mueller McPherson, Associate Professor of Education, Nutrition, and Restaurant-Hotel Management, Emeritus, 1947-1986.
Clinton Marsud McPherson, Associate Professor of Chemistry, Emeritus, 1956-1984.
John Stephen Mecham, Professor of Biological Sciences, Emeritus, 1965-1992.
Shamus Mehaffie, Professor of Education, Emeritus, 1971-1990.
Michael Mezack III, Associate Professor of Educational Psychology and Leadership, Emeritus, 1975-1996.
John David Miller, Associate Professor of Mathematics and Statistics, Emeritus, 1968-1996.
Betty Jo Mills, Curator of The Museum, Emeritus, 1959-1986.
Jerry Lee Mills, Professor of Chemistry and Biochemistry, Emeritus, 1970-1995.
Raymond William Mires, Professor of Physics, Emeritus, 1957-1991.
Robert Wetsel Mitchell, Professor of Biological Sciences, Emeritus, 1965-1991.
Arunkumar Mitra, Associate Professor of Mathematics and Statistics, Emeritus, 1967-2000.
Gene Allen Mittler, Professor of Art, Emeritus, 1982-1995.
Joseph John Mogan, Professor of English, Emeritus, 1966-1996.
Evelyn ina Montgomery, Professor of Anthropology, Emeritus, 1964-1979.
Marvin Lee Moon, Associate Professor of Art, Emeritus, 1973-1996.
Diana Moore, Associate Professor of Theatre and Dance, Emeritus, 1971-2000.
Harmon Loyd Morgan, Associate Professor of Mass Communications, Emeritus, 1968-1992.
Sibyl Pirtle Morrison, Associate Director of The Library, Emeritus, 1947-1983.
Carmyn Hula Morrow, Associate Professor of Merchandising, Environmental Design, and Consumer Economics, Emeritus, 1972-1993.
Grover Elmer Murray, University Professor of Geosciences and President, Emeritus, 1966-1988.
Thomas Alec Musiak, Professor and Chairperson, Department of Landscape Architecture, Emeritus, 1988-2000.

Levi Marshall Nagle, Jr., Professor of Education, Emeritus, 1959-1978.
Kline Allen Nall, Professor of English, Emeritus, 1944-1980.
Otto Millard Nelson, Associate Professor of History and Associate Dean, College of Arts & Sciences, Emeritus, 1965-2000.
John R. Nevius, Professor of Education, Emeritus, 1974-1995.
Benjamin Havelock Newcomb, Professor of History, Emeritus, 1964-2000.
Robert Lee Newell, Professor of Mechanical Engineering and Engineering Technology, Emeritus, 1941-1982.
Mary Tom Riley O'Bar, Professor of Human Development and Family Studies, Emeritus, 1972-2000.
Harley Dean Oberhelman, Horn Professor of Classical and Modern Languages and Literatures, Emeritus, 1958-1995.
Donald Oberleas, Professor of Education, Nutrition, and Restaurant-Hotel Management, Emeritus, 1985-1998.
William Eugene Oden, Professor of Political Science, Emeritus, 1948-1984.
Edgar O'Hair, Professor of Electrical Engineering, Emeritus, 1981-2002.
Mary Lydia Seymour Owens, Professor of Health, Exercise, and Sport Sciences, Emeritus, 1969-1999.
Thomas Richard Owens, Associate Professor of Agricultural and Applied Economics, Emeritus, 1966-1999.
Roderick Parkinson, Associate Professor of Art, Emeritus, 1946-1975.
William Robert Pasewark, Professor of Education, Emeritus, 1956-1982.
William Taylor Patterson, Professor of Classical and Modern Languages and Literatures, Emeritus, 1961-1995.
Neale J. Pearson, Professor of Political Science, Emeritus, 1969-1996.
Arlin Peterson, Professor of Education, Emeritus, 1972-2001.
Richard Lewis Peterson, Professor of Finance, Emeritus, 1982-1999.
Russell Dean Pettit, Associate Professor of Range Management, Emeritus, 1969-1989.
George Rex Philbrick, Professor of Health, Exercise, and Sport Sciences, Emeritus, 1941-1979.
Florence Louise Phillips, Professor of Psychology, Emeritus, 1954-1985.
Fannie Ernestine Pillow, Associate Professor of Education, Emeritus, 1965-1976.
Robert Henry Pinder, Associate Professor of Human Development and Family Studies, Emeritus, 1971-1994.
Marvin Roger Platten, Associate Professor of Curriculum and instruction, Emeritus, 1971-1993.
William Manos Portnoy, Professor of Electrical and Computer Engineering, Emeritus, 1967-2000.
Charles William Post, Professor of Music, Emeritus, 1957-1984.
Louis John Powers, Professor of Mechanical Engineering, Emeritus, 1942-1979.
Rodney Leroy Preston, Horn Professor and Thornton Distinguished Chair of Animal Science and Food Technology, Emeritus, 1982-1996.
Vernon Willard Proctor, Professor of Biological Sciences, Emeritus, 1956-1992.
Ray Abiff Purkerson, Associate Professor of Education, Emeritus, 1972-1991.
John William Queen, Associate Professor of Art, Emeritus, 1960-1991.
William Reed Quilliam, Jr., George Herman Mahon Professor of Law, Emeritus, 1966-1995.
Helen Caldwell Randle, Associate Professor of Home and Family Life, Emeritus, 1965-1977.
Joseph Morton Ransdell, Associate Professor of Philosophy, Emeritus, 1974-2002.
Joseph Bland Bob Ray, Professor of Psychology, Emeritus, 1963-1990.
Charles Wesley Rebstock, Associate Professor of Education, Emeritus, 1966-1982.
Corwin C. Reeves, Jr., Professor of Geosciences, Emeritus, 1957-1995.
Maryanne Reid, Associate Professor of Education, Emeritus, 1963-1995.
Levern Anthony Reis, Associate Professor of Mechanical Engineering, Emeritus, 1957-1990.
Elbert Brunner Reynolds, Jr., Associate Professor of Technology and Mechanical Engineering, Emeritus, 1964-1990.
Dayton Young Roberts, Professor of Education, Emeritus, 1973-1990.
Larry Spurgeon Roberts, Professor of Biological Sciences, Emeritus, 1979-1990.
Delilah Manire Roch, Associate Professor of Clothing and Textiles, Emeritus, 1967-1982.
John Robert Rogers, Professor of Education, Emeritus, 1970-1980.
Ruth Marie Rogers, Professor of Health, Physical Education, Recreation, and Dance, Emeritus, 1971-1989.
Nina Lorraine Ronshausen, Associate Professor of Education, Emeritus, 1975-1996.
Robert Alan Rooker, Associate Professor of Mass Communications, Emeritus, 1963-1990.
Gene Edward Rooze, Professor of Curriculum and instruction, Emeritus, 1969-1996.
Billy Irvan Ross, Professor of Mass Communications, Emeritus, 1970-1988.
Robert Lyle Rouse, Professor of Economics and Business Administration, Emeritus, 1950-1985.
Billy Joe Sandlin, Associate Professor of Physics, Emeritus, 1955-1990.
Elizabeth Skidmore Sasser, Professor of Architecture, Emeritus, 1949-1990.
Theodore William Schettler, Associate Professor of Music, Emeritus, 1968-1983.
Rodric Bruce Schoen, Thornton Professor of Law, Emeritus, 1971-2000.
Russell Holland Seacat, Jr., Professor of Electrical Engineering, Emeritus, 1959-1984.
Martha Gene Shelden, Professor of Clothing and Textiles, Emeritus, 1955-1969.
Deskin Hunt Shurbet, Jr., Professor of Geosciences, Emeritus, 1956-1994.
Gerald Lynn Shurbet, Associate Professor of Mathematics, Emeritus, 1956-1987.
Vera Loie Jarrard Simpson, Associate Professor of Speech Communication, Emeritus, 1964-1985.
Roland Edgar Smith, Professor of Political Science, Emeritus, 1968-1986.
George Wendell Sorensen, III, Professor of Theatre and Dance, Emeritus, 1976-1996.
Carl Herbert Stem, Dean of Business Administration, Emeritus, 1975-1997.
Tom Basil Stenis, Associate Professor of Electrical Engineering, Emeritus, 1947-1987.
Francis B. Stephen, Professor of Art, Emeritus, 1967-1983.
William Addison Stewart, Professor of Architecture, Emeritus, 1965-1984.
Betty Ann Street, Associate Professor of Art, Emeritus, 1967-1995.

