## TTU Directory Assistance

806.742.2011

Students who have disabilities and need assistance should contact Student Disability Services, 335 West Hall, 806.742.2405.

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### Undergraduate Admission Deadlines

**Domestic Admission**
- **Spring 2008 Freshman and Transfer**
  Deadline to complete application process: November 15, 2007
- **Summer or Fall 2008 Freshman and Transfer**
  Deadline to complete application process: May 1, 2008
- **Spring 2009 Freshman and Transfer**
  Deadline to complete application process: November 15, 2008
- **Summer or Fall 2009 Freshman and Transfer**
  Deadline to complete application process: May 1, 2009

Submit application electronically at [www.applytexas.org](http://www.applytexas.org)

**International Admission**
- **Spring 2008**
  Deadline to complete application process: November 1, 2007
- **Summer or Fall 2008**
  Deadline to complete application process: April 1, 2008
- **Spring 2009**
  Deadline to complete application process: November 1, 2008
- **Summer or Fall 2009**
  Deadline to complete application process: April 1, 2009

Submit application electronically at [www.applytexas.org](http://www.applytexas.org)

**Former Texas Tech Student Admission**
- Information and application for re-admission available at [www.depts.ttu.edu/formertech](http://www.depts.ttu.edu/formertech)

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### Graduate Admission Deadlines

**Domestic Admission**
- Complete admission application at least three months before intended enrollment date. Applications available at [www.gradschool.ttu.edu](http://www.gradschool.ttu.edu)

**International Admission**
- **Spring 2008**
  Deadline to complete application process: September 1, 2007
- **Summer 2008**
  Deadline to complete application process: February 1, 2008
- **Fall 2008**
  Deadline to complete application process: March 1, 2008

Applications available at [www.gradschool.ttu.edu](http://www.gradschool.ttu.edu)

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### Contact Information

#### Undergraduate

Office of Admissions | Texas Tech University | Box 45005
Lubbock, Texas 79449-5005 | T 806.742.1480 | F 806.742.0062
[www.gototexastech.com](http://www.gototexastech.com) | admissions@ttu.edu

#### Graduate

Graduate Admissions | Texas Tech University | Box 41030
Lubbock, Texas 79449-1030 | T 806.742.2787 | F 806.742.4038
[www.gradschool.ttu.edu](http://www.gradschool.ttu.edu) | gradschool@ttu.edu

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**On the front cover:** Sunset at the Student Union Building by Sothy Eng
Committed to teaching and the advancement of knowledge, Texas Tech University, a comprehensive public research university, provides the highest standards of excellence in higher education, fosters intellectual and personal development, and stimulates meaningful research and service to humankind.

The 2007-08 Undergraduate and Graduate Catalog is an official publication of Texas Tech University. The annual catalog is published each summer and its provisions apply during the following academic year, September through August. New students who register at the university for the first time during a summer session are subject to the degree requirements set forth in the catalog effective for the upcoming fall semester. Those degree requirements expire at the end of the summer session of the seventh academic year after publication.

Acceptance of registration by Texas Tech University and admission to any educational program of the university does not constitute a contract or warranty that the university will continue indefinitely to offer the program in which a student is enrolled. The university expressly reserves the right to change, phase out, or discontinue any program.

The listing of courses contained in this university catalog is by way of announcement only and shall not be regarded as an offer of contract. The university expressly reserves the right to (1) add or delete courses from its offerings; (2) change times or locations of courses or programs; (3) change academic calendars without notice; (4) cancel any course for insufficient registration; or (5) revise or change rules, charges, fees, schedules, courses, requirements for degrees, and any other policy or regulation affecting students, including, but not limited to, evaluation standards, whenever the same is considered to be in the best interests of the university.

Students who enter a college within the university in the academic year of this catalog generally may expect to follow the graduation requirements set forth by that college in this catalog. Because the faculty of each college reserves the right to change graduation requirements, students should meet with their college advisor regularly to be certain that they are aware of any changes in graduation requirements that may apply to them. Although faculty, academic advisors, and staff members are available to assist students, each student is responsible for knowing and following the academic rules, regulations, guidelines, and timelines of the university and the appropriate academic degree program.

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 an online class schedule that can be found at www.depts.ttu.edu/officialpublications.

Important Information

- More than 70 percent of degrees at Texas Tech are designed to take four years to complete. The university’s Graduate-On-Time (GOT) program will not only help students save money but also catapult them into a career or graduate/professional program as soon as possible. See pages 51–52.

- A complete explanation of tuition and fees is available online at www.sbs.ttu.edu.

- How does the university define “in academic good standing”? See page 50.

- The grade of I (incomplete) will revert to an F for undergraduates after one calendar year if the conditions for completing the I have not been met. See page 47.

- Students may drop a course through the 45th class day of a long semester or the 15th class day of a summer term and receive a W regardless of their progress in the class. What happens if a class has not been dropped within the specified time period? See pages 45–47.

- First-time freshmen entering in the fall of 2004 or thereafter have four W’s permitting them to drop a maximum of four courses during their time at Texas Tech. Transfer students have three W’s. What happens after all W’s have been used? See page 47.

- Students who find it necessary to withdraw completely from the university before the end of the semester do not have to use their W’s for withdrawal. See page 49.

- Because excessive absences constitute cause for dropping a student from class, the instructor will assign a grade of W if the drop occurs within the specified drop period or an F thereafter. See page 46.

- There is an incentive for not dropping any course prior to the last semester of a degree program. See page 46.
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 Handbook. Students are expected to become thoroughly familiar with and abide by these standards. The “Code of Student Conduct” and Student Handbook may be obtained from the Office of Student Judicial Programs, 020 Student Union, 806.742.1714, or online at www.studentaffairs.ttu.edu or www.depts.ttu.edu/studentjudicialprograms.

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 with inquiries or complaints concerning Section 504 of the Rehabilitation Act of 1973 (504) or the Americans with Disabilities Act (ADA) of 1990 should contact Student Disability Services, 335 West Hall, 806.742.2405.

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 Student Disability Services.

SDS 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. The ADA compliance officer is located in the Office of the Provost and also works 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 Student Disability Services, 335 West Hall, 806.742.2405 or visit online at www.studentaffairs.ttu.edu/sds.

DARS–Division of Blind Services

The state office of the Division of Blind Services within the Department of Assistive and Rehabilitative Services (DARS) is located on the Texas Tech University campus. In those instances in which the disability constitutes a substantial handicap to employment, several vocational rehabilitation programs are available to provide educational assistance for blind and visually impaired students. For detailed information concerning these programs, contact DBS counselor Sue Ann Hansford, 3rd floor, TTU Library, 806.742.2253.

Accrediting Organizations

Inquiries regarding the accreditation status of Texas Tech University may be directed to the following:

- Southern Association of Colleges and Schools
  Commission on Colleges
  1866 Southern Lane
  Decatur, GA 30033-4097
  404.679.4501
- AACSB International
- Accreditation Commission for Dietetics Education
- Accreditation Council for Occupational Therapy Education
- Accreditation Review Commission on Education for the Physician Assistant
- 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 Association of Family and Consumer Sciences
- American Association of Museums
- American Association of Petroleum Land Management
- American Bar Association
- American Chemical Society
- American Nurses Credentialing Center
- 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 in Physical Therapy Education
- Commission on Accreditation of Athletic Training Education
- Commission on Collegiate Nursing Education
- Council for the Accreditation of Counseling and Related Educational Programs
- Council for Exceptional Children
- Council for Interior Design Accreditation
- Council on Rehabilitation Education
- Council on Social Work Education
- Engineering Accreditation Commission of ABET
- Human Factors and Ergonomics Society
- International Association for the Education of Young Children
- Landscape Architectural Accrediting Board
- National Accrediting Agency for Clinical Laboratory Sciences
- National Architectural Accrediting Board
- National Association for the Education of Young Children
- National Association of Schools of Art and Design
- National Association of Schools of Music
- National Association of Schools of Public Affairs and Administration
- National Association of Schools of Theatre
- National Collegiate Athletic Association
- National Council for the Accreditation of Teacher Education
- National Council of Teachers of Mathematics
- National Science Teachers Association
- Society for Range Management
- Southern Association of Colleges and Schools
- Sport Management Program Review Council
- State Board for Educator Certification
- Supreme Court of Texas
- Technology Accreditation Commission of ABET
### General Information