Metin Tamkoc, Professor of Political Science, Emeritus, 1966-1994.
Donald Ray Tanner, Professor of Music, Emeritus, 1977-2001.
Jeri Tanner, Associate Professor of English, Emeritus, 1966-1993.
Frank Millett Temple, Associate Director of Library Services, Emeritus, 1951-1979.
George Tereshkovich, Professor of Plant and Soil Science, Emeritus, 1968-1995.
Henry Coffman Thomas, Professor of Physics, Emeritus, 1958-1984.
Orlan Earl Thomas, Associate Professor of Music, Emeritus, 1967-2002.
Arthur Dudley Thompson, Professor of Architecture, Emeritus, 1959-1997.
Virginia Mahaley Thompson, Associate Professor of Architecture, Emeritus, 1964-1997.
Myra Bounds Timmons, Associate Professor of Merchandising, Environmental Design, and Consumer Economics, Emeritus, 1961-1995.
Richard Earl Tolley, Professor of Music, Emeritus, 1959-1991.
Leland Floyd Tribble, Professor of Animal Science, Emeritus, 1967-1989.
Roger M. Troub, Professor of Economics and Geography, 1967-1997.
William Pierce Tucker, Professor of Political Science, Emeritus, 1967-1977.
Fred Donavon Turner, Associate Professor of Music, Emeritus, 1971-2002.
Willie Lee Ulich, Professor of Agricultural Engineering and Technology, Emeritus, 1961-1984.
Mary Ann Vaughan, Associate Professor of Music, Emeritus, 1967-1996.
Darrell Lee Vines, Professor of Electrical and Computer Engineering, Emeritus, 1962-2000.
Charles Ernest Wade, Associate Professor of Finance, Emeritus, 1971-1999.
Jack Douglas Wages, Professor of English, Emeritus, 1968-1999.
Betty Sue Malone Wagner, Associate Professor of Human Development and Family Studies, Emeritus, 1969-1994.
Fred Philip Wagner, Jr., Associate Professor of Engineering Technology, Emeritus, 1967-1994.
Harry Stuart Walker, Associate Professor of Economics, Emeritus, 1953-1986.
Warren Stanley Walker, Horn Professor of English, Emeritus, 1964-1986.
John Frank Walkup, Horn Professor of Electrical and Computer Engineering, Emeritus, 1971-1998.
Dorothy Estelle Hays Wallace, Professor of Home and Family Life, Emeritus, 1959-1975.
Derald Dee Walling, Professor of Mathematics, Emeritus, 1966-1992.
Terrel Barney Warren, Professor of Architecture, Emeritus, 1964-1976.
Richard Alden Weaver, Professor of Theatre and Dance, Emeritus, 1972-1996.
Holmes Andrew Webb, Professor of Education, Emeritus, 1960-1970.
Leonard Harold Weiner, Associate Professor of Computer Science, Emeritus, 1976-1990.
James Roy Wells, Secretary, Emeritus, Board of Regents, 1951-1971.
Gary Elbert White, Professor of Accounting, Emeritus, 1979-1999.
John Thomas White, Associate Professor of Mathematics and Statistics, Emeritus, 1965-2002.
William Elmer Whittington, Professor of Business Administration, Emeritus, 1947-1975.
Richard Edward Wilde, Professor of Chemistry and Biochemistry, Emeritus, 1963-1995.
Ira Lawson Williams, Professor of Agricultural Engineering, Emeritus, 1952-1974.
Peggy Jean Williams, Associate Professor of Health, Exercise, and Sport Sciences, Emeritus, 1962-1993.
Billie Frances Williamson, Assistant Dean and Professor of Home Economics Education, Emeritus, 1956-1973.
Horace Hampton Williamson, Associate Professor of Architecture, Emeritus, 1973-1986.
Welborn Kiefer Willingham, Professor of Education, Emeritus, 1961-1993.
Margaret Eileen Wilson, Professor of Health, Physical Education, Recreation, and Dance, Emeritus, 1965-1990.
Herald Warren Winkler, Professor of Petroleum Engineering, Emeritus, 1970-1985.
John Wittman, Professor of Economics, Emeritus, 1960-1990.
Willie Mae Wolfe, Associate Professor of Home Management, Emeritus, 1955-1976.
Eleanor Mary Woodson, Associate Professor of Merchandising, Environmental Design, and Consumer Economics, Emeritus, 1970-1987.
Ruth Cowart Wright, Associate Professor of Political Science, Emeritus, 1957-1983.
Shiang Ping Yang, Professor of Education, Nutrition, and Restaurant-Hotel Management, Emeritus, 1969-1988.
Paul Edward Zintgraff, Professor of Educational Administration, Emeritus, 1974-1984.
Edward William Zukauckas, Jr., Associate Professor of Horticulture, Emeritus, 1952-1984.
Wolodymyr Taras Zyla, Professor of Germanic and Slavic Languages, Emeritus, 1963-1986.

Residency Status Determination

Interpretations of Residence

It is the duty of each student to register under the proper residence and pay the correct tuition fees. The explanation below of what constitutes a nonresident is intended to assist students in properly determining whether or not they qualify as residents of the state for tuition purposes. If there is any possible question whether or not a student qualifies as a resident of Texas, he or she should consult the office of admissions. For each improper registration there may be a penalty of $10 per semester in addition to the proper fee. There can be no change in residence status except upon express authorization by the Office of Admissions. *The following State Statutes and Coordinating Board's Rules and Regulations for Determining Residence Status are subject to change respectively by the State Legislature and the State Coordinating Board without notice.* Please refer to the last item of this section for a glossary that explains the terms used in residency interpretation.

General Residency Rules

Minors and Dependents

Statute: Section 54.052(a)(3) "Dependent" means an individual who is claimed as a dependent for federal income tax purposes by the individual's parent or guardian at the time of registration and for the tax year preceding the year in which the individual registers.
Section 54.052(c) An individual who is under 18 years of age or is a dependent and who is living away from his family and whose family resides in another state or has not resided in Texas for the 12-month period immediately preceding the date of registration shall be classified as a nonresident student.
Section 54.052(d) An individual who is 18 years of age or under or is a dependent and whose family has not resided in Texas for the 12-month period immediately preceding the date of registration shall be classified as a nonresident student regardless of whether he has become the legal ward of residents of Texas or has been adopted by residents of Texas while he is attending an educational institution in Texas, or within a 12-month period before his attendance, or under circumstances indicating that the guardianship or adoption was for the purpose of obtaining status as a resident student.
Section 54.055 An individual who is 18 years of age or under or is a dependent and whose parents were formerly residents of Texas is entitled to pay the resident tuition fee following the parents' change of legal residence to another state, as long as the individual remains continuously enrolled in a regular session in a state-supported institution of higher education.

Residence of a Minor or a Dependent. The residence of the person to whom custody was granted by court order (e.g., divorce decree, child custody actions, guardianship or adoption proceedings), provided custody was granted at least 12 months prior to the student's enrollment and was not granted for the purpose of obtaining status as a resident student.

Custody by Court Order. If the custody of the minor has been granted by court order (e.g., divorce decree, child custody action, guardianship or adoption proceedings) to some person other than the parent, the residence of that person shall control; provided, however, that such grant of custody was not ordered during or within a year prior to the minor's enrollment in a public institution of higher education and was granted under circumstances indicating that such guardianship was not for the purpose of obtaining status as a resident student.

Abandoned Child. In the case of an abandoned child, the residence of a person who has stood *in loco parentis* for a period of time may determine the residence. The fact of abandonment must be clearly established and must not have been for the purpose of affecting the residence of the minor, and the minor must have actually resided in the home of such person for two years immediately prior to enrolling in a public institution of higher education in Texas and such person must have provided substantially all of the minor's support. In the event that the *in loco parentis* relationship has not existed for the full two year period, a lesser period of time is acceptable in unusual hardship cases, such as death of both parents.