#### Academic Calendar (2007-2008)

<table>
<thead>
<tr>
<th>Event</th>
<th>FALL ’07</th>
<th>SPRING ’08</th>
<th>SUMMER I ’08</th>
<th>SUMMER II ’08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence Halls Open for Occupancy</td>
<td>Aug. 19</td>
<td>Jan. 6</td>
<td>May 26</td>
<td>July 6</td>
</tr>
<tr>
<td>Registration for New Students</td>
<td>Aug. 23-24</td>
<td>Jan. 8</td>
<td>May 27</td>
<td>July 7</td>
</tr>
<tr>
<td>Final Day to Register or Withdraw Without Penalty</td>
<td>Aug. 24</td>
<td>Jan. 8</td>
<td>May 27</td>
<td>July 7</td>
</tr>
<tr>
<td>Classes Begin</td>
<td>Aug. 27</td>
<td>Jan. 9</td>
<td>May 28</td>
<td>July 8</td>
</tr>
<tr>
<td>Final Day to Declare Pass/Fail Intentions</td>
<td>Oct. 30</td>
<td>March 12</td>
<td>June 17</td>
<td>July 28</td>
</tr>
<tr>
<td>Advance Registration for Next Term</td>
<td>Nov. 5-20</td>
<td>April 1-16</td>
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</tr>
<tr>
<td>Open Registration Begins</td>
<td>Nov. 26</td>
<td>April 17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Exams Except Makeup or Scheduled Lab Exams</td>
<td>Nov. 30-Dec. 6</td>
<td>April 23-29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last Day of Classes</td>
<td>Dec. 6</td>
<td>April 29</td>
<td>June 26</td>
<td>Aug. 6</td>
</tr>
<tr>
<td>Individual Study Day</td>
<td>Dec. 7</td>
<td>April 30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Examinations</td>
<td>Dec. 8-12</td>
<td>May 1-6</td>
<td>June 27-28</td>
<td>Aug. 7-8</td>
</tr>
<tr>
<td>Semester/Term Ends</td>
<td>Dec. 12</td>
<td>May 6</td>
<td>June 28</td>
<td>Aug. 8</td>
</tr>
<tr>
<td>Residence Halls Close (with exceptions*)</td>
<td>Dec. 13</td>
<td>May 7</td>
<td>June 29</td>
<td>Aug. 9</td>
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<tr>
<td>Commencement – Graduate School</td>
<td>Dec. 14</td>
<td>May 9</td>
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<tr>
<td>Commencement – Undergraduate</td>
<td>Dec. 15</td>
<td>May 10</td>
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</tr>
<tr>
<td>PAYMENTS AND REFUNDS**</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Final Day to Make Full Payment or Payment Arrangements</td>
<td>Aug. 20</td>
<td>Jan. 4</td>
<td>May 23</td>
<td>July 3</td>
</tr>
<tr>
<td>for pre-registration</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Final Day to Drop a Course and Receive a Refund</td>
<td></td>
<td>Sept. 12</td>
<td>Jan. 25</td>
<td>June 2</td>
</tr>
<tr>
<td>(not applicable to students dropping to 0 hours)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Last Day to Withdraw and Receive Partial Refund</td>
<td></td>
<td>Sept. 24</td>
<td>Feb. 6</td>
<td></td>
</tr>
<tr>
<td>ADD/DROP (changes in schedule), WITHDRAWAL (dropping all courses)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student-Initiated Add on the Web</td>
<td>Aug. 27-30</td>
<td>Jan. 9-14</td>
<td>May 28-29</td>
<td>July 8-9</td>
</tr>
<tr>
<td>Student-Initiated Drop on the Web</td>
<td>Aug. 27-Sept. 12</td>
<td>Jan. 9-25</td>
<td>May 28-June 2</td>
<td>July 8-11</td>
</tr>
<tr>
<td>Last Day to Drop a Course</td>
<td>Oct. 30</td>
<td>March 12</td>
<td>June 17</td>
<td>July 28</td>
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<tr>
<td>Last Day to Withdraw from the University</td>
<td>Dec. 3</td>
<td>April 24</td>
<td>June 24</td>
<td>Aug. 4</td>
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<tr>
<td>Last Day to Transfer Between Colleges</td>
<td>Nov. 26</td>
<td>April 17</td>
<td>June 17</td>
<td>July 28</td>
</tr>
<tr>
<td>DEADLINES RELATED TO GRADUATION</td>
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</tr>
<tr>
<td>Final Day for Undergraduate Degree Candidates to Remove Grades of I and PR, Complete Final Exams for Correspondence</td>
<td>Nov. 30</td>
<td>April 25</td>
<td>June 24</td>
<td>Aug. 4</td>
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<tr>
<td>Final Day to Order Invitations/Academic Regalia at Bookstore</td>
<td>Oct. 23</td>
<td>March 5</td>
<td>June 13</td>
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<tr>
<td>Graduate School—Final Day to File Statement of Intent to Graduate</td>
<td>Sept. 7</td>
<td>Jan. 25</td>
<td>June 9</td>
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<tr>
<td>Graduate School—Final Day to Defend Thesis/Dissertation</td>
<td>Oct. 26</td>
<td>March 27</td>
<td>June 26</td>
<td></td>
</tr>
<tr>
<td>Graduate School—Final Day to Submit Final Defense Reports</td>
<td>Oct. 29</td>
<td>March 28</td>
<td>June 27</td>
<td></td>
</tr>
<tr>
<td>Graduate School—Final Day to Remove Grades of I or CR</td>
<td>Nov. 16</td>
<td>April 11</td>
<td></td>
<td>July 11</td>
</tr>
<tr>
<td>Graduate School—Final Day to Pay Document Fee</td>
<td>Oct. 26</td>
<td>March 27</td>
<td>June 26</td>
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<tr>
<td>Graduate School—Final Day for Master’s Candidates to Submit Comprehensive Exam Reports</td>
<td>Nov. 16</td>
<td>April 15</td>
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<tr>
<td>Graduate School—Final Day to Submit Final Draft of Thesis/Dissertation</td>
<td>Nov. 2</td>
<td>April 2</td>
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<tr>
<td>Graduate School—Final Day to Submit Final Corrected PDF of Thesis/Dissertation</td>
<td>Nov. 28</td>
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<tr>
<td>HOLIDAYS AND VACATION DAYS</td>
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<tr>
<td>Labor Day Holiday</td>
<td>Sept. 3</td>
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<td>Fall Break</td>
<td>Oct. 12</td>
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<tr>
<td>Thanksgiving Vacation</td>
<td>Nov. 21-25</td>
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<td>Martin Luther King Day</td>
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<td>Spring Vacation</td>
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<td>March 17-21</td>
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<tr>
<td>No Classes</td>
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<td>March 24</td>
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<tr>
<td>INTERSESSION, WINTERSESSION AT JUNCTION</td>
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<tr>
<td>WinterSession Classes at Junction Center Campus</td>
<td>Dec. 26-Jan. 8</td>
<td></td>
<td>May 7-22</td>
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<tr>
<td>Intersession Classes at Junction Center Campus</td>
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<tr>
<td>FACULTY-RELATED INFORMATION</td>
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<td>Faculty on Duty</td>
<td>Aug. 20</td>
<td>Jan. 7</td>
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<tr>
<td>Mid-Semester Grades Due***</td>
<td>Oct. 23</td>
<td>March 5</td>
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<tr>
<td>Web for Faculty available for Faculty Grading</td>
<td>Oct. 23</td>
<td>March 5</td>
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<tr>
<td>Grades Due for Graduating Students***</td>
<td>Dec. 13</td>
<td>May 7</td>
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<tr>
<td>Final Grades Due***</td>
<td>Dec. 17</td>
<td>May 12</td>
<td>July 3</td>
<td>Aug. 11</td>
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</tbody>
</table>

* See detailed chronological calendar at www.depts.ttu.edu/officialpublications/calendar.html

** See Finance section of catalog for details of payment arrangements, dates, and refunds

*** Via Web for Faculty
About the University

Campuses
More than 28,000 students attend classes in Lubbock on the 1,839-acre Texas Tech University campus. The university also operates the Research Center–East Campus (Lubbock); Texas Tech University Farm at Pantex in the Texas Panhandle; research facilities at Reese Technology Center (west of Lubbock); agricultural field laboratories at New Deal; Texas Tech University Center at Junction (411-acre educational facility in the Texas Hill Country); and off-campus educational sites at Abilene, Amarillo, Highland Lakes, and Frederickburg. The Texas Tech University Health Sciences Center is a separate university that includes the School of Medicine, School of Nursing, School of Veterinary Sciences, and the School of Pharmacy. The Health Sciences Center has regional campuses in Amarillo, El Paso, and Odessa-Midland. Planning is underway to expand the medical school on the El Paso campus from a two-year into a four-year facility.

Location
With a population of more than 200,000, Lubbock is located in the heart of the vast Southern Plains of West Texas and Eastern New Mexico. It is a major medical center for an area within a 300-mile radius of Lubbock and a major regional center for business and industry. 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. Several airlines and an interstate bus line serve the city, as well as an interstate highway and three additional U.S. highways.

History
Texas Tech University was created by legislative action in 1923 and has the distinction of being the largest comprehensive higher education institution in the western two-thirds of the state of Texas. The university serves a region larger than 46 of the nation’s 50 states and is the only campus in Texas that is home to a major university, law school, and medical school.

Originally named Texas Technological College, the college opened in 1925 with six buildings and an enrollment of 910. Graduate instruction did not begin until 1927 within the School of Liberal Arts. A “Division of Graduate Studies” was established in 1935 and eventually became known as the Graduate School in 1954.

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 1998, and the College of Visual and Performing Arts opened in 2002. Mass Communications became a college in 2004.

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.

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. 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.

As a member of the National Collegiate Athletic Association, Texas Tech began competing in the Big 12 Conference in 1996 after a 35-year membership in the former Southwest Conference.


Financial Support
The university receives the major share of its operating funds from tuition and appropriations by the Legislature. For the construction and renovation of academic and general buildings, funds are made available from the Higher Education Assistance Fund (HEAF), Tuition Revenue Bonds, and gifts. 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 university 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 who directs the research efforts of the university; and a Vice President for Operations who manages the physical plant.

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

Officers
L. Frederick Francis, Chair
J. Frank Miller, Vice Chair
Ben W. Lock, Secretary
Christina Martinez, Executive Secretary to the Board of Regents

Regents
Term Expires January 31, 2007
(Awaiting new appointments by Governor)
C. Robert Black .......................... Horseshoe Bay
L. Frederick Francis .......................... El Paso
Dr. Bob L. Stafford .......................... Amarillo

Term Expires January 31, 2009
J. Frank Miller, III .......................... Dallas
Windy Sitton ................................. Lubbock
F. Scott Dueser .............................. Abilene

Term Expires January 31, 2011
Larry Anders ............................... Dallas
Mark Griffin ............................... Lubbock
Dan Serna ............................ Arlington

Student Regent
Ebtesam Attaya Islam ........................ Lubbock

Administrative Officers
Date following rank indicates year of appointment to Texas Tech.

Office of the Chancellor

Office of the President
Provost and Senior Vice President for Academic Affairs William M. Marcy, Professor of Computer Science, 1975. B.S., Texas Tech, 1964; M.S., 1966; Ph.D., 1972; Reg. Prof. Engineer (Texas).
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.
General Information

Reader’s Guide to Catalog

How to Read Catalog Course Descriptions

Texas Tech offers nearly 4,500 courses as part of its curriculum. These courses are listed alphabetically by subject prefix (see prefix listing on next page) within each college and departmental section of this catalog. The courses appear in numerical order, moving from beginning freshman or developmental level courses to graduate, research, and professional courses.

Not all courses listed in this catalog are offered every year. An online class schedule (www.depts.ttu.edu/officialpublications/ClassSchedule.html) published before each registration period indicates courses that will be available during the upcoming term or semester and when each class will meet. The university reserves the right to cancel any scheduled course or withdraw any program from the list of offerings when the best interests of the institution require such action.

Courses are designated by a subject prefix and number along with a descriptive title. The following illustration may help readers better interpret the course descriptions found throughout this publication.

**Example:** HLTH 2305

2305. [PSYC 2306, SOCI 2306] Human Sexuality (3:3:0). Prerequisite: HLTH 2300. Examination of the structural and functional traits of sexuality and how they affect well-being; covers relationships, reproduction, and lifestyle alternatives. F, S. (Writing Intensive) (W S 2305)

**Subject Prefix** – Indicates course subject (HLTH = Health). See subject prefixes on next page.

**First digit in course number** – Indicates the academic level of the course. The course in the above example is a sophomore-level 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. Developmental courses begin with “0” (e.g., MATH 0301). A number of 5 or above designates a graduate-level course. Graduate standing is a prerequisite for enrollment in all courses numbered in the 5000 series or above and are intended only for graduate students (except for seniors who are within 12 hours of graduation and whose enrollment has been authorized by the graduate dean). Although graduate students occasionally enroll in undergraduate courses to fill out deficiencies in their preparation for graduate work, coursework credited toward a graduate degree must, except in rare instances, be of graduate level (5000 series or above).

**Second digit in course number** – Indicates the semester hour credit of the course. Thus, HLTH 2305 is a sophomore-level course with 3 semester hours of credit.

**Last two digits of course number** – The distinguishing numbers of the course.

**Course prefix and numbers in brackets** – Identify this course as part of the Texas Common Course Numbering System that facilitates transfer between Texas colleges and universities (see page 18). Always appears in brackets immediately after the TTU course number.

**Prerequisites** – Some courses have specific prerequisites that must be met before the student can enroll. Before taking this course, the student must have had HLTH 2300.

**Numbers in parenthesis (3:3:0)** – Denote in order of appearance: hours of semester credit earned, hours of lecture in the classroom per week, and hours of laboratory work per week (0 indicates no lab work). A single number in parenthesis (3) indicates the credit in semester hours and is typically an individual studies class with no class time or laboratory. When the letter V precedes the numbers (e.g., V1-6), this indicates the class is a variable credit course. Such courses are ordinarily research courses and permit enrollment for any number of hours up to the limit indicated by the second number in the parenthesis.

**Course title**

**Description of course content**

**Semester of Course Offering** – Some course descriptions indicate when the course is normally taught (F–fall, S–spring, SSI–first summer term, SSII–second summer term, SSIII–summer trimester, which combines SSI and SSII).

**Writing Intensive** – Every degree plan must include 6 hours of writing intensive courses. Course descriptions have a “Writing Intensive” designation when a course has been cited by the department as meeting the criteria for this requirement.
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<td>GERM</td>
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<td>GINN</td>
<td>Neurosciences Health Communications Preventive Medicine Microbiology (Medical) Pharmacology Physiology Pharmaceutical Sciences Greek Graduate School of Biomedical Sciences General Engineering Technology Human Development and Family Studies History Health Heritage Management Honors Humanities Human Sciences International Business Interior Design Industrial Engineering Interdisciplinary Studies Information Systems and Quantitative Sciences Italian Japanese Journalism Latin American and Iberian Studies Landscape Architecture Latin Law</td>
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Facilities and Resources

Archive of Turkish Oral Narrative
The Archive of Turkish Oral Narrative is a research facility devoted to the study of Turkish folktales and related narrative forms: folk history, legends, folk minstrelsy, and myths. Its extensive holdings—in Turkish on magnetic tape and in English on bound typescript volumes—and its support services for researchers are unique. The archive is now online and can be accessed at www.aton.ttu.edu. Books, articles, papers, and recorded programs produced from archive materials flow from scholars in this country and abroad.

For additional information concerning, please contact the Southwest Collection/Special Collections Library at 806.742.3749.

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, student body, 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 compete in intercollegiate volleyball, soccer, cross country, basketball, golf, tennis, softball, and track and field. The women’s 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 and field, baseball, golf, and tennis.

Jones AT&T Stadium is named for Texas Tech’s late President Emeritus Clifford B. Jones and his wife Audrey and for SBC Communications. While SBC’s gift of $20 million enabled renovation of the stadium in 2003, the Jones family provided the initial funds to permit construction of the stadium in 1947. Because SBC Communications acquired AT&T in 2005 and chose to keep the AT&T name, the former Jones SBC Stadium was renamed and became the only collegiate athletic facility in the nation with the AT&T name.

The 2003 renovation added a new west side building, complete with 54 luxury suites, a club level, and press and camera levels. In 2006 the Board of Regents approved future expansion to the east side of the stadium and an estimated 10,000 additional seats.

Dan Law Field hosts the university’s baseball team and debuted a new state-of-the-art scoreboard two years ago. Track and soccer events are held at the R.P. “Bob” Fuller Track Complex, and basketball games tip off in the 15,098-seat United Spirit Arena, one of the finest on-campus basketball-volleyball facilities in the nation.

The Texas Tech softball and tennis programs are enjoying new venues as the result of the opening in 2001 of the Don and Ethel McLeod Tennis Complex and the Rocky Johnson Field. The university’s golf teams also began their first season at The Rawls Course in 2003. Named after Texas Tech alumnus Jerry S. Rawls, who provided an $8.6 million gift for construction of the course, The Rawls Course was named as one of the nation’s “Top 10 New Courses” by Golf Magazine.
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. The center provides varied opportunities for university students to work in classrooms with professional staff to acquire information and skills related to the development and guidance of young children.

The CDRC also provides opportunities for faculty and graduate students to conduct research on child behavior and family interactions as well as to generate 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, at 15th and Akron or by calling 806.742.3016.

Computing Services

The Information Technology (IT) Division (www.infotech.ttu.edu) provides a wide range of computing resources, services, and support for students, faculty, and staff at Texas Tech University. Some of the key services provided to the university community are open access student computing facilities, free short courses, computer-based training modules (www.cbt.ttu.edu), personal Web pages, email (TechMail), secure remote network access, Help Desk operations, desktop support, secure wireless networking, videoconference facilities, and consulting. The Office of the CIO, as part of the Safe Computing Practices Campaign, hosts educational events each month and other educational resources to raise IT security awareness in the Texas Tech community (www.safecomputing.ttu.edu).

**Technology Assessment** (www.depts.ttu.edu/ita) provides timely and objective information and analysis of current and emerging technologies. The department helps customers keep current with technology news and trends and provides the concise information necessary for customers to make decisions regarding technology. Various levels of assessments of technology and technology-related issues are available, ranging from short briefs to comprehensive studies.

**Technology Support** (www.its.ttu.edu) provides quality user services and operates the Advanced Technology Learning Center (ATLC) in the west basement of the Texas Tech Library. The 25,000-square-foot ATLC facility provides leading-edge computing technology to the university community. The Technology Support staff teaches short courses, manages university site licenses, creates documentation, and develops enterprise-level applications. Technology Support also manages five remote labs located throughout the campus (www.depts.ttu.edu/its/labs).

**IT Help Desk** (www.helpdesk.ttu.edu) is an excellent IT service that provides students, faculty, and staff with a friendly IT “front line” for the university community. IT Help Central is the primary point of contact for those needing assistance regarding a technology issue. Help Desk services are structured to escalate questions, problems, and concerns from the user community to the proper IT staff member and track the incident until it is resolved (T 742-HELP).

**Telecommunications** (www.net.ttu.edu) architects and manages the Texas Tech community data and video network, TTUnet, secure wireless network access in academic areas, 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. Telecommunications also provides the eRaider network authentication account that allows access to various IT services, including email.

**High Performance Computing Center** (www.hpc.ttu.edu) manages several research computing clusters and initiatives. In addition, TTU participates in local, regional, and national grid projects. A local resource is TechGrid, which consists of more than 300 CPUs. Faculty and researchers are welcome to take advantage of these services.

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

In addition to the IT Division resources, the Texas Tech System provides the following IT resources:

- **Communication Services** (www.its.ttu.edu) assists if you need a new telephone (office or cellular), additional telephone line, or voice mail; if your telephone is not working; or if you need a telephone number for someone on campus. For any of these needs, contact Communications Services at 806.742.2000.

- **Information Systems** (www.depts.ttu.edu/itis) develops and supports legacy and intranet systems for Texas Tech University and the Texas Tech University Health Sciences Center. Major systems supported by Information Systems are student information, human resources, payroll, accounting, and budget.

- **Technology Operations and Systems Management** staff members (www.tosm.ttu.edu) are available to answer the following questions: Do you have server administration, management, or support? Are you confident the data on your server is being backed up properly? Do you have questions about distributed mainframe print? TOSM also hosts the IBM 9672-R26 mainframe system supporting administrative, instructional, and research activities and offers such services as general purpose computation, optical scanning, and large-scale laser printing

Office of International Affairs

Working with and through the colleges, the Office of International Affairs (OIA) coordinates international activities at Texas Tech and is composed of the following units:

- International Cultural Center Operations
- Study Abroad
- International Student and Scholar Services
- International Center for Arid and Semi-arid Land Studies
- Administrative Support Services

The OIA advocates and facilitates initiatives that bring an international dimension to the university’s roles in teaching, research, and outreach.

The **International Cultural Center** (ICC) houses all units of the Office of International Affairs. In addition to offering attractive facilities for all types of meeting, conferences, and special events, the center hosts changing art exhibits and periodic lectures. The center represents the commitment of Texas Tech to become globally prominent. **Contact information:** Division of Operations, 806.742.2974, www.iaff.ttu.edu (click on “International Cultural Center Operations”)

**International Student and Scholar Services** (ISSS) operates the university’s foreign student and exchange visitor immigration programs and provides employment-based immigration services to the university. ISSS assists with the university’s compliance programs for nonresident tax and employment authorization. Counselors advise and assist international students and scholars concerning immigration rules, financial concerns, and cross-cultural issues. The office also facilitates cross-cultural programming and other extracurricular activities with campus and community-based organizations to enhance mutual understanding. Sponsored Student Programs is also part of ISSS. Priorities are to customize services to sponsoring agencies and students. Services to sponsors include special program design, student placement, monitoring academic studies, developing customized billing procedures, and providing periodic progress reports. An administrative fee of $250
Landmark Arts Galleries

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

The galleries of Landmark Arts are Landmark Gallery, Studio Gallery, Folio, South Gallery, and SRO-Photo. The Landmark Gallery exhibits contemporary art by professional artists. The gallery hosts programs that engage campus and Lubbock community participation.

Folio Gallery is an intimate venue that displays prints, photographs, and drawings by visiting professional artists. 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. The SRO-Photo Gallery presents the viewer with wide-ranging solo exhibitions of fine art photography by professional artists. The galleries are open from 10 a.m. to 5 p.m. weekdays and 10 a.m. to 5 p.m. on Saturday. During university holidays the galleries are closed. More information is available at www.landmarkarts.org.

Libraries

With a vast library collection and extensive computing and communications resources, Texas Tech University Libraries serve as a vital partner with students and faculty in their research endeavors. The 2.5 million volumes in the Libraries collection support research activity in the humanities, social sciences, and science-technology disciplines. In addition to the Libraries’ catalog, patrons also may access materials from the Health Sciences Center library, Vietnam Archive, and the Southwest Collection/Special Collections Library. The University Library is a Patent and Trademark depository and is one of two regional depositories for U.S. government documents in Texas. The Libraries integrate the latest technologies into their services to support the teaching and research missions of the university. Its Web site (http://library.ttu.edu/ul/) provides access to online resources, including numerous electronic journals and full-text and bibliographic databases covering a wide range of subjects.

As a charter member of the Texas Digital Library (TDL), the Libraries make their digital collections available to Texas higher education students and faculty via the Internet through a consortium of research libraries. The Digital Media Studio (DMS) provides easy access to the latest Macintosh and PC computing equipment, as well as industry-standard design and video editing software. The DMS also offers digital cameras, high-definition digital camcorders, iPods, and thousands of American and international film titles, music, and audio books on DVD, CD, and VHS. Patrons have access to more than 200 public computers equipped with the full Microsoft Office Suite and Adobe Creative Suite (Photoshop, Illustrator, InDesign, etc.), AutoCAD, and other project and publishing tools. A document delivery service will obtain materials not owned by the Libraries for students and faculty. The Libraries’ one credit-hour course (LIB 1100) is offered to convey knowledge and experience to more than 200 public computers equipped with the full Microsoft Office Suite and Adobe Creative Suite (Photoshop, Illustrator, InDesign, etc.), AutoCAD, and other project and publishing tools. A document delivery service will obtain materials not owned by the Libraries for students and faculty. The Libraries’ one credit-hour course (LIB 1100) is offered to convey effective library research methods and strategies for scholastic success. The University Library is open more than 130 hours a week during each semester and is open around the clock during final exam periods.

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 Landmark is a unit of the Museum of Texas Tech University and offers tours, outreach, and programs related to the ongoing archaeological and natural history research at the preserve. Community and
Facilities and Resources / General Information

Radio and TV Stations

**KTXT–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.

**KOHM–FM.** Operating on a frequency of 89.1, KOHM–FM is a classical music and news station licensed to and owned by Texas Tech. KOHM is a division of the Office of the Provost and is professionally staffed. The station operates 24 hours a day, seven days a week. KOHM–FM is a Qualifying Public Radio station. The station is on a listener supported subscription basis with contributions from the station and individuals.

**KTXT–TV.** A noncommercial educational television station, KTXT–TV (Channel 5/Digital 5.1, 5.2, and 5.3) is licensed by the Federal Communications Commission (FCC) to the University's Board of Regents and operates as a division within the Office of the Provost. Channel 5’s office, studio, and production facilities, and engineering facilities, and antenna facilities are located on the southwestern campus triangle west of Indiana Avenue. From this location the station broadcasts diverse programming 24 hours a day, seven days a week. The signal coverage zone encompasses Lubbock and the surrounding area within a 60-mile radius for Channel 5 and approximately a 75-mile radius on 60 kw Digital Channels 5.1, 5.2, and 5.3, serving a population of approximately 380,000.

**KTXT–TV** is a member of the Public Broadcasting Service (PBS), a national network of 349 television stations interconnected by satellite. Staffed by professional personnel, the station produces programming to satisfy the 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 provides educational services to the community and students through its eight main divisions: intramurals, open recreation, sport clubs, aquatics, clinics and classes, special events, fitness/wellness, and outdoor pursuits.

**Radio and TV Stations**

National Ranching Heritage Center

The National Ranching Heritage Center is a 16-acre museum with six galleries and an historical park containing 45 ranch structures that have been moved to the site from locations throughout the Southwest. The structures—a bunkhouse, one-room school house, half-dugout, train, depot, blacksmith shop, barns, windmills, and more—date from the late 1780s to the early 1930s and have been authentically restored. They illustrate the development of the ranching industry in the Southwest. Dedicated on July 4, 1976, the NRHC hosts a fund-raising gala and Ranch Day in the Spring and Candlelight at the Ranch in December. Community and student volunteers who comprise the Ranch Hosts 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. on Sunday.

Psychology Clinic

The Psychology Clinic provides short- and long-term counseling, psychotherapy, and psychological and vocational assessment to Texas Tech students and staff as well as children and adults in the Lubbock community. The clinic provides training experience for doctoral students in clinical and counseling psychology. The clinic is located on the first floor in the east end of the Psychology Building.

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
Southwest Collection

The Southwest Collection/Special Collections Library research collections include Rare Books, the University Archive, the Archive of Turkish Oral Narrative, 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 1,800 collections of personal papers and more than 5,000 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. The Southwest Collection also houses one of the nation’s most important collections on the Literature of Place—the James Sowell Family 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 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 9 a.m. to 1 p.m. on Saturday.

Inquiries and donations are welcomed. Tours are available.

Speech–Language, 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 Speech, Language, and Hearing Sciences. Under faculty supervision, 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 office of the Speech–Language and Hearing Clinic at 806.743.5678.

Student Union Building

The Student Union Building (SUB) is the community center of campus. Often referred to as the living room of the university, the SUB has as many as 15,000 students, faculty, staff, alumni, and guests come through its doors daily.