Orphans. Orphans who have lived for longer than a year in an established orphans' home in Texas operated by a fraternal, religious, or civic organization and have been graduated from the orphans' home shall be considered residents of Texas provided they reside in Texas from the time of such graduation until they enter an institution of higher education.

Emancipation. A minor who has been legally emancipated may establish their claim to residency following the rules applicable to independent individuals 18 years of age or older.

Married Minors. Minors who are married have the power and capacity of single persons of full age.

Dependents Whose Parents Moved to Another State or Foreign Country and No Longer Claim Residence in Texas. If both of the parents of dependents who have been enrolled as resident students move their residence to another state or foreign country, the dependents shall be classified as nonresidents at all subsequent registration periods.

1. Under the provisions of Texas Education Code 54.055, although classified as nonresidents, the dependents will be entitled to pay the resident tuition fee as long as they remain continuously enrolled in a state-supported institution of higher education. Such dependent students must enroll for the next available fall or spring semester immediately following the parents' change of residence to another state.
2. When the parents of dependents who have established their residence in another state or foreign country return and reestablish their residence in Texas the dependents must continue to be classified as nonresidents until the first registration after the parents have resided in the state for a 12-month period.

Dependents Whose Parents Moved to Another State or Foreign Country But Continue to Claim Texas Residence.

1. If both of the parents of dependents move to another state or foreign country, or reside outside the state or in a foreign country at the time the dependents enroll in an institution of higher education, but claim residence in Texas, conclusive evidence must be presented that the parents are still claiming residence in the State of Texas and that they have the present intent to return to the state. A certificate from the employer of the parents that the move outside the state was temporary (generally less than five years) and that there are definite plans to return the parents to Texas by a determinable future date will be considered in this connection.
2. Persons who resided in Texas for at least five years prior to moving from the state, and who have returned to the state for residence purposes before having resided out of the state for a year, shall be classified as residents. The parent(s) of dependents must return to the state to live in order for the dependent to be considered a resident.

Independent Individuals 18 Years of Age or Older

Statute: Section 54.052(e) An individual who is 18 years of age or over who has come from outside Texas and who is gainfully employed in Texas for a 12-month period immediately preceding registration in an educational institution shall be classified as a resident student as long as he continues to maintain a legal residence in Texas.
Section 54.052(f) An individual who is 18 years of age or over who resides out of the state or who has come from outside Texas and who registers in an educational institution before having resided in Texas for a 12-month period shall be classified as a nonresident student.
Section 54.052(g) An individual who would have been classified as a resident for the first five of the six years immediately preceding registration, but who resided in another state for all or part of the year immediately preceding registration, shall be classified as a resident student.

Establishment of Residence. Independent individuals 18 years of age or over who move into the state and who are gainfully employed within the state for a period of 12 months prior to enrolling in an institution of higher education are entitled to classification as residents. An individual who is self employed or employed as a homemaker within the home may be considered gainfully employed for tuition purposes. If such 12 months residence, however, can be shown not to have been for the purpose of establishing residence in the state but to have been for some other purpose, the individuals are not entitled to be classified as residents. Students enrolling in an institution of higher education prior to having resided in the state for 12 months immediately preceding time of enrollment shall be classified as nonresidents for tuition purposes.

Establishment of Residence For Individuals 18 Years of Age or Older Whose Parents or Court-Appointed Legal Guardians No Longer Claim Them as Dependents For Federal Tax Purposes. If the parents or legal guardians of an individual 18 years of age or older move out of state and continue to claim the individual as a dependent for tax purposes, the individual continues to have the residence of the parents or guardians. If the individual remains in Texas, he/she may claim residency for tuition purposes as an independent student once 12 months have passed from the end of the last calendar year in which the parents or guardians claimed the student as a dependent.

Retention of Residence. If the parents of an individual 18 years of age or older move out of the state and immediately cease claiming the student as a dependent for federal tax purposes, the individual may retain his/her claim to Texas residency for tuition purposes if he/she remains in Texas and begins filing federal income tax returns as an independent student.

Married Students

Statute: Section 54.056 A student who is a resident of Texas and who marries a nonresident is entitled to pay the resident tuition fee as long as the student does not adopt the legal residence of the spouse in another state.

Marriage of a Texas resident to a nonresident does not jeopardize the former's right to pay the resident tuition rate unless the resident has taken steps to claim the out-of-state residence of his or her spouse.

A nonresident who marries a resident of Texas must establish his or her own residency by meeting the standard requirements. (See section relating to Residence of Independent Individuals 18 Years of Age or Older or section relating to Married Minors.)

Foreign Students

Statute: Section 54.057(a) An alien who is living in this country under a visa permitting permanent residence or who has applied to or has a petition pending with the Immigration and Naturalization Service to attain lawful status under federal immigration law has the same privilege of qualifying for resident status for fee purposes under this Act as has a citizen of the United States. A resident alien residing in a junior college district located immediately adjacent to Texas Boundary lines shall be charged the resident tuition by that junior college.
Section 54.057(b) A nonimmigrant alien who resides in this state in accordance with the Agreement between the Parties to the North Atlantic Treaty Regarding the Status of Their Forces (4 U. S. T. 1792) and the spouse or children of such an alien are residents for tuition and fee purposes under this code.
Section 54.052(j) Notwithstanding any other provision of this subchapter, an individual shall be classified as a Texas resident until the individual establishes a residence outside this state if the individual residing with the individual's parent, guardian, or conservator while attending a public or private high school in this state and: (1) graduated from a public or private high school or received the equivalent of a high school diploma in this state; (2) resided in this state for at least three years as of the date the person graduated from high school or received the equivalent of a high school diploma; (3) registers as an entering student in an institution of higher education not earlier than the 2001 fall semester; and (4) provides to the institution an affidavit stating that the individual will file an application to become a permanent resident at the earliest opportunity the individual is eligible to do so.

Eligible Aliens. Aliens living in the United States under a visa permitting permanent residence, and aliens who are permitted by Congress to adopt the United States as their domicile while they are in this country, and aliens who have filed with the proper federal immigration authority a declaration of intent to become a United States citizen have the same privilege of qualifying for Texas resident status for tuition purposes as do citizens of the United States. The Immigration and Naturalization Service has identified the following categories of foreign students as being eligible to establish domicile in the United States, however, if an individual provides proof from the Department of Justice or Immigration and Naturalization Service that the visa he/she holds has been granted eligibility to establish a domicile in the United States, such individuals may be granted the same privileges in establishing Texas Residency for tuition purposes:

- Is living in this country under a visa permitting permanent residence; or
- Is permitted by Congress to adopt the United States as his or her domicile, or
- Has applied to or has a petition pending with the Immigration and Naturalization Service to attain lawful status under federal immigration law, or
- Has met coordinating Board requirements for being treated as a permanent resident

A foreign individual who enters a Texas institution or higher education in fall 2001 or later is a resident of Texas if he or she:

- Attended a public or private high school while residing with a parent or legal guardian;
- Graduated from the high school or received the equivalent of a high school degree in Texas;
- Resided in Texas for at least three (3) consecutive years as of the date he/she graduated from high school or received the equivalent of a high school degree;
- Registers as an entering student no earlier than fall 2001; and
- Provides his/her college an affidavit that he or she intends to file an application to become a permanent resident of the United States at the earliest opportunity the individual is eligible to do so.

A list of eligible visas, along with a discussion of eligible applicants for permanent resident status, is available through the coordinating Board web site at www.thecb.state.tx.us.