The SUB recently completed a $45 million renovation and expansion that created one of the finest facilities in the United States. The expansion includes additional space for the Barnes and Noble Campus Bookstore, the Student Organization Involvement Center, 60 registered student organization cubicles, TV and study lounges, Student Government Association office suite, Student Union and Activities administration offices, Dean of Students and the Center for Campus Life offices, Student Legal Services, Student Judicial Programs, and West Plaza Courtyard between the SUB and library. The renovation encompasses a five-concept food service court, a casual dining area with seating for 600 patrons, 8 reflection “study” rooms, 25 technologically capable meeting rooms for events, the 968-seat Allen Theatre, the Courtyard, and the east entrance ATM hub.

The retail and service corridor on the first floor houses a variety of businesses such as the PostTech post office, the University ID Center, a branch bank, a cellular phone store, Sam’s Place convenience store, CopyTech copy center, High Tech Computer Service Center, the Union Bistro, and Healthy Choices.

The Student Union Union ticket booth located on the lower west level in the Student Union Building north of the University Library. Service is provided from 7 a.m. to 1 p.m. on weekdays, and 8 a.m. to 11 p.m. on Saturday, and noon to 1 p.m. on Sunday.

The Student Union Building is open from 7 a.m. to 11 p.m. weekdays, 8 a.m. to 11 p.m. Saturday, and noon to 1 p.m. Sunday.
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 Mainstage of the Charles E. Maedgen Jr. Theatre, which seats 385 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.

University Parking Services

Students are required to register their vehicles and display a Texas Tech parking permit on any vehicle parked on campus from 7:30 a.m. to 8 p.m. Monday through Friday. Students who operate motor vehicles on campus must comply with currently approved and published regulations that can be seen at www.parking.ttu.edu or obtained at the University Parking Services Office, 2903 4th St., Room 145, from 7:30 a.m. to 8 p.m. on weekdays. This office also provides vehicle registration forms and permit purchases.

Vietnam Center and Archive

Texas Tech University established the Vietnam Center in 1989 with the missions of funding and guiding the development of the Vietnam Archive and encouraging continued study of all aspects of the American Vietnam experience. The center provides a forum for all points of view and all topics related to Southeast Asia, particularly America’s involvement in the region before, during, and since the Vietnam War.

The Vietnam Archive collects and preserves materials and artifacts focusing on the men and women who directly participated in wartime events. This includes people from the United States as well as from all participant nations. Located in the Special Collections Library, the Vietnam Archive currently contains approximately 20 million pages of material, making it the largest repository of Vietnam War related materials outside the U.S. federal government.

In addition to documents, artifacts, and related items, the Vietnam Archive houses a library of more than 12,000 books and an unrivaled microfilm/microfiche collection. The Vietnam Archive microform collection comprises material from all the U.S. presidential administrations involved in Southeast Asia from World War II to 1975 and contains a comprehensive collection of other government agency and military branch records. This collection also includes one of the largest French Indochina and Vietnamese newspaper collections in the country.

To ease the burden of researching these vast holdings, the Vietnam Archive has developed one of the largest online document retrieval systems in the nation. Started in 2001, The Virtual Vietnam Archive now provides access to more than 2.7 million pages of materials, all of which are accessible free of charge through the Internet. These online materials include more than 250,000 documents; 96,000 photographs and slides; and thousands of of maps, audio recordings, oral history interviews, films, and more. The Vietnam Archive adds approximately 25,000 new pages of digital material online each month.

In addition to the Vietnam Archive and its component projects, the Vietnam Center administers a number of special projects and events, including scholarships for Texas Tech students and for students in Cambodia and Vietnam, annual conferences, triennial symposia, and numerous other projects and publications. The Vietnam Center conferences and symposia welcome student and community participation and attendance. For more information, visit www.vietnam.ttu.edu or contact the Vietnam Center at 806.742.3742, vietnam.center@ttu.edu.
Admission to the University

Undergraduate Admission

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 and letters of recommendation are recommended.

Applicants may be considered for admission to the undergraduate divisions of the university by graduation from an accredited high school, by transfer from an accredited college, or equivalent. 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.

Deadlines to Complete Application Process

- Spring 2008 Admission: November 15, 2007
- Summer I and/or II 2008 Admission: May 1, 2008
- Fall 2008 Admission: May 1, 2008
- Spring 2009 Admission: November 15, 2008
- Summer I and/or II 2009 Admission: May 1, 2009
- Fall 2009 Admission: May 1, 2009

Residency Status Determination

For rules governing the determination of residency status as defined by the Texas Higher Education Coordinating Board, see www.collegefortexans.com.

Notice to Graduate Students

Students planning to earn graduate degrees at Texas Tech must be admitted to the Graduate School and also meet any special admission requirements of the department in which they are planning to study. General admission requirements of the Graduate School are described in the Graduate School section of this catalog. Any additional departmental requirements will be listed in the “Graduate Program” section of each college and department.

Admission Requirements

As a state-assisted institution, Texas Tech University recognizes its responsibility to provide excellent educational opportunities for its students. Class rank in high school, SAT/ACT scores, and/or college GPA are used to help predict potential academic performance. Other factors that could predict success at Texas Tech also may be considered.

First-Time Freshman Admission

To gain admission for the first time, an applicant must complete the following:

1. File a freshman application and pay an application fee of $50. The fee may be paid by check, money order, or one of the following credit cards: Visa, MasterCard, American Express, Diners Club, or Discover. If payment of the 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, a grade report, or listed on the State of Texas Common Application form. A final official high school transcript showing graduation date will be required after graduation and will become part of the student’s permanent record. A student with a GED must submit their official GED scores as well as a partial high school transcript.

3. Have college entrance test scores, either the SAT or the ACT, sent from the testing agency at the time the test is taken.

The following courses are recommended but not mandatory to be considered for admission:

<table>
<thead>
<tr>
<th>High School Subjects</th>
<th>Units Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics¹</td>
<td>3</td>
</tr>
<tr>
<td>Laboratory Science²</td>
<td>2</td>
</tr>
<tr>
<td>Foreign Language³</td>
<td>2</td>
</tr>
</tbody>
</table>

¹ Algebra I, Geometry, and Algebra II are the courses recommended for admission.
² Biology I, Chemistry I, or Physics I are the courses recommended for admission.
³ If two years of the foreign language are not completed in high school, at least two semesters of a single foreign language will be required at the college level.
Assured Admission

Students who graduate from an accredited high school or equivalent (including Department of Defense schools) with required coursework will be assured admission if they present the appropriate combination of class rank and minimum test scores.

<table>
<thead>
<tr>
<th>High School Class Rank</th>
<th>Minimum Test Scores for Assured Admission*</th>
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</thead>
<tbody>
<tr>
<td>Top Ten Percent</td>
<td>ACT 25 Min 1140</td>
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<tr>
<td>(other than top 10%)</td>
<td></td>
</tr>
<tr>
<td>First Quarter</td>
<td>SAT 28 Min 1230</td>
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<tr>
<td>Second Quarter</td>
<td></td>
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<tr>
<td>Lower Half</td>
<td>SAT 29 Min 1270</td>
</tr>
</tbody>
</table>

* Writing portions of the ACT and SAT are not included in the minimum scores for assured admission.

Assured admission will be granted to all students who hold competitive 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 used to evaluate a student's potential for success includes:

- High school coursework
- Honors or advanced placement
- Extracurricular activities
- Leadership experiences
- Civic or other service activities
- Socioeconomic background
- Family educational background
- Bilingual proficiency
- Affiliation with Texas Tech
- Special talents or awards
- Diversity of experience

A response to Topic B or C on the State of Texas Common Application is strongly recommended for students who do not meet the assured admission requirements.

Gateway Program

Freshman applicants who have been denied admission for the summer or fall semester are eligible to participate in the Gateway Program. Visit www.admissions.ttu.edu for details about this program.

Transfer Admission

Undergraduate students who have attended an accredited college beyond high school graduation may be accepted for admission to Texas Tech provided they meet admission requirements. Falsification or omission of application information will void admission to Texas Tech University. Applicants must complete the following:

1. File a transfer application 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 academic records from all institutions in which the applicant has been or is currently enrolled. Admission will be determined by transferable work only. Applicants must be eligible to return to the institution most recently attended.

An unofficial copy of the high school transcript is necessary for academic advising prior to enrollment, but not required for admission unless the student has less than 12 transferable hours.

Transfer applicants will be assured admission if they meet the following requirements:

1. Complete 12 to 23 semester hours of transferable college work beyond high school graduation and have a cumulative 2.5 GPA.

2. Complete 24 or more semester hours of transferable college work beyond high school graduation and have a cumulative 2.25 GPA.

3. If transferring with fewer than 12 transferable completed hours, applicants must meet the same standards for admission as required of new freshmen entering from high school and have a minimum 2.0 transferable GPA in work completed. Applicants enrolled in their first semester of college after high school graduation should apply as transfer students but are required to submit a high school transcript and SAT and ACT scores and must meet freshman assured admission requirements.

4. Transfer applicants with 45 or more transferable hours must choose a major. The university reserves the right to modify its admission requirements to manage enrollment in high demand areas. Transfer students choosing the College of Business Administration must have a cumulative 2.75 GPA; College of Architecture, cumulative 3.0 GPA; Human Development and Family Studies, cumulative 2.5 GPA; and Interior Design, cumulative 3.0 GPA. These requirements are subject to change.

Admission Review. Students who do not meet assured admission requirements but have at least a 2.0 transferable GPA will be reviewed. The student’s major, types of courses taken, and pattern of progress, as well as high school records, essays, and standardized test scores may be considered in the admissions process.

Credit Transferred 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. 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.
Guidelines to the transfer of college credit:

- Original copies of official college transcripts will be reviewed and coursework 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. Includes courses from which a student has withdrawn or received a grade of incomplete.
- Vocational and technical courses normally not accepted 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 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 in each course description.

For more information concerning the Texas Common Course Number System, please visit the TCCNS Web page at www.tccns.org/ccn.

Visit www.reg.ttu.edu for information on how your credit will transfer. The following lower-division courses have been evaluated by academic departments and determined to be the equivalent of the Texas Tech courses listed.

<table>
<thead>
<tr>
<th>TCCNS Number</th>
<th>TTU Equivalent</th>
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<tbody>
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<tr>
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<td>PSS 1321</td>
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<tr>
<td>AGRI 1309</td>
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Transfer Disputes Involving Lower-Division Courses

If 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.

Approval for Concurrent Attendance at Other Institutions

Students who are registered at Texas Tech and wish to register concurrently at another institution must obtain prior written approval from the academic dean of the college in which they are enrolled. This approval applies to all residence courses, extension courses, and distance education 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. Concurrent registration resulting in a combined enrollment beyond a maximum load at this institution will not be permitted.

Credit for Core Requirements Taken at Another State 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)

Credit for Educational Courses Completed 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.

Admission Requirements for International Students

International students may apply for admission to Texas Tech electronically at www.applytexas.org or by requesting an application from the Office of Admissions. With the official application, international applicants must furnish original documents or official certified copies indicating the nature and scope of their educational program and meet admission requirements stated in the catalog.

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. Entering freshman students who have completed secondary school in the United States must also take and submit scores from the SAT or ACT.

Students whose native language is not English must also present a score of at least 550 (paper exam) or 213 (computer exam) or 79 (IBT) on the Test of English as a Foreign Language (TOEFL) or a score of at least 6.5 on the International English Language Testing System (IELTS). These requirements 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 concerning the TOEFL may be obtained from the Educational Testing Service, P.O. Box 899, Princeton, NJ 08540, U.S.A. or online at www.toefl.org. Information about the IELTS may be obtained from IELTS International, 100 East Carson Street, Suite 200, Pasadena, CA 91103, U.S.A.; T 626.564.2954, F 626.564.2981; email ielts@ieltsintl.org or online at www.ielts.org. Further testing will be given once the student arrives on campus to verify competency. Students lacking adequate English proficiency will be required to enroll in basic English courses.