Family Unity Program. A noncitizen residing in Texas under the Immigration and Naturalization Service's (INS) Family Unity Program may qualify to pay the resident tuition rate. A noncitizen is eligible to apply for benefits under the Family Unity Program if he or she entered the United States on or before May 5, 1988 and has been residing in the United States since that date; and if he or she was the spouse or unmarried child of a legalized alien as of that date and continues to be so. An individual proving his or her eligibility

should provide an institution two Immigration and Naturalization Service forms I-797, one of which indicates an INS-approved "Application for Voluntary Departure under the Family Unity Program," and the other which must indicate either an INS-approved "Immigration Petition for Relative" or a "Visa Petition for Spouse". Since INS may cancel eligibility for the Family Unity Program at any time, it is necessary that institutions confirm the student's current INS status each time he or she registers. To comply with the provisions of the Family Unity Program and qualify to pay resident tuition rates at Texas Institutions, the parent or spouse must have established a domicile in the State of Texas.

*Students holding I688A and I688B cards are not eligible to establish domicile in the United States.

Reclassification

Section 54.054 A nonresident student classification is presumed to be correct as long as the residence of the individual in the state is primarily for the purpose of attending an educational institution. After residing in Texas for at least 12 months, a nonresident student may be reclassified as a resident student as provided in the rules and regulations adopted by the Coordinating Board, Texas College and University System. Any individual reclassified as a resident student entitled to pay the tuition fee for a resident of Texas at any subsequent registration as long as he continues to maintain his legal residence in Texas.

Reclassification. Persons classified as nonresidents upon first enrollment in an institution of higher education are presumed to be nonresidents for the period during which they continue as students. Students classified as nonresident students shall be considered to retain that status until they make written application for reclassification in the form prescribed by the institution and are officially reclassified in writing as residents of Texas for admissions and tuition purposes by the proper administrative officers of the institution. Application for reclassification must be submitted prior to the official census date of the relevant term. If such nonresident students withdraw from school and reside in the state while gainfully employed for a period of 12 consecutive months, upon reentry into an institution of higher education they will be entitled to be reclassified as residents for tuition purposes if other evidence indicates they have established a domicile in the State of Texas. Accumulations of summer and other vacation periods do not satisfy this requirement. If such nonresident students enroll while gainfully employed for a period of 12 consecutive months, they shall be considered for reclassification as residents for tuition purposes if other evidence indicates they have established a domicile in the State of Texas. Material to the determination of the establishment of a domicile in Texas are business or personal facts or actions unequivocally indicative of a fixed intention to reside permanently in the state. Such facts shall include, but are not limited to:

- The length of residence and employment prior to enrolling in the institution;
- The nature of employment while a student;
- Presence in Texas as a part of a household transferred to the state by an employer or as part of a household moved to the state to accept employment offered in Texas;
- Purchase of a homestead, or
- Dependency upon a parent or legal guardian who has resided in Texas for at least 12 consecutive months immediately preceding the student's enrollment.

All of these facts are weighed in the light of the fact that a student's residence while in school is primarily for the purpose of education and not to establish residence, and that decisions of an individual as to residence are generally made after the completion of an education and not before. A person who moves to Texas as the spouse of an individual transferred here by the military (see section relating to Military Personnel, Veterans, and Commissioned Officers of the Public Health Service), through the state's plan for economic development and diversification (see section relating to Economic Development and Diversification Employees) or as a part of a household moved to the state to accept employment offered in Texas, is considered not to have come to Texas for the purpose of going to school. Therefore, once he or she has physically resided in Texas for 12 consecutive months, even though the student may have been enrolled full time, the person may be considered a resident if he or she has otherwise established a domicile in the state.

Loss of Residence. Residents who move out of state will be classified as nonresidents immediately upon leaving the state, unless their move is temporary (generally less than five years) and residence has not been established elsewhere. Conclusive evidence must be provided by the individuals supporting their present intent to return to the state. Among other things, a certificate from the employer that the move outside the state is temporary and that a definite future date has been determined for return to Texas may qualify as proof of the temporary nature of the time spent out of state. Internship programs as part of the academic curriculum that require the student to return to the school may qualify as proof of the temporary nature of the time spent out of state.

Reestablishment of Residence. Persons who resided in Texas for at least five years prior to moving from the state, and who have returned to the state for residence purposes before having resided out of the state for a year, shall be classified as residents.

Application for Reclassification. Students classified as nonresident students shall be considered to retain that status until they make written application for reclassification in the form prescribed by the institution and are officially reclassified in writing as residents of Texas by the proper administrative officers of the institution.

Reclassification as a Nonresident. Persons who have been classified as residents of Texas shall be reclassified as nonresident students whenever they shall report, or there is found to exist, circumstances indicating a change in residence to another state. If students who have been classified as residents of Texas are found to have been erroneously classified, those students shall be reclassified as nonresidents and shall be required to pay the difference between the resident and nonresident tuition for those semesters in which they were so erroneously classified.

Reclassification as a Resident. If students have been erroneously classified as nonresident students and subsequently prove to the satisfaction of the appropriate officials of an institution of higher education that they should have been classified as resident student, they shall be reclassified as residents of Texas and may be entitled to a refund of the difference between the resident and nonresident fees for the semesters in which they were so erroneously classified. Normally the refunds must be requested and substantiated during the current term.

Exceptions to Basic Residency Rules

Military Personnel, Veterans, and Commissioned Officers of the Public Health Service

Statute: Section 54.058(a) Military personnel are classified as provided by this section. Section 54.058(b) A person who is an officer, enlisted person, selectee, or draftee of the Army, Army Reserve, Army National Guard, Air National Guard, Air Force, Air Force Reserve, Navy, Navy Reserve, Marine Corps, Marine Corps Reserve, Coast Guard, or Coast Guard Reserve of the United States, who is assigned to duty in Texas and the spouse and children of such an officer, enlisted person, selectee, or draftee are entitled to register in a state institution of higher education by paying the tuition fee and other fees or charges required of Texas residents, without regard to the length of time the officer, enlisted person, selectee, or draftee has been assigned to duty or resided in the state. However, out-of-state Army National Guard or Air National Guard members attending training with Texas Army or Air National Guard units under National Guard Bureau regulations may not be exempted from nonresident tuition by virtue of such training status nor may out-of-state Army, Air Force, Navy, Marine Corps, or Coast Guard Reserves training with units in Texas under similar regulations be exempted from nonresident tuition by virtue of such training status. It is the intent of the legislature that only those members of the Army or Air National Guard or other reserve forces mentioned above be exempted from the nonresident tuition fee and other fees and charges only when they become members of Texas units of the military organizations mentioned above.
Section 54.058(c) As long as they reside continuously in Texas, the spouse and children of a member of the Armed Forces of the United States who has been assigned to duty elsewhere immediately following assignment to duty in Texas are entitled to pay the tuition fees and other fees or charges provided for Texas residents.
Section 54.058(e) A Texas institution of higher education may charge to the United States Government the nonresident tuition fee for a veteran enrolled under the provisions of a federal law or regulation authorizing education or training benefits for veterans.
Section 54.058(f) The spouse and children of a member of the Armed Forces of the United States who dies or is killed are entitled to pay the resident tuition fee, if the wife and children become residents of Texas within 60 days of the date of death.
Section 54.058(g) If a member of the Armed Forces of the United States is stationed outside Texas and his spouse and children establish residence in Texas by residing in Texas and by filing with the Texas institution of higher education at which they plan to register a letter of intent to establish residence in Texas, the institution of higher education shall permit the spouse and children to pay the tuition, fees, and other charges provided for Texas residents without regard to length of time that they have resided within the State.

Legal Residence—General Rule of Domicile For Members of the Military. Persons in military service and commissioned Public Health Service officers are presumed to maintain during their entire period of active

service the same domicile which was in effect at the time of entering the service. Persons stationed in a state for or Public Health Service are presumed not to establish a domicile in that state because their presence is not voluntary but under military or Public Health Service orders.

Change of Domicile. It is possible for members of the military service or Public Health Service to abandon the domicile of original entry into the service and to select another, but to show establishment of a new domicile during the term of active service, there must be clear and unequivocal proof of such intent including evidence of abandonment of domicile of original entry, evidence of establishment of a domicile in Texas, and proof that Texas has remained the individual's domicile when stationed outside of Texas after having established Texas as his or her domicile. Abandonment of domicile of original entry is evidenced by the establishment of a domicile in Texas.