International students not living in the United States are encouraged to apply a year in advance and must verify their ability to support themselves financially (a required minimum of $25,313 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 undergraduate international students is $405 per semester credit hour. Each nonimmigrant international student will be charged an International Student Fee of $50 per semester and $25 for each summer term. Certain sponsored international students also will pay an administrative fee of $250 per semester and $125 per summer term.
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. Completed applications must be on file by the published international student admission deadlines.

**Admission Requirements for Former Texas Tech Students**

Application materials and deadlines for former Texas Tech students are available at www.depts.ttu.edu/formertech. Official transcripts from all institutions attended subsequent to Texas Tech enrollment must be submitted by the application deadline. Students who were on probation, suspension, or second/subsequent suspension and are returning to Texas Tech should refer to the admission criteria under “Scholastic Probation and Suspension” listed in the Undergraduate Academics section of this catalog and on the Web site listed above. Students who left in good standing must have a 2.0 GPA on work taken since leaving Texas Tech.

**Academic Fresh Start**

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. 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.

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 professional 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 coursework completed after the student enrolled under this plan (along with other criteria the institution normally uses to evaluate applicants for admission).

**Texas Success Initiative**

The Texas Success Initiative (TSI) has replaced the Texas Academic Skills Program (TASP). Under the Texas Success Initiative, any student who is not exempt is required to take one of the following tests to assess basic skills in the areas of reading, writing, and mathematics: THEA, Accuplacer, Compass, or Asset. Students may be exempt if they have high ACT, SAT, or TAKS test scores or have earned an associate's or baccalaureate degree (www.reg.ttu.edu gives other exemptions) at an accredited Texas public institution of higher education or from a regionally accredited out of state institution. Students may test with Accuplacer through Academic Testing Services, Room 242 West Hall, 806.742.3671. Students will need to present their driver's license or passport for identification purposes. Once tested, students must submit their test scores to the TSI Compliance Office, 116 West Hall. A practice Accuplacer test can be taken at the Web site listed above. For THEA test registration or to take a practice THEA test, go to www.thea.nesinc.com. Students who have tested but not attained the minimum scores on all three sections of the test are required to obtain TSI advising before registration and enroll continuously in formal skills development through the TSI Basic Skills Office, 72 Holden Hall, 806.742.3242. To ask questions about your status with respect to the Texas Success Initiative, contact the TSI Compliance Office at 806.742.1183, ext. 248.

**New Student Orientation**

New Student Orientation (NSO) is a mandatory program designed to provide all incoming students an opportunity to meet with an academic advisor, register for classes, and gather information about Texas Tech programs and services. All new freshmen and transfer students are required to attend NSO. Sessions are held in January, April, May, June, July, and August. To obtain more information, visit www.newstudentorientation.ttu.edu, call 806.742.0048, or email newstudentorientation@ttu.edu.

**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 SAT 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 SAT or 25 ACT or a high school junior in the top 10 percent of their class with at least an 1180 SAT 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. For more information contact the Office of Admissions.

**Senior Citizen’s Program.** This program is designed for students age 55 and above who wish to enrich their later years through the adventure of lifelong learning. Senior citizens can enroll either to earn a degree or take a series of classes for personal enrichment. No transcripts or SAT or ACT scores will be required for nondegree-seeking students. For more information or for a special application, contact the Office of Admissions.

**Undergraduate Credit by Exam**

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 in which proficiency may be 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, former, or prospective Texas Tech student may attempt to earn undergraduate course credit using the designated exam options. Some credit-by-exam programs (AP and IB) are only administered at participating high schools. CLEP exams are a credit-by-exam option for several undergraduate subjects and are administered at Texas Tech throughout the year and during New Student Orientation. Students may not use credit-by-exam options to attempt to remove or replace a grade that has already been earned in a Texas Tech course. The student is responsible for complying with the following procedures:

1. All CLEP exams are computer-based. Appointments to use the computers and schedule the exams must be made through Academic Testing Services in 214 West Hall, 806.742.3671. For more information on CLEP, visit the Academic Testing Services Web site at www.depts.ttu.edu/testing or www.collegeboard.com.
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 Academic Testing Services, 214 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 Academic Testing Services, 214 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 SAT Subject Exams.
2. Advanced Placement Examinations that are a part of the College Board Advanced Placement Programs (AP) available in a limited number of secondary schools.
3. Specified subject examinations of the 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 Academic Testing Services at Texas Tech. It is the student’s responsibility to request that his or her test scores be sent to the university. Information concerning each of the testing programs follows.

1. Credit for SAT Subject Exams. Achievement Tests are part of the College Board Admissions Testing Program. Each year there are several national administrations of the SAT Subject Exams. 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. For more information, view www.collegeboard.com; visit your high school counselor; or contact Academic Testing Services, Texas Tech University, Box 45002, Lubbock, TX 79409-5002, 806.742.3671.

2. Credit for Advanced Placement (AP) Program Examinations. 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 exam is offered once a year during May at participating high schools. AP scores are reported to the university in July.

3. Credit for College Level Examination Program (CLEP) Examinations. Under the College Level Examination Program, the university will award credit only for specified examinations. Accepted exams vary among institutions, so students should be aware of which exams are accepted at Texas Tech. As with the other College Board 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. However, these examinations are offered on the Texas Tech campus during new student orientation conferences, as well as several times each month throughout the year.

NOTE: Scores accepted for credit vary among universities. Students are responsible for knowing what scores are accepted at Texas Tech. Required scores are psychometrically scaled conversions and do not correlate on a one-point, one-question basis, nor is the required score a percentile.

Further information about the CLEP may be obtained from your high school counselor or principal; www.collegeboard.com; or Academic Testing Services, Texas Tech University, Box 45002, Lubbock, TX 79409-5002, 806.742.3671.

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 students in the IB program and will grant a minimum of 24 hours credit for an IB Diploma completed with Higher or Standard Level exam scores of 4-7. For those individuals who participate in IB courses, but do not have an IB Diploma, individual course credit may be earned based on the subject and score obtained on specified IB exams. Students must send an IB examination transcript to Texas Tech to receive credit.

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. 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.
## Exams for Advanced Placement (AP) Program

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<th>TTU Courses for Which Credit Can Be Earned</th>
<th>Standardized Test(s) Used</th>
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<tr>
<td>ART 1303</td>
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<tr>
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<tr>
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<td>CS 1303</td>
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<tr>
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<tr>
<td>ECO 2301</td>
<td>AP: Microeconomics</td>
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<tr>
<td>ECO 2302</td>
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<td><strong>English</strong></td>
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<tr>
<td>ENGL 1301</td>
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<td>ENGL 1301, 1302</td>
<td>AP: English Language and Composition</td>
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<td>AP: English Literature and Composition</td>
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<td>CLEP-S: German</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>GERM 1501, 1502</td>
<td>CLEP-S: German</td>
<td>55</td>
<td>10</td>
</tr>
<tr>
<td>GERM 1501, 1502, 2301</td>
<td>CLEP-S: German</td>
<td>59</td>
<td>13</td>
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<td>GERM 1501, 1502, 2301, 2302</td>
<td>CLEP-S: German</td>
<td>63</td>
<td>16</td>
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<tr>
<td><strong>History</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>HIST 1300</td>
<td>CLEP-S: Western Civilization I: Ancient Near East to 1648</td>
<td>51</td>
<td>3</td>
</tr>
<tr>
<td>HIST 1301</td>
<td>CLEP-S: Western Civilization II: 1648 to the Present</td>
<td>51</td>
<td>3</td>
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<tr>
<td>HIST 2300</td>
<td>CLEP-S: History of U.S. I: Early Colonizations to 1877</td>
<td>52</td>
<td>3</td>
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<tr>
<td>HIST 2301</td>
<td>CLEP-S: History of U.S. II: 1865 to Present</td>
<td>52</td>
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<tr>
<td><strong>Mathematics</strong></td>
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<tr>
<td>MATH 1320</td>
<td>CLEP-S: College Algebra</td>
<td>52</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1350, 1351</td>
<td>CLEP-S: Calculus</td>
<td>50</td>
<td>6</td>
</tr>
<tr>
<td>MATH 1350, 1351, 1352</td>
<td>CLEP-S: Calculus</td>
<td>56</td>
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<tr>
<td>MATH 1550</td>
<td>CLEP-S: Precalculus</td>
<td>50</td>
<td>5</td>
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<tr>
<td><strong>Political Science</strong></td>
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<tr>
<td>POLS 1301</td>
<td>CLEP-S: American Government</td>
<td>50</td>
<td>3</td>
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<tr>
<td><strong>Psychology</strong></td>
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<tr>
<td>PSY 1300</td>
<td>CLEP-S: Introductory Psychology</td>
<td>51</td>
<td>3</td>
</tr>
<tr>
<td>PSY 2301</td>
<td>CLEP-S: Human Growth and Development</td>
<td>53</td>
<td>3</td>
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<tr>
<td><strong>Spanish</strong></td>
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<tr>
<td>SPAN 1501</td>
<td>CLEP-S: Spanish</td>
<td>50</td>
<td>5</td>
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<tr>
<td>SPAN 1501, 1502</td>
<td>CLEP-S: Spanish</td>
<td>55</td>
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<td>SPAN 1501, 1502, 2301</td>
<td>CLEP-S: Spanish</td>
<td>66</td>
<td>13</td>
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<tr>
<td>SPAN 1501, 1502, 2301, 2302</td>
<td>CLEP-S: Spanish</td>
<td>68</td>
<td>16</td>
</tr>
</tbody>
</table>

* The multiple choice score of 55 on the Freshman College Composition CLEP earns an examinee the opportunity to sit for a 90-minute on-campus writing exam. The writing exam will determine the amount, if any, of credit hours awarded for Essentials of College Rhetoric (English 1301) and/or Advanced College Rhetoric (English 1302).
### Exams for International Baccalaureate (IB)

<table>
<thead>
<tr>
<th>TTU Courses for Which Credit Can Be Earned</th>
<th>Standardized Test(s) Used</th>
<th>Minimum Score</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biology</strong></td>
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</tr>
<tr>
<td>BIOL 1401, 1402</td>
<td>IB: Biology Standard Level</td>
<td>5, 6, 7</td>
<td>8</td>
</tr>
<tr>
<td>BIOL 1403, 1404</td>
<td>IB: Biology Higher Level</td>
<td>5, 6, 7</td>
<td>8</td>
</tr>
<tr>
<td><strong>Chemistry</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CHEM 1301</td>
<td>IB: Chemistry Standard Level</td>
<td>4, 5, 6, 7</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1307, 1308 and 1107, 1108</td>
<td>IB: Chemistry Higher Level</td>
<td>5, 6, 7</td>
<td>8</td>
</tr>
<tr>
<td><strong>Economics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECO 2301</td>
<td>IB: Economics Higher Level</td>
<td>5, 6, 7</td>
<td>3</td>
</tr>
<tr>
<td><strong>English</strong></td>
<td></td>
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</tr>
<tr>
<td>ENGL 1301</td>
<td>IB: English Language A1 or A2 Standard Level</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 1301, 1302</td>
<td>IB: English Language A1 or A2 Higher Level</td>
<td>5, 6, 7</td>
<td>6</td>
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<tr>
<td><strong>French</strong></td>
<td></td>
<td></td>
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<tr>
<td>FREN 1507</td>
<td>IB: French B Standard or Higher Level</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>FREN 2301, 2302</td>
<td>IB: French B Standard or Higher Level</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>FREN 2301, 2302, 3304</td>
<td>IB: French B Standard or Higher Level</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>FREN 2301, 2302, 3302, 3304</td>
<td>IB: French A1 or A2 Standard or Higher Level</td>
<td>6, 7</td>
<td>12</td>
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<tr>
<td>FREN 3302, 3304*</td>
<td>IB: French A1 or A2 Standard or Higher Level</td>
<td>4, 5</td>
<td>6</td>
</tr>
<tr>
<td>FREN 3304*</td>
<td>IB: French A1 or A2 Standard or Higher Level</td>
<td>4, 5</td>
<td>3</td>
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<tr>
<td><strong>Geography</strong></td>
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<tr>
<td>GEOG 2351</td>
<td>IB: Geography Standard or Higher Level</td>
<td>5, 6, 7</td>
<td>3</td>
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<tr>
<td><strong>German</strong></td>
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<tr>
<td>GERM 1507</td>
<td>IB: German B Standard or Higher Level</td>
<td>3</td>
<td>5</td>
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<tr>
<td>GERM 2301, 2302</td>
<td>IB: German B Standard or Higher Level</td>
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<tr>
<td>GERM 2301, 2302, 3303</td>
<td>IB: German B Standard or Higher Level</td>
<td>5</td>
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<td>GERM 2301, 2302, 3303, 3304</td>
<td>IB: German A1 or A2 Standard or Higher Level</td>
<td>6, 7</td>
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<tr>
<td>GERM 3303*</td>
<td>IB: German A1 or A2 Standard or Higher Level</td>
<td>4, 5</td>
<td>3</td>
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<tr>
<td>GERM 3303, 3304*</td>
<td>IB: German A1 or A2 Standard or Higher Level</td>
<td>6, 7</td>
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<tr>
<td><strong>History</strong></td>
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<tr>
<td>HIST 1300</td>
<td>IB: History Higher Level: European</td>
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<tr>
<td>HIST 1301</td>
<td>IB: History Higher Level: European</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>HIST 1300, 1301</td>
<td>IB: History Higher Level: European</td>
<td>6, 7</td>
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<tr>
<td>HIST 3395</td>
<td>IB: History Higher Level: African</td>
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<td>HIST 3396</td>
<td>IB: History Higher Level: African</td>
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<tr>
<td>HIST 3395, 3396</td>
<td>IB: History Higher Level: African</td>
<td>6, 7</td>
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<tr>
<td><strong>Mathematics</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>MATH 1320</td>
<td>IB: Mathematics Studies Standard Level</td>
<td>5, 6, 7</td>
<td>3</td>
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<tr>
<td>MATH 1351</td>
<td>IB: Mathematics Methods Standard Level</td>
<td>6, 7</td>
<td>3</td>
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<tr>
<td>MATH 1351</td>
<td>IB: Mathematics Higher Level</td>
<td>5, 6, 7</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1550</td>
<td>IB: Mathematics Methods Standard Level</td>
<td>4, 5</td>
<td>5</td>
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<tr>
<td>MATH 1550</td>
<td>IB: Mathematics Higher Level</td>
<td>4</td>
<td>5</td>
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<tr>
<td><strong>Music</strong></td>
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<tr>
<td>MUHL 1301**</td>
<td>IB: Music Standard Higher Level</td>
<td>6, 7</td>
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<tr>
<td>MUTH 1303, 1103**</td>
<td>IB: Music Standard or Higher Level</td>
<td>6, 7</td>
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<tr>
<td><strong>Philosophy</strong></td>
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<tr>
<td>PHIL 1310</td>
<td>IB: Philosophy Standard Level</td>
<td>5, 6, 7</td>
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<tr>
<td>PHIL 2300</td>
<td>IB: Philosophy Higher Level</td>
<td>5, 6, 7</td>
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<tr>
<td><strong>Physics</strong></td>
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<tr>
<td>PHYS 1403, 1404</td>
<td>IB: Physics Standard Level</td>
<td>4, 5, 6, 7</td>
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<tr>
<td>PHYS 1408, 2401</td>
<td>IB: Physics Higher Level</td>
<td>4, 5, 6, 7</td>
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</tbody>
</table>
General Information

Psychology

PSY 1300  IB: Psychology Standard or Higher Level  5, 6, 7  3

Spanish

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, 3305  IB: Spanish B Standard or Higher Level  5  9
SPAN 2301, 2302, 3305, 3307*  IB: Spanish B Standard or Higher Level  6, 7  12
SPAN 3305, 3307*  IB: Spanish A1 or A2 Standard or Higher Level  6, 7  6
SPAN 3305  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 and TH A 3308 or 3309 or 3335 or DAN 3313  IB: Theater Arts Standard or Higher Level  6, 7  6

* 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.

Credit by Exam with SAT, ACT

<table>
<thead>
<tr>
<th>TTU Courses for Which Credit Can Be Earned</th>
<th>Standardized Test(s) Used</th>
<th>Minimum Score</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English</strong></td>
<td></td>
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<tr>
<td>ENGL 1301</td>
<td>SAT: Critical Reading and Writing (each)</td>
<td>610</td>
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<tr>
<td>ENGL 1301, 1302</td>
<td>SAT: Critical Reading and Writing (each)</td>
<td>700</td>
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<td>ENGL 1301, 1302</td>
<td>ACT: English Aptitude</td>
<td>31</td>
<td>6</td>
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<td><strong>History</strong></td>
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<td>HIST 2300</td>
<td>SAT Subject: United States History</td>
<td>600</td>
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<tr>
<td>HIST 2300, 2301</td>
<td>SAT Subject: United States History</td>
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<td><strong>Mathematics</strong></td>
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<td>MATH 1350</td>
<td>SAT Subject: Mathematics Level IC or IIC</td>
<td>670</td>
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</table>
Admission Requirements for Specific Colleges

Undergraduates who are accepted for admission to Texas Tech University will be enrolled in one of the university’s 10 colleges. In addition to the admission requirements for enrollment in the university, each college may have admission requirements that must be met before acceptance.

Admissions requirements for each of the colleges are as follows:

**College of Agricultural Sciences and Natural Resources**
- The admissions requirements of the college are the same as those for the university.

**College of Architecture**
- Freshman admissions requirements of the college are the same as those for the university.
- Freshmen choosing to major in architecture will be admitted to general architecture.
- Transfer students can be admitted to general architecture by transferring with a 3.0 cumulative GPA.
- Admission into the preprofessional program is competitive and based on a comprehensive review of the student’s portfolio, essay, statement of intent and GPA. The review to continue in the preprofessional program occurs at the end of the first year.

**College of Arts and Sciences**
- The admissions requirements of the college are the same as those for the university.
- Freshmen may be admitted into a general major known as Arts and Sciences Undeclared (ASUD) until they select the major degree program in which they intend to graduate. Students transferring from another institution with less than 60 hours (including coursework in progress) may choose ASUD. Students who have completed 60 or more hours must declare a major to be considered for admission.

**Rawls College of Business**
- Students wishing to major in any business discipline must meet assured admission criteria and will be admitted to a general business major, COBA (College of Business Administration), until completion of the Lower Division Business Core with grades of C or higher and attainment of a minimum 2.75 adjusted cumulative Texas Tech GPA. Once these requirements have been met, students may declare a major. For more information on majors, check the Rawls College of Business section of the catalog.
- Students transferring from any institution must have a minimum of 12 transferable hours and a cumulative 2.75 GPA or higher on transferable hours taken.

**College of Education**
- The admissions requirements of the college are the same as those for the university.
- Freshmen and transfer students wishing to become teachers may major in multidisciplinary studies. Degrees leading to certification in special education and bilingual education are also available. Students wishing to become science teachers (grades 8-12) may major in multidisciplinary science.

**College of Engineering**
- Students who major in the college or who major in another college and wish to become teachers must apply for admission to the Teacher Education Program. Requirements and applications are available online at www.educ.ttu.edu.

**College of Human Sciences**
- Students meeting the admissions requirements of the university will be admitted to any major within the college except mechanical engineering.
- For admission into mechanical engineering, freshmen must meet assured admission requirements. Students not meeting assured admission requirements but still wanting to pursue a degree in engineering will be admitted to Engineering Undecided. Once a student has earned a 2.5 GPA or higher, mechanical engineering can be declared as a major.

**Honors College**
- The admissions requirements for the Honors College majors are the same as those for the university.
- Students who are admitted to a major within another college at the university, but who wish to participate in the honors program, must submit an additional application to the Honors College. This application is available online at www.honr.ttu.edu.

**College of Mass Communications**
- The admissions requirements of the college are the same as those for the university.
- Students enrolling in or transferring into the school for the first time will be admitted as general mass communication students. To declare a major, a student must have a cumulative 2.75 in the first 15 hours taken at Texas Tech University.

**College of Visual and Performing Arts**
- The admissions requirements of the college are the same as those for the university.
- Students applying to communication design will be admitted to art undeclared and must apply and present a portfolio for admission to the major.
- Students applying to music will be admitted to music undeclared until their audition. Music majors must audition in their declared principal applied area with the appropriate faculty for acceptance into any music program.
- Students applying to the Bachelor of Fine Arts (BFA) program in theatre arts will be admitted initially to the Bachelor of Arts program. Entrance to the BFA program is by audition and interview, normally at the end of the sophomore year.
Registration

Don Wickard, Registrar
Office of the Registrar | 103 West Hall | Box 45015
Lubbock, TX 79409-5015 | T 806.742.3661
F 806.742.0355 | www.reg.ttu.edu

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 to “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 and supplying official documentation of name change. 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 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. An undergraduate who is permitted to enroll for graduate credit as described above but has not previously taken the Aptitude Test of the Gradu-
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 ended 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 117 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.

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

Stephanie Smith, Interim Managing Director
Student Business Services
301 West Hall | Box 41099 | Lubbock, TX 79409-1099
T 806.742.3272, toll free 866.774.9477
F 806.742.0445 | www.sbs.ttu.edu

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, rates, or other charges set forth herein
and subject to action by the Texas State Legislature, the Board of
Regents of the Texas Tech University System, or other authority as
the case may be.

Texas Tech University reserves the right to deny credit for coursework 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 arrangements by the due date will result in cancellation of the registration. Students who choose the payment option or who incur incidental fees during the semester must make full payment by the established due dates or be prohibited from registering for future terms until full payment is made. A student who is not 100% paid prior to the end of the term may be denied credit for coursework completed that semester or term.

Fee Payment. Payment arrangements must be made prior to the first class day. See our Web site at www.sbs.ttu.edu for payment due dates. Students will receive email billings prior to the due dates. Payment must reach Student Business Services by close of business on the due date. Cancellation for non-payment will occur after close of business on the due date. Students who are cancelled prior to the first class day for nonpayment will not be allowed to reregister for classes until open registration.

Students registering after the first due date will have until the 12th class day (4th class day in summer) to make payment arrangements. Students who are cancelled after the 12th class day (4th class day in summer) will be assessed late charges before being allowed to reregister.

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

Option 1: Payment of the total amount due (cash, check, credit card, 100% financial aid).

Option 2: Payment option plan (not available for summer terms). All charges, including housing and hospitality.

Option 3: Emergency enrollment loan (tuition and fees only).

Payment Option Plan (Option 2)
Texas State Law (Texas Education Code, Section 54.007a) allows students to pay tuition, fees, housing, and hospitality in three installments over the course of the semester. Students selecting this option are required to enroll in the payment option plan online through the eBill system. Additional instructions for enrolling in the payment option plan are available at www.sbs.ttu.edu.

The first installment of 50 percent of all tuition and fees is due at the time the student enrolls in the payment option plan. 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 15 and the third installment is due March 15. A service charge of $25 must be paid at the time the student enrolls in the plan in addition to the 50 percent down payment. 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 percent 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.

Emergency Enrollment Loan (Option 3)
Students may request an Emergency Enrollment Loan (EEL) for tuition and fees. Students selecting the EEL option prior to second cancellation are required to sign up online through the eBill system. After second cancellation, the EEL will only be available via paper form. The form may be obtained from Student Business Services in the Student Financial Center, located at 301 West Hall or online at www.sbs.ttu.edu. A service charge of $25 is due at the time the student requests the EEL option. Emergency Enrollment Loans are disbursed on a first come, first served basis until funds are depleted. Please visit the Web site at www.sbs.ttu.edu for additional information and payment dates.

Billings
Billings will be sent via email to all preregistered students one month prior to the due date. Students registering after preregistration or those making changes to their billing after the initial billing will receive weekly e-bill updates to their established email address or addresses. Monthly billings for incidental expenses will be emailed the 10th of each month and must be paid in full prior to the 1st of the following month to avoid late fees. Students are billed based on their location of residence and location of classes. Students must verify their location each term when registering and may request a location change anytime by entering the change at www.techsis.admin.ttu.edu/student.

General Payment Information
How to Pay. Payment can be made as follows:

• In Person. Students can pay in cash at the Student Business Services office located in the Student Financial Center at 301 West Hall or by 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.