Establishment of a domicile in Texas requires 12 consecutive months assignment to the state, during which the military member must simultaneously file the appropriate documentation to change his or her military records to reflect Texas as the state of legal residence. Other actions may be considered in determining whether a domicile has been established in Texas. If four of the following actions have been taken by the military member at least 12 consecutive months immediately prior to the date of enrollment and continue to be in effect, the member has established a domicile in Texas:

- Purchasing a residence and claiming it as a homestead,
- Registering to vote and voting in local elections,
- Registering automobiles in Texas and paying personal property taxes thereon,
- Maintaining a Texas driver license,
- Maintaining checking accounts, savings accounts, or safe deposit boxes in Texas,
- Having wills or other legal documents that indicate residence in Texas,
- Having membership in professional organizations or other state organizations, and/or
- Establishing a business in Texas.

To prove Texas has remained as his or her domicile when stationed outside of Texas, and individual must provide evidence that he or she was a Texas resident upon entry into the service and that Texas continues to be his or her state of record with the military. If he or she has established a domicile in Texas while in the service in accordance with the above conditions, the member must currently meet at least three of the following criteria in order to qualify to pay the resident tuition rate at a public institution of higher education:

- Owning a residence in Texas and claiming it as a homestead,
- Registering to vote and voting in Texas elections,
- Registering automobiles in Texas and paying personal property taxes thereon,
- Maintaining checking accounts, savings accounts, or safe deposit boxes in Texas,
- Maintaining a Texas driver's license, and/or
- Having wills or other legal documents indicate legal residence in Texas.

Eligibility of Nonresident Military Personnel, Commissioned Public Health Service Officers, and Their Spouses and Dependents.

Eligibility of nonresident military personnel, commissioned Public Health Service Officers, and their spouses and their dependents. Certain military and Public Health Service personnel, spouses and dependent children classified as nonresidents are entitled to pay the resident tuition regardless of their length of residence in Texas if they comply with the following provisions of the statute.

Status of Military Personnel, Commissioned Public Health Service Officers, and Their Spouses and Dependents Stationed in Texas. Education Code 54.058(b) provides that military personnel assigned to duty within the state of Texas, their spouse and their dependent children, shall be entitled to pay the same tuition as a resident of Texas regardless of the length of their physical presence in the state. To be entitled to pay resident tuition, such military personnel shall submit at least once per 12 month academic year as defined by the institution a statement from an appropriately authorized officer in the service certifying that they are then assigned to duty in Texas and that same will be in effect at the time of such enrollment in a public institution of higher education. This same provision also applies to commissioned Public Health Service officers and their spouses and their dependents. This subsection also provides that nonresident members of an out-of-state National Guard unit who are temporarily training with a Texas National Guard unit will not be entitled to pay the resident tuition.

Status of Spouses and Dependents of Military Personnel or Commissioned Public Health Service Officers Reassigned Out-of-State. Texas Education Code 54.058(c) provides that if they reside continuously in the State of Texas, the spouse and dependent children of members of the armed forces previously assigned to active duty in Texas, but reassigned to duty outside the state of Texas may pay resident tuition rates. This provision also applies to

spouses and dependents of commissioned Public Health Service officers.

Status of Spouses and Dependents of Military Personnel or Commissioned Public Health Service Officers Stationed in Out-of-State Locations. Texas Education Code 54.058(g) provides that the spouse and dependent children of members of the armed forces who are assigned to duty outside the State of Texas may be entitled to pay the resident tuition if they reside in Texas and file with the public institution of higher education at which a child or spouse plans to register a letter of intent, an affidavit, or other evidence satisfactory to the institution stating they intend to become permanent residents of Texas. This provision also applies to commissioned Public Health Service officers and their spouses and their dependents.

Status of Spouses and Dependents of Military Personnel or Commissioned Public Health Service Officers Once Stationed in Texas But Now Stationed in Out-of-State Locations. Texas Education Code 58.058 (d) provides that a spouse or dependent child of a member of the Armed Forces of the United States, who is not assigned to duty in Texas but who has previously resided in Texas for a 12-month period, is entitled to pay the tuition fees and other fees or charges provided for Texas residents at a state institution of higher education if the member:

- At least one year preceding the first day of the term or semester executed a document with the applicable military service that is in effect on the first day of the term or semester and that:
  A. Indicates that the member's permanent residence address is in Texas and
  B. Designates Texas as the member's place of legal residence for income tax purposes;
- Has been registered to vote in Texas for the entire year preceding the first day of the term or semester, and
- Satisfies at least one of the following
  A. For the entire year preceding the first day of the term or semester has owned real property in Texas and in that time has not been delinquent in the payment of any taxes on the property;
  B. Has had an automobile registered in Texas for the entire year preceding the first day of the term or semester, or
  C. At least one year preceding the first day of the term or semester executed a will that has not been revoked or superseded indicating that the member is a resident of this state and deposited the will with the county clerk of the county of the member's residence under Section 71, Texas Probate Code.

Status of Spouses and Dependents of Military Personnel or Commissioned Public Health Service Officers Who Die While in Service. Texas Education Code 54.058(f) provides that members of the immediate family (which includes spouse or dependent children) of members of the armed forces who die while in military service or public health service may qualify to pay the resident tuition if they become residents of Texas within 60 days of the date of death. To qualify under this provision, the students shall submit to the institution of higher education satisfactory evidence establishing the date of death and residence in Texas. This provision also applies to commissioned Public Health Service officers and their dependents.

Nonresidents Attending College Under Federal Benefits Programs for Veterans. Texas Education Code 54.058(e) provides that the public institution of higher education may charge the nonresident tuition fee for nonresident veterans to the United States government under the provisions of any federal law or regulation authorizing educational or training benefits for veterans.

Residence Classification Upon Separation From Military or Public Health Service

Waiver of Nonresident Tuition for Veterans or Commissioned Public Health Service Officers Upon Separation from Military or Public Health Service. A former member of the Armed Forces of the United States or the former member's spouse or dependent child is entitled to pay the tuition fees and other fees or charges provided for Texas residents for any term or semester at a state institution of higher education that begins before the first anniversary of the member's separation from the Armed Forces if the former member has retired or been honorably discharged from the Armed Forces and has complied with the requirements of subsection 21.28 (f)(4) of this section.

Students Enrolled in ROTC Programs. A nonresident student who is a member of an ROTC unit will be required to pay nonresident tuition rates until such time the student has signed a contract which cannot be terminated by the student and which obligates the student to serve a period of active military duty.

NATO Forces Stationed in Texas. Nonresident aliens stationed in Texas in keeping with the agreement between the parties to the North Atlantic Treaty regarding status of forces, their spouses, and dependent children are entitled to pay the same tuition rate at public institutions of higher education as residents of Texas.

Other Federal Employees. The privilege of paying resident tuition rates described in this section is restricted to persons in the military service and commissioned officers of the

Public Health Service, and is not extended to other federal employees.

Civilian Employees of the Military. The privilege of paying resident tuition rates described in this section is restricted to persons in the military service and commissioned officers of the Public Health Service, and is not extended to civilians employed by the military or the Public Health Service.

A nonresident who marries a resident of Texas who is in the military must establish his or her own residency by meeting the standard requirements as stated in this title (relating to married students).

Teachers, Professors, and Their Dependents

Statute: Section 54.059 A teacher or professor of an institution of higher education, and the spouse and children of such a teacher or professor, are entitled to register in an institution of higher education by paying the tuition fee and other fees or charges required for Texas residents without regard to the length of time the teacher or professor has resided in Texas. A teacher or professor of an institution of higher education and the teacher's or professor's family are entitled to the benefit of this section if the teacher or professor is employed at least one-half time on a regular monthly salary basis by an institution of higher education.

Teachers and professors employed at least half time on a regular monthly salary basis (not an hourly employee) by any Texas public institution of higher education may pay the same tuition as a resident of Texas for themselves, their spouses, and their dependent children, regardless of the length of residence in the state. If the spouse or children attend an institution other than the one employing the teacher or professor, they must provide proof of his or her current employment to the college they attend. It is the intent of this rule that employment be for the duration of the period of enrollment for which a waiver is awarded.