• Mail. Cash should not be sent through the mail, and Texas Tech accepts no responsibility for cash sent by mail. Payments should
be mailed to PO. Box 41099, Lubbock, TX 79409 at least 5 to 7 days prior to the due date. Express mail your payments to Student Business Services, Texas Tech University, 301 West Hall, Box 41099, Lubbock, TX 79409-1099.

- **Web Credit Card, Debit Card or E-Check Payments.** Pay online at www.techsis.admin.ttu.edu/student.

**Account Information.** Tuition and fee information can be obtained at the following: www.techsis.admin.ttu.edu/student. The student's eRaider user ID and password will be required to view this information.

**Late Payment Fee.** A $50 per due date fee will be charged the first working day after the university-established due date. Postmarks will not be considered in assessing this charge.

**Late Registration Fee.** A $50 fee will be charged to registrations after classes have begun. This includes reregistration and re-enrollment in the event of cancellation.

**Returned Check Charge.** A fee will be 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.** A $200 fee will be charged for registering, reregistering, or re-enrolling after the 12th class day (4th class day in summer). The amount of the reinstatement fee is subject to change by action of the Board of Regents without prior notice.

**Refund Policy**

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 Direct Deposit Authorization form may be obtained from Student Business Services located in the Student Financial Center in 301 West Hall. Forms are also located online at www.sbs.ttu.edu.

**Refund Checks.** Paper 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 students to establish the address to which their refund check will be sent. A refund address may be established online at www.techsis.admin.ttu.edu/student. The selection criteria for address printing on the check will be as follows:

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

- **Fall or Spring Semester:**
  - 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%

- **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.** The 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 percent of the semester has been completed.

**Tuition Rates**

**Undergraduate Students**

Undergraduate students are charged tuition using a modified tuition structure designed to reward students for taking a greater number of semester credit hours. A complete explanation of the plan and its benefits is available at www.sbs.ttu.edu.

**Graduate Students**

A complete explanation of tuition and fees is available online at www.sbs.ttu.edu.

**Law Students**

A complete explanation of tuition and fees is available online at www.sbs.ttu.edu.

**Residency Status Determination**

For rules governing the determination of residency status as defined by the Texas Higher Education Coordinating Board, see www.thecb.state.tx.us/Rules/tac3.cfm?Chapter_ID=21&Subchapter=X.

**General Fees**

All fees are mandatory and authorized by state statute or the Board of Regents of the Texas Tech University System. Please see the Student Business Services Web site at www.sbs.ttu.edu for a complete list of current fees and amounts.

**Academic Fees**

- **Laboratory Fee:** Fee charged per lab section.
- **Information Technology Fee:** Per semester credit hour fee used to fund the current information technology infrastructure within the university.
- **Library Fee:** Per semester credit hour fee used to provide continued support for the acquisition and access of materials used for teaching and research.
- **Advising, Retention, and Placement Fees:** Per semester credit hour fees that are college specific and will allow the college to provide enhanced student advising, retention programs, and to provide funding for recruitment of potential employers for students graduating from programs within these colleges. Those charging this fee are the College of Agri-
cultural Sciences and Natural Resources, the Rawls College of Business, and the College of Engineering.

- **Cultural Activities Fee:** Per semester credit hour fee used to fund all aspects of the presentational elements for the College of Visual and Performing Arts so that all students are able to fully participate in the widely diverse presentations without an additional charge.
- **Course Fee:** Per semester credit hour not to exceed the cost of materials or services directly associated with the course.
- **Special Instruction Fee:** Fee charged for one-time cost associated with a particular or special section of a course.
- **Field Trip Fee:** Fee assessed to students for courses that require travel by students for field trips associated with the course.
- **Off-Campus Travel Fee:** Set fee that reflects the cost of faculty members traveling off campus to deliver a course.
- **Auditing Fee:** Students enrolled for fewer than 12 semester credit hours in a semester (6 hours in summer) must pay a 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.)
- **Law School Deposit:** Each accepted applicant is required to pay a deposit soon after being accepted to hold a place in the class.
- **Law School Academic Support and Advising Fee:** Per semester credit hour fee for all law school students to provide funds to implement a formal academic support system and to enhance student placement and career services at the School of Law.
- **Probation/Post Suspension Assistance Fee (XL-Strategies):** Fee that allows the XL: Strategies for Learning Program to offer sections of the non-credit study strategy assistance course required of freshmen on probation and first-return suspension students.
- **Library Fines:** Fee charged to cover costs ranging from late return fees to lost, stolen, or damaged interlibrary loan books.

**Student-Related Fees**

- **Student Services Fee:** Per semester credit hour fee to support student services.
- **Student Union Fee:** Per semester fee to support the Student Union.
- **Medical Services Fee:** Per semester fee to support medical services.
- **International Education Fee:** Per semester fee to support international education.
- **Student Recreation Center Fee:** Per semester fee to support Student Recreation Center.
- **Student Transportation Fee:** Per semester credit hour fee to support student transportation.
- **Identification Card Maintenance Fee:** Per semester fee to support identification card maintenance.
- **Identification Card Replacement Fee:** Per semester fee to support replacement of identification card.

**Other Fees**

- **Intercollegiate Athletic Fee:** Per semester fee to allow students to access the student seating for all home sporting events on a first-come basis.
- **Student Business Services Fee:** Per semester credit hour fee to support the student support areas of the university. Funds the Office of Admissions, Office of the Registrar, Student Business Services and New Student Relations.
- **Application Fee:** Varied fee charged for applications from prospective students.
- **New Student Orientation Fee:** A one-time fee for all incoming freshmen and transfer students to support the cost of orientation.

- **Diploma Replacement Fee:** Fee charged for printing and mailing a replacement diploma.
- **Diploma Insertion Fee:** Fee charged for reapplication for graduation.
- **Duplicate Copy of Registration Fee Receipt:** Fee charged for each duplicate copy of registration fee receipt.
- **Fee for Binding Theses and Dissertations:** Varied fees charged for official copies, personal copies, packets for enclosure and mailing charges.
- **Sponsored International Student Administrative Fee:** A semesterly fee assessed to each international student.
- **Education Abroad Fee:** A flat fee to support the Study Abroad Program.
- **International Student Fee:** A semesterly fee assessed to each non-immigrant international student.
- **Option Fee for Installment Payment of Tuition/Fees:** Service charge for processing and maintenance of the Payment Option Plan.
- **Late Charges on Emergency Loans:** A late fee assessed after the due date for emergency enrollment loans and charged monthly on outstanding emergency loan amounts.
- **Late Payment Fee:** Fee assessed the first working day after the billing due date for tuition and fees.
- **Late Registration Fee:** Fee assessed for registration after the first class day, including registration and re-enrollment in the event of cancellation.
- **Reinstatement Fee:** Fee assessed for registering, reregistering or re-enrolling after the 12th class day (4th class day in summer).
- **Returned Check Charge:** Fee charged for each check or webcheck that is returned from the bank unpaid.
- **Facilities Fee:** Per semester credit hour fee to support the cost of facilities maintenance and renewal at off-campus educational sites. Applies only to those students enrolled in courses at any of the following sites: TTU at Abilene, TTU at Amarillo, TTU at Fredericksburg, TTU at Highland Lakes, and TTU Center at Junction.
- **Parking Fee:** A fee is required for all vehicles parked on campus. A schedule of these fees may be obtained from University Parking Services.
- **Distance Learning/Electronic Instruction Fee:** A flat fee to support the Study with 130 or more doctoral hours (150 in the areas of clinical psychology and counseling psychology) will pay out-of-state tuition (full cost of education). These fees may not be waived by virtue of employment or scholarship.

**Tuition Rate for Excess Undergraduate Credit Hours.** Texas Education Code, Section 54.068, 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.

**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
General Information / Finances

Exemptions and Waivers

All exemptions or waivers have been authorized by statute in the Texas Education Code or through action of the Board of Regents of the Texas Tech University System. Texas Tech reserves the right, without notice in this or any other publication, to change, amend, add to or otherwise alter any or all exemptions and waivers subject to and in accordance with actions of the Texas State Legislature and/or the Board of Regents.

Waivers must be submitted no later than the 12th class day of a fall or spring semester or the 4th class day of a summer term. It is the student’s responsibility to check the student account prior to the 20th class day to ensure the application of a waiver. Under no circumstances will waivers be accepted after the 20th class day.

Texas Tech University reserves the right to apply exemptions and waivers subject to and in accordance with actions of the Texas State Legislature and/or the Board of Regents.

• **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 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 his 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.

• **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.

• **Early High School Graduate:** A student graduating prior to September 1, 2003, may be awarded $1,000 for tuition only. A student graduating after September 1, 2003, may be awarded:
  A. $2,000 if the student graduated in less than 36 months (an additional $1,000 will be awarded if the student also graduated with at least 15 hours college credit).
  B. $500 if the student graduated in more than 36 but less than 41 months (an additional $1,000 will be awarded if the student also graduated with at least 30 hours of college credit).
  C. $1,000 if the student graduated in more than 41 months but less than 45 months and also has at least 30 hours of college credit.

• **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 Aid 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.

• **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.

• **Prisoner of War:** Exempts a student from payment of tuition and required fees. The U.S. Department of Defense must have certified the 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.

• **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 (Hazlewood):** Exempts a student from payment of tuition and fees except the 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. Requires Registrar’s certification.

• **Veterans and Dependents (Partial Hazlewood):** 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.

• **Nursing Preceptor Program:** Exempts a student from payment of $500 of the total amount of resident tuition. Student must be a registered nurse and serving under a written preceptor agreement with an undergraduate professional nursing program as a clinical preceptor or is a child of someone meeting these qualifications.

• **Graduate Student Tuition/Fee Assistance Program:** Exempts, by Board of Regents action, the student from payment of certain fees. 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) as a benefits-eligible employee with employment of at least one-half time as a TA, RA, GA, or GPTI. For more information see www.gradschool.ttu.edu.

• **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.

• **Employee Tuition Assistance Program:** Full-time benefits-eligible employee with one continuous year of Texas Tech employment. Exempts, by Board of Regents action, the student from payment of tuition and fees for three semester credit hours each fall and spring term. By Board of Regents mandate, the student must maintain a 2.25 minimum cumulative GPA, must be in compliance with Texas Tech operating policies regarding employee enrollment and must be admitted to a degree or certification program.

Estimated expenses for undergraduate students can be found at www.sbs.ttu.edu. For questions or further information, contact Student Business Services at 806.742.3272 (toll free 866.774.9477) or email sbs@ttu.edu.
Student Financial Assistance

Becky Wilson, Director
Office of Student Financial Aid

301 West Hall | Box 45011 | Lubbock, TX 79409-5011
T 806.742.3681 | F 806.742.0880
finaid.advisor@ttu.edu | www.financialaid.ttu.edu

The Office of Student Financial Aid provides financial assistance in an effective and timely manner to students who would not be able to pursue a higher education without such assistance. 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 the cost of attending 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.

Types of Assistance. The university participates in the following financial assistance programs:

- Federal Work–Study Program
- Hinson–Hazlewood College Access Loan
- LEAP
- Parent Loans for Undergraduate Students
- Perkins Student Loan
- SLEAP
- Stafford Loans
- State Incentive Grant
- Red Raider Student Employment Center
- Supplemental Educational Opportunity Grants
- Texas B-On-Time Loan
- TEXAS Grant
- Texas Public Education Grants
- Texas Public Education–State Student Incentives Grant
- ACG – Academic Competitiveness Grant
- National SMART (Science and Mathematics Access to Retain Talent) Grant
- PLUS Loans for Graduate Students
- TTU Grant

Application Deadlines. 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 February 1.

Scholarship Information. Incoming students can submit applications at www.applytexas.org and current Texas Tech students can submit applications at www.financialaid.ttu.edu for consideration for merit scholarships, college and departmental scholarships, and need-based scholarships. Students may choose to further seek major-specific scholarships by contacting their department or college dean’s office.

Merit scholarships offered through the Honors College are awarded to entering freshmen based on SAT and ACT test scores and class rank of top 10 percent. Merit scholarships range in value from $1,000 to $12,700 per year. Contact the Honors College at www.honr.ttu.edu for more information on merit scholarships.