Students Employed as Teaching or Research Assistants

Statute: Section 54.063 A teaching assistant or research assistant of any institution of higher education and the spouse and children of such a teaching assistant or research assistant are entitled to register in a state institution of higher education by paying the tuition fees and other fees or charges required for Texas residents under Section 54.051 of this code, without regard to the length of time the assistant has resided in Texas, if the assistant is employed at least one-half time in a teaching or research assistant position which relates to the assistant's degree program under rules and regulations established by the employer institution.

Students employed as teaching or research assistants employed at least half time by any public institution of higher education in a degree program-related position may pay the same tuition while attending any public institution of higher education as a resident of Texas for themselves, their spouses, and their dependent children, regardless of the length of residence in the state. The institution which employs the students shall determine whether or not the students' jobs relate to their degree programs. If the spouse or children attend an institution other than the one employing the research or teaching assistant, they must provide proof of his or her current employment to the college they attend. It is the intent of this rule that employment be for the duration of the period of enrollment for which a waiver is awarded.

Scholarship Recipients

Statute: Section 54.064(a) A student who holds a competitive scholarship of at least $1,000 for the academic year or summer for which the student is enrolled and who is either a nonresident or a citizen of a country other than the United States of America is entitled to pay the fees and charges required of Texas residents without regard to the length of time the student has resided in Texas. The student must compete with other students, including Texas residents, for the scholarship and the scholarship must be awarded by a scholarship committee officially recognized by the administration and be approved by the Texas Higher Education Coordinating Board under criteria developed by the board.
Section 54.064(b) The total number of students at an institution paying resident tuition under this section for a particular semester may not exceed five percent of the total number of students registered at the institution for the same semester of the preceding academic year.
Statute: Section 54.065 A student is entitled to pay the fees and charges required of Texas residents without regard to the length of time the student has resided in Texas if the student: (1) holds a competitive academic scholarship or stipend; (2) is accepted in a clinical and biomedical research training program designed to lead to both doctor of medicine and doctor of philosophy degrees; and (3) is either a nonresident or a citizen of a country other than the United States of America.

Competitive Academic Scholarship Recipients. Certain students receiving competitive scholarships may be exempted from paying nonresident tuition rates.

Approved Procedures for Awarding Scholarships. Each institution awarding nonresident tuition waivers based on competitive scholarships shall have in the appropriate office of the institution a memo from the institution's administration granting the scholarship committee the authority to award scholarships which hold a nonresident tuition waiver option. In addition, the scholarship committee shall maintain records which verify that residents as well as nonresidents were eligible to compete for the scholarship and the criteria used to select scholarship recipients.

To qualify for exemption from paying nonresident tuition rates students nonresidents (including citizens and permanent residents of the U.S. and all foreign students) must be awarded competitive scholarships totaling at least $1, 000 for the academic year, the summer session or both by an official scholarship committee or committees of the public institution of higher education they are attending. If nonresidents or foreign students in competition with other students, including Texas residents, obtain these competitive scholarships, the students may pay the same tuition as a resident of Texas during the registration period in which the competitive scholarship is in effect. In order for a competitive scholarship to qualify a student to pay the resident rate, both the funds and the selection process must be under the control of the institution. At the time the competitive scholarship is made, the institution must designate the term or terms of the current 12-month academic year as defined by the institution in which the scholarship will be in effect. Scholarship funds need not be disbursed in each term covered by the scholarship and waiver, but documentation for the scholarship must define the relevant time period for the scholarship. The waiver's time period will be the same as that of the scholarship. If the scholarship is terminated for any reason, the waiver shall also cease as of the end of the enrollment period in which the scholarship is terminated. An institution shall not waive nonresident tuition on the basis of competitive scholarship for more than five percent of its total enrollment in the corresponding semester or term of the previous academic year. If the recipient of the scholarship is concurrently enrolled at more than one institution, the waiver of nonresident tuition is only effective at the institution awarding the scholarship.

Beginning with awards for fall 1998, institution of higher education that offer competitive scholarships shall adopt a written policy describing the factors to be used by the institution or unit making an award. A policy adopted under this section shall be published in the institution's or unit's catalog and shall be made available to the public in advance of any deadline for the submission of an application for a competitive scholarship to which the policy applies.

A nonresident or foreign student is eligible to pay the fees and charges required of Texas residents if the student holds a competitive academic scholarship or stipend and is accepted in a clinical biomedical research training program designed to lead to both a doctor of medicine and doctor of philosophy degree.

A nonresident student who is simultaneously enrolled in two or more institutions of higher education under a program offered jointly by the institutions under a partnership agreement and who pays the fees and charges required of Texas residents at one of the institutions as provided by the Texas Education Code, Section 54.064 because the student holds a competitive scholarship is entitled to pay the fees and charges required of Texas residents at each public institution of higher education in which the student is simultaneously enrolled under the program.

Economic Development and Diversification Program

Section 54.052(h) An individual who has come from outside Texas and registered in an educational institution before having resided in Texas for a 12-month period immediately preceding the date of registration is entitled to pay the tuition fee and other fees required of Texas residents if the individual or a member of his family has located in Texas as an employee of a business or organization that became established in this state as part of the program of state economic development and diversification authorized by the constitution and laws of this state and if the individual files with the Texas institution of higher education at which he registers a letter of intent to establish residency in Texas.

Economic Development and Diversification Employees. Nonresidents, (including citizens and permanent residents of the U.S. and foreign students eligible to domicile in the United States, but excluding foreign students ineligible to domicile in the U.S.) whose families have been transferred to Texas by a company in keeping with the state's Economic Development and Diversification Program are entitled (although still nonresi-

dents) to pay the resident tuition rate as soon as they move to Texas if they provide the college a letter of intent to establish Texas as their home. If a semester begins before the rest of the family moves to the state, the student may register and pay the resident tuition rate if he/she provides the college a letter from the company, indicating the family will move to Texas prior to the end of the given semester. However, in order to pay resident tuition for a second semester, the student will have to give the college a letter from the company, indicating the family has, indeed, moved to Texas. After the family has resided in Texas 12 months, the student is eligible to apply for reclassification as a resident. A current list of eligible companies is maintained on the Coordinating Board web site at www.collegefortexans.com.

Special Programs

Residents of a State Bordering Texas

Statute: Section 54.060(a) Resident of Bordering State or Nation: Tuition. The nonresident tuition fee prescribed in this chapter does not apply to a nonresident student who is a resident of Arkansas, Louisiana, New Mexico, or Oklahoma and who registers in a public upper-level institution of higher education, Lamar State College-Orange, Lamar State College-Port Arthur, a Texas public junior college or public technical institute that is situated in a county immediately adjacent to the state in which the nonresident student resides. The nonresident tuition fee prescribed by this chapter does not apply to a nonresident student who is a resident of New Mexico or Oklahoma and who registers in a public technical institute that is situated in a county that is within 100 miles of the state in which the nonresident student resides and who is admitted for the purpose of utilizing available instructional facilities. The nonresident student described in this subsection shall pay an amount equivalent to the amount charged a Texas student registered at a similar school in the state in which the nonresident student resides. For purposes of this subsection, "public upper-level institution of higher education" means an institution of higher education that offers only junior-level and senior-level courses or only junior-level, senior-level, and graduate-level courses. Section 54.060(b) The foreign student tuition fee prescribed in this chapter does not apply to a foreign student who is a resident of a nation situated adjacent to Texas, who registers in any general academic teaching institution, as defined in Section 61.003(3) of this code, or component of the Texas State Technical College System in a county immediately adjacent to the nation in which the foreign student resides or who registers for lower division courses at a community or junior college having a partnership agreement pursuant to Subchapter N. Chapter 51, of this code, with an upper-level university and both institutions are located in the county immediately adjacent to the nation in which the foreign student resides, or who registers in Texas A&M University-Kingsville, or Texas A&M University-Corpus Christi, and, except as provided by this subsection, and who demonstrates a financial need after the financial resources of the foreign student and the student's family are considered. The foreign student described in this subsection shall pay tuition equal to that charged Texas residents under Sections 54.051 and 54.0512 of this code. The Coordinating Board shall adopt rules governing the determination of financial need of students under this subsection and rules governing a pilot project to be established at general academic teaching institutions and at components of the Texas State Technical College System in counties that are not immediately adjacent to the nation in which the foreign student resides.

Section 54.060(f) The nonresident tuition fee prescribed by this chapter does not apply to a nonresident student who is a resident of a county or parish of Arkansas, Louisiana, New Mexico, or Oklahoma that is adjacent to this state and who registers in an institution of higher education as defined by Section 61.003, the governing board of which has agreed to admit the student at the resident tuition fee prescribed by this chapter. The state in which the student resides must allow a resident of a county of this state that is adjacent to that state to register in a public institution of higher education in that state at the tuition fee charged residents of that state. The student shall pay tuition equal to that charged residents of this state at the institution.

Residents of a Bordering State. Nonresidents who are residents of a state of the United States bordering Texas and who register in a public upper-level institution of higher education, two-year institution in the Lamar University System, or in any Texas public technical college or public junior college situated in a county immediately adjacent to the state in which the nonresident student resides are entitled to pay an amount equivalent to the amount charged a Texas student registered at a similar school in the bordering state. However, the amount paid by the nonresident for tuition may not be less

than the amount charged Texas residents to attend the Texas institution.

Nonresidents who are residents of New Mexico or Oklahoma and who register in a public technical college that is situated in a county within 100 miles of the state in which the nonresident student resides are entitled to pay an amount equivalent to the amount charged a Texas student registered at a similar school in the bordering state. However, the amount paid by the nonresident for tuition may not be less than the amount charged Texas residents to attend the Texas institution.

The admitting Texas public junior college, public technical college, public senior upper-level institution, or two-year institution in the Lamar University System must have on file a copy of a letter from the Chief Executive Officer of the comparable neighboring state institution which certifies that eligible Texas residents are entitled to pay in-state tuition at the comparable neighboring institution. To be valid, the certifying letter must have been issued no longer than two years before the start of the involved enrollment period; also, a copy of the letter must be filed with the Texas Higher Education Coordinating Board.

Citizens of Mexico. Residents of Mexico are those individuals who currently live in Mexico and individuals who are living outside of Mexico temporarily and with definite plans to return. Students planning to stay in the United States indefinitely are not residents of Mexico. A citizen of Mexico who registers for instruction offered by a general academic teaching institution or component of the Texas State Technical College System in a county bordering Mexico or who registers for lower division courses at a community or junior college having a partnership agreement pursuant to Texas Education Code Subchapter N, Chapter 51, with an upper-level university and both institutions are located in the county immediately adjacent to the nation in which the foreign student resides, or who registers at Texas A&M University-Kingsville or Texas A&M-Corpus Christi is eligible to pay tuition equal to that charged Texas residents provided the student demonstrates a financial need after the resources of the student and the student's family have been considered.

General academic teaching institutions other than Texas A&M University-Kingsville and components of the Texas State Technological College System, located in counties which are not adjacent to Mexico, may allow a limited number of citizens of Mexico who demonstrate financial need to register and pay the Texas resident rate at their institution. The number of such students each institution may enroll in any one term is not to exceed two (2) eligible students per thousand of enrollment of the institution's total enrollment in that term. Institutions with fewer than 5,000 students may enroll up to ten (10) eligible students.

Residents of Adjacent Counties of Bordering States. A nonresident student who is a resident of a county or parish of Arkansas, Louisiana, New Mexico or Oklahoma that is adjacent to this state and who registers in a Texas public institution of higher education, the governing board of which has agreed to admit the student at the resident tuition fee prescribed by this chapter, shall pay tuition equal to that charged residents of this state at the institution. The state in which the student resides must allow a resident of a county of this state that is adjacent to that state to register in a public institution of higher education in that state at the tuition fee charged residents of that state.

The admitting Texas institution must have on file a copy of a letter from the Chief Executive Officer of a neighboring state public institution which certifies that eligible Texas residents are entitled to pay in-state tuition at the neighboring state institution or, a copy of a memorandum from the board that such a letter has been provided by a Texas institution and is on file at the board. To be valid, the certifying letter must have been issued no longer than two years before the start of the involved enrollment period; also, a copy of the letter must be filed with the Texas Higher Education Coordinating Board. For the Coordinating Board memorandum to justify a waiver, the student's enrollment period must fall within the eligibility period indicated in the memorandum by the board.

If a dependent student's family or an independent student from a bordering state moves to Texas after the student has received a waiver of nonresident tuition based on reciprocity as described in this section, the student is eligible for a continued waiver for the 12-month period after the relocation to Texas. After that time, however, the student shall be reclassified as a nonresident unless he or she applies for reclassification and proves he or she has become a resident in keeping with these rules.

Junior College Tuition Waivers for Ad Valorem *Tax Payers*

The governing board of a public junior college district may allow a person who resides outside the district and who owns property subject to *ad valorem* taxation by the district, or a dependent of the person, to pay tuition at the rate applicable to a student who resides in the district.

The governing board of a public junior college district may allow a person who resides outside the district and in the taxing district of a contiguous public junior college district to pay tuition and fees at the rate applicable to a student who resides in the district.

The governing board of a public junior college district may allow a person who resides outside the district to pay tuition and fees at a rate less than the rate applicable to other persons residing outside the district, but not less than the rate applicable to a student who resides in the district, if the person:

- Resides within the service area of the district;
- Does not reside in an independent school district that meets the criteria of the coordinating board for the establishment of a junior college district under the Texas Education Code, Section 130.013 and
- Demonstrates financial need in accordance with rules adopted by the Texas Higher Education Coordinating Board.

Responsibilities of Students and Schools

Student Responsibilities

Statute: Section 54.0521 Oath of Residency. (a) Before an individual may register at an institution of higher education paying tuition at the rate provided for residents, the individual must affirm under oath to the appropriate official at the institution that the individual is entitled to be classified as a resident for purposes of tuition.

Section 54.0521(b) If the institution later determines that the individual was not entitled to be classified as a resident at the time of the individual's registration, the individual shall, not later than 30 days after the date the individual is notified of the determination, pay to the institution the amount the individual should have paid as a nonresident.

Section 54.0521(c) If the individual fails to make a timely payment as required by this section, the individual is not entitled to receive a transcript or to receive credit for courses taken during the time the individual was falsely registered as a resident student.

Oath of Residency. When completing the oath of residency portion of an application for admission process, the student is responsible for registering under the proper residence classification and for providing documentation as required by the public institution of higher education. If there is any question as to the right to classification as a resident of Texas it is the student's obligation, prior to or at the time of enrollment, to raise the question with the administrative officials of the institution in which they are enrolling for official determination. Students classified as Texas residents must affirm the correctness of that classification as a part of the admissions procedure. If the student's classification as a resident becomes inappropriate for any reason, it is the responsibility of the student to notify the proper administrative officials at the institution. Failure to notify the institution constitutes a violation of the oath of residency and will result in disciplinary action.

Responsibilities of the Public Institutions of Higher Education

Review of Enrollment and/or Registration Forms. Each public institution of higher education is responsible for reviewing enrollment and/or registration applications for errors, inconsistencies or misclassifications of residency status. Institutions should obtain written documentation to resolve any problems noted during the review of forms.

Affirmation of Residence for Returning Students. When independent students classified as residents have been out of school for 12 months or more, an institution may continue the students' classification as residents upon receipt of affirmations from the students that they have not changed their state of residence since their last enrollment at that institution, provided the institution has documentation of residence status on file. When dependent students classified as residents have been out of school for 12 months or more, an institution may continue the students' classification as residents upon receipt of affirmations from the students that their parents or legal guardians have not changed their state of residence since the student's last enrollment at that institution, provided the institution has documentation of residence status on file.

Oath of Residency. Each public institution is responsible for incorporating a core of residency questions and an oath of residency into its student application for admission process. The required core of questions will be developed by the Coordinating Board staff with the assistance of an advisory committee. Answers to the questions should then be reviewed to determine the student's proper residency classification. If any of the answers raise questions as to the appropriateness of classification, the institution must file and maintain a copy of one or more appropriately dated documents which will certify that the student classified as a resident has legal right to such classification as of the official census date of the semester or term for which

enrolling. However, documents which cannot legally or conveniently be reproduced should be observed by an official of the institution and pertinent information about the document should be noted and signed by the observing officer. Such notations should be maintained in the school's records for audit purposes. Documents acceptable for this purpose include, but are not limited to:

- Texas high school transcript for the full senior year immediately preceding the full semester enrolled.
- Texas college or university transcript (in conjunction with other documents from the institution).
- Employer statement of date of employment.
- Permanent driver's license (at least one year old). The license expiration date minus date of enrollment should not exceed three years.
- Texas voter registration.
- Lease agreement which includes student's name and period covered.
- Property tax payments for the year preceding enrollment.
- Canceled checks.
- Utility bill for the year preceding enrollment.
- A signed, dated, and notarized comprehensive residence questionnaire.
- (For aliens) Proof of permanent residence classification which is eligible for the establishment of a domicile in Texas.
- An income tax form or, (if current year federal tax form has not been filed) a signed, notarized statement regarding the student's independence or regarding the individual(s) who claim the student as a dependent.
- A current credit report which documents the student's length and place of residence.
- Other third party documentation which confirms residency status for the 12-month period preceding enrollment.
- For a homeless individual, documentation may consist of written statements from the office or one or more legitimate social service agencies located in Texas, attesting to the provision of services to the individual over the previous 12-month period.

Penalties

Statute: Section 54.053 The governing board of each institution required by this Chapter to charge a nonresident tuition or registration fee is subject to the rules, regulations, and interpretations issued by the Coordinating Board, Texas College and University System, for the administration of the nonresident tuition provisions of this Act. The rules, regulations and interpretations promulgated by the Coordinating Board shall be furnished to the presidents or administrative heads of all Texas public senior and junior colleges and universities.

Section 54.061 The governing board of an institution of higher education may assess and collect from each nonresident student who fails to comply with the rules and regulations of the boards concerning nonresident fees a penalty not to exceed $10 a semester.

Student Compliance with Institutional Rules and Regulations. Each institution has been authorized by statute to assess and collect from nonresident students failing to comply with the provisions of the tuition statute and with these interpretations concerning nonresident fees a penalty not to exceed $10 a semester. In addition, if students have obtained residence classification by virtue of deliberate concealment of facts or misrepresentation of fact, they may be subject to appropriate disciplinary action, in accordance with the rules and regulations that may be adopted by the governing boards of the respective institutions of higher education.

Glossary

The following words and terms, when used in this subchapter, shall have the following meanings, unless the context clearly indicates otherwise:

Competitive Scholarship. A scholarship which is designated as competitive by the institution, whose sum either singularly or in combination with other competitive scholarships totals the amount named in Texas Education Code 54.064, that is publicized and open to all students including Texas residents, and which has been selected by the institution to be a basis for the waiver of nonresident tuition charges.

Conclusive Evidence. Proof which removes uncertainties. In the case of proving residency, conclusive evidence may include but is not limited to the purchase of a homestead with substantial down-payment, significant employment, and business or personal ties in the state which imply a fixed intent to remain in Texas.

Dependent. An individual (minor or 18 years of age or older) who is claimed as a dependent for federal income tax purposes by a parent or guardian the year of enrollment and the tax year prior to enrollment.

Domicile in Texas. Physically residing in Texas for at least 12 consecutive months with the intent to make Texas one's permanent home. The burden of proof that a domicile has been established lies with the student.

Foreign Students. Aliens who are not permanent residents of the United States or have not been permitted by Congress to adopt the United States as their domicile while they are in this country.

Gainful Employment. Lawful activities intended to provide an income to the individual or allow an individual to avoid the expense of paying another person to perform the tasks (as in child care or the maintenance of a home). A person who is self-employed, employed as a homemaker, or who is living off his/her earnings may be considered gainfully employed for tuition purposes, as may an individual whose primary support is the government (for instance, through a public assistance program).

Homeless Individual. A homeless individual who resides in Texas for the 12-month period immediately preceding the date of registration, but who does not have a permanent residence in Texas, may enroll in vocational education courses at a public junior college by paying the resident tuition rate. For this purpose, a homeless individual is defined by 42 U.S.C. Section 11302, which states, "the term homeless" or "homeless individual" or "homeless person" includes:

- An individual who lacks a fixed, regular, and adequate night time residence; and
- An individual who has a primary night time residence that is
  - A. A supervised publicly or privately operated shelter designed to provide temporary living accommodation;
  - B. An institution that provides temporary residence for individuals intended to be institutionalized; or
  - C. A public or private place not designated for, or ordinarily used as, a regular sleeping accommodation for human beings.

Documentation for a homeless individual may consist of written statements from the office of one or more legitimate social service agencies located in Texas, attesting to the provision of service to the homeless individual over the previous 12-month period.

Independent Student. A student 18 years of age or older or an emancipated minor who is not claimed by a parent or a guardian as a dependent for federal income tax purposes during the tax year including the enrollment period.

Minor. An individual who is 17 years of age or younger.

Nonresident. A citizen, national or permanent resident of the United States or an alien who has been permitted by Congress to adopt the United States as his or her domicile while in this country and who has not met the state requirements for establishing residency for tuition purposes.

Official Census Date. The official reporting date for enrollments; the date upon which the student (by virtue of having obligated him/herself to pay requisite tuition and/or fees) is considered to be enrolled in the institution. (For 16-week semesters, the 12th class day; for 6-week summer sessions, the 4th class day. For other length programs, consult the Reporting and Procedures Manual, published by the Educational Data Center of the Coordinating Board.)

Out-of-District Student. A Texas resident who does not physically reside within the geographic boundaries of the classifying public junior college district.

Prior to Enrolling. Prior to or including the official census date.

Public Institution of Higher Education. State-supported institutions of higher education, including public junior and community colleges, public senior colleges and universities, public health science centers and the Texas State Technical Institutes.

Resident. A citizen, national or permanent resident of the United States, or an alien who has been permitted by Congress to adopt the United States as his or her domicile while in this country, and who has otherwise met the state requirements for establishing residency for tuition purposes.

Time of Enrollment. The end of working hours on the official census date for the semester or term for that institution.

U.S. Armed Forces. A person who is an officer, enlisted person, selectee, or draftee of the Army, Army Reserve, Air Force, Air Force Reserve, Navy, Navy Reserve, Marine Corps, Marine Corps Reserve, Coast Guard, or Coast Guard Reserve of the United States. Members of the Army and Air National Guard may not qualify for every program directed at members of the U.S. Armed Forces. Where a rule does not explicitly include them, members of the Army or Air National Guard, or spouses or dependents of those members, should present documentation from an appropriately authorized officer that indicates that the individual was acting as a component of the Army or Air Force for the relevant time period.

Students Enrolled in Radiological Sciences. United States military personnel stationed outside the State of Texas who are enrolled in the bachelor of science or master of science degree program in radiological sciences at Midwestern State University by instructional telecommunication will be entitled to pay tuition fees and other fees or charges provided for Texas residents if they

began the program while stationed at a military base in Texas.

Appeals to the Texas Higher Education Coordinating Board. In the event two or more Texas public institutions of higher education determine a different residency status for members of the same family with identical evidence of residency currently enrolled at each institution, the individuals who were the subject of the residency determination may appeal the unfavorable decision to the Commissioner for Higher Education. Before making an appeal to the Commissioner, the student classified as a nonresident must exhaust all appeal processes available at the institution level. A decision by the Commissioner as to one family member's residency status will apply to each family member with identical evidence of residency at any institution of higher education he or she attends.

Students Who Are Beneficiaries of the Texas Tomorrow Fund. The tuition and required fees charged by an institution of higher education for semester hours and fees that are paid for by a prepaid tuition contract shall be determined as if the beneficiary of that contract is a resident student. If a student is a nonresident, any tuition and fees not paid by the contract will be assessed at the nonresident rate.

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