College and departmental scholarships are awarded to students from the 10 colleges and more than 100 academic departments at Texas Tech. They are awarded to entering and current students based on major, academics, leadership, community involvement, financial need, or any combination of these factors. College and departmental scholarships range in value from $200 to $5,000 per year. For more information on college and departmental scholarships, please contact those offices or go to www.depts.ttu.edu for a Web site listing of departments.

Need-based scholarships are awarded to entering and current students based on financial need, academics, major, leadership, county of residence, or any combination of these and other factors. Need-based scholarships range in value from $200 to $2,500 per year. For more information on need-based scholarships, go to www.financialaid.ttu.edu.

Students receiving scholarships from sources outside of Texas Tech University should submit scholarship checks to the following: Texas Tech University Scholarship Office, Box 45011, Lubbock, TX 79409-5011. External scholarships will be credited to tuition and fees and included in financial aid packages.

Academic Requirements for Assistance. Federal regulations require that all financial aid recipients maintain satisfactory academic progress. The guidelines applied in determining satisfactory academic progress are located on the financial aid Web site at www.financialaid.ttu.edu.

Assistance for Graduate Students. A number of fellowships are available for graduate work at Texas Tech, especially for doctoral work. These are usually offered directly through the departments. Many departments also support graduate students through teaching assistantships and research assistantships, both of which must be requested from the department concerned. Some departments also offer tuition scholarships. To enhance assistantship stipends, Chancellor’s Fellowships are available to qualified students through departmental nomination.

Applications must be completed and the student must first be accepted by the Graduate School before departments can act on requests for fellowships and assistantships and make Chancellor’s Fellowship nominations.

Other fellowships and financial assistance available through the Graduate School include the Cash Family Endowed Fellowships, the James Douglas and Mary Hazlewood Memorial Fellowships, the Helen DeVitt Jones Graduate Fellowships, the Arthur J. Waterman Scholarships, the Health and Social Service Fellowships, the Ronald E. McNair Post-Baccalaureate Achievement Program, Mr. and Mrs. Carl H. Gelin Emergency Loan Fund, and the Junction Summer Scholarship Program.

Competitive Graduate Dean’s Summer Research Awards are also available to assist students completing theses and dissertations. See www.ttu.edu/gradschool for details.

Although the university’s military service programs do not offer graduate courses or degrees, Texas Tech’s departments of Aerospace Studies (Air Force ROTC) and Military Science (Army ROTC) offer commissioning programs for which graduate students may qualify if their graduate studies will extend for three to four full semesters, not including summer school. Students who have successfully completed the Army ROTC Basic Course or who qualify through enlisted service may enter directly into the Advanced Program. Others may qualify by attending a five-week Army ROTC summer camp. There are no prerequisites for taking the Air Force ROTC upper division classes. Financial assistance is available for all qualified students in either program. For further information, inquire directly to the appropriate department.
Housing and Hospitality

Sean Duggan, Managing Director
Housing and Residence Life
108 Doak Hall | Box 41141 | Lubbock, TX 79409-1141
T 806.742.2661 | F 806.742.2696
housing@ttu.edu | www.housing.ttu.edu

Sam Bennett, Ed.D., Managing Director
Hospitality Services
114 Doak Hall | Box 41141 | Lubbock, TX 79409-1141
T 806.742.6666 | F 806.742.1336
hospitality@ttu.edu | www.depts.ttu.edu/hospitality

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 (Honors, Intensive Study, Substance-Free, and Learning Communities as well as upperclass–graduate areas) provides students with the opportunity to live with others of similar interests. The Carpenter/Wells Complex, which is arranged in three-bedroom townhouses or four-bedroom flats, offers private bedrooms in an apartment setting. Murray Hall offers suite-style accommodations to men and women. Most suites include four private bedrooms, a common living area, and shared bathrooms. Priority for assignment to Murray Hall will be given to students of sophomore or above classification. Gordon Hall, a suite-style residence, is designated as the Honors College residence hall. Ethernet computer connections are provided in each room. Other services include basic cable television service, coin-operated laundry and vending machines, and desk services.

An experienced and trained staff of Residence Life Coordinators and Community Advisors 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.

Freshman Residency Policy

Students have greater opportunities for a well-rounded educational experience when they live in a supervised residence hall designed for student living. Statistical data indicates that students who reside on campus perform better academically and are more likely to earn a college degree than those who live outside the university environment during their first years. Therefore, the university requires that all students having fewer than 30 hours of academic credit (not including credit by exam or dual credit) prior to the beginning of their first semester, live in the university residence halls. The residency requirement applies to all students registered for six or more credit hours (three or more credit hours during a summer session). However, those students registered for a full-time academic schedule (12 or more hours) will be given assignment priority. Registration for classes may be delayed pending verification of housing. All newly admitted students must either apply for on-campus housing or complete a request for exemption to the residence hall policy.

Requests for exemptions from the freshman residency requirement must be submitted to the Department of Housing and Residence Life no later than May 1 for fall or summer enrollment and November 1 for spring enrollment. Because of unforeseen changes in a student’s circumstances such as illness or other personal reasons, some petitions are considered after the above dates. Unless it is clearly established that illness or personal reasons were not known prior to the above dates and necessitate a student’s living off campus, students should not expect to be relieved of their residence hall contract. Students are encouraged to discuss such developments with the Department of Housing and Residence Life in Doak Hall. Subject to verification and authorization by the Department of Housing and Residence Life, students who meet one or more of the following criteria may be given permission to live off campus:

1. The student is residing and continues to reside in the established primary residence of her/his parents (legal guardian) if it is within a 60-mile radius of the university. The parents must have established their primary Lubbock residency at least six months prior to the request for an exemption. In order for an exemption to be considered, legal guardianship must have been established by a court of law at least one year prior to a request for an exemption.

2. The student presents sufficient evidence of an extreme financial hardship condition based on guidelines similar to those for Financial Aid.

3. The student is married or has dependent children.

4. The student is 21 years of age or over on or before the first day of classes 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. Credit earned by exam and hours received from concurrent high school hours are not considered.

6. A student is awarded a university scholarship by a department or college, which minimally includes the equivalence of the current academic school year’s room, board, tuition, fees, and textbooks (as estimated by the Student Financial Center). Upon prior approval from the awarding department or college, the student may opt to reside on campus or off campus. The department or college awarding the university scholar-
ship (current academic school year's room, board, tuition, fees, and textbooks) should provide verification in writing to the Department of Housing and Residence Life prior to the student's enrollment and/or re-enrollment to the university.

7. The student has served in the active military service as verified by a discharge certificate (DD214).

8. The student presents sufficient evidence of an extreme medical condition, as documented by her/his treating physician for which on-campus accommodations cannot be made.

9. The student presents evidence of an extreme or unusual hardship that will be intensified by living in the residence halls.

In conjunction with the university's support of academic integrity, evidence of deliberate falsification of information, data, or any materials submitted, or providing false or erroneous information in connection with an application for exemption from the freshman residency requirement will be grounds for disciplinary action. Such action may include, but is not limited to, revocation of a previously approved exemption, restitution of up to a semester's room and board fees, or probation, as determined by the Department of Student Judicial Services and in accordance with the Code of Student Conduct of Texas Tech University.

Students sign a Residence Hall Contract for the summer session, the academic year (fall and spring semesters), or 12 months (fall, spring and both summer sessions). 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 exemption from the freshman residency requirement 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.

Housing 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. To apply for housing at Texas Tech, students must first be admitted to the university. Students are encouraged to apply for housing as soon as they are notified of their admission status and receive and activate their eRaider account information. To complete the housing application, go to the Web site www.myhousing.ttu.edu and follow the instructions provided.

Students entering in the fall 2008 semester will have the opportunity to request specific room assignments. This process will begin during fall 2007 after current students have completed room assignment selections for the upcoming year. Spaces that are not reserved by current students will be available during the selection stage for new freshmen and transfer students. For information on the dates that applications are accepted, go to www.housing.ttu.edu.

Students entering the fall 2008 semester will have the opportunity to request specific room assignments. This process will begin during fall 2007 after current students have completed room assignment selections for the upcoming year. Spaces that are not reserved by current students will be available during the selection stage for new freshmen and transfer students. For information on the dates that applications are accepted, go to www.housing.ttu.edu.

Students entering the residence halls for the spring semester may only request a residence hall instead of a specific room because it will be necessary to assign these residents to spaces that are made available when a limited number of students vacate space at the end of the fall term. Room assignments for spring applicants will be made to available space based upon the date we receive the completed application. Students should notify the Department of Housing and Residence Life through the housing Web site if cancellation of the application becomes necessary. Information relating to cancellation is included with the 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 applicable residence hall contract.

Dining Plans

Hospitality Services provides a wide variety of dining options and dining plans. Dining Bucks Plans can be used in any of the residence dining halls, The Market food court at Stangel/Murdough, the Union Plaza food court, Student Union dining outlets or Sam's Place mini-markets. The five levels of Dining Buck Plans offer students the option of selecting the plan that best fits their individual appetite and needs. For example, the Red or Black or Diamond levels are best for those students who consistently eat three meals per day. These plans also have plenty of flexibility for the student who needs late-night options and will take maximum advantage of the extensive offerings of our mini-markets. The Platinum or Gold levels will appeal to students who eat most meals on campus and who take advantage of the mini-market and late-night offerings. The Silver level is a choice for students who may miss meals for various reasons or who work off campus. The room and board rates listed on this page include the Diamond Dining Bucks Plan.

Dining Bucks allow students the freedom of purchasing complete meals or between-meal snacks. Dining Bucks provide maximum flexibility for both cash operations and all-you-care-to-eat dining halls. Students will receive a preset amount of Dining Bucks per semester and their balance will decline as they purchase meals from any of the all-you-care-to-eat dining locations or food items from cash operations such as The Market food court at Stangel/Murdough, any of Sam's Place mini-markets, or any of the food outlets in the Student Union.

Students who live off campus may purchase a Commuter Dining Plan and eat in any Hospitality Services restaurant on campus. This includes any all-you-care-to-eat dining hall, the five Sam’s Place mini-markets, the Market at Stangel/Murdough, the Union Plaza Food Court, and the Student Union food outlets. Students can choose from one of three Commuter Dining Plans and receive a discount when they dine.

Room and Board Rates

Room and board fees are billed on a semester basis and included on the same billing account as tuition and fees. Payments must be made in accordance with the established payment due dates and amounts provided on the billing. If payments are not made by the established due date, a late fee will be assessed. For assistance, contact Student Financial Services at 806.742.3272. For questions about specific charges for room and board, contact Housing and Residence Life at 806.742.2661.

Rates for room and board are based on a per-person charge and are established by the Texas Tech University Board of Regents. The following room and board rates have been proposed for 2007-08 but are pending approval by the Board of Regents as this catalog goes to press. Rates are subject to change.

Non-Air-Conditioned Halls*

<table>
<thead>
<tr>
<th>Housing Type</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bledsoe</td>
<td>$6,394</td>
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Air-Conditioned Halls*

<table>
<thead>
<tr>
<th>Housing Type</th>
<th>Rate</th>
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<tbody>
<tr>
<td>Chitwood, Clement, Coleman, Gates, Horn, Hulen, Knapp, Murdough, Sneed, Stangel, Wall, Weymouth</td>
<td>$7,310</td>
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Air-Conditioned Suites

<table>
<thead>
<tr>
<th>Housing Type</th>
<th>Rate</th>
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</thead>
<tbody>
<tr>
<td>Gordon (2-bedroom)**</td>
<td>$7,576</td>
</tr>
<tr>
<td>Murray (4-bedroom, nine months)**</td>
<td>$8,491</td>
</tr>
<tr>
<td>Murray (4-bedroom, twelve months)**</td>
<td>$10,028</td>
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Carpenter/Wells Complex**

<table>
<thead>
<tr>
<th>Housing Type</th>
<th>Rate</th>
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<tbody>
<tr>
<td>3-Bedroom townhouse</td>
<td>$8,419</td>
</tr>
<tr>
<td>4-Bedroom flat</td>
<td>$8,113</td>
</tr>
</tbody>
</table>

* Rates are for a double room and the Diamond Dining Bucks Plan (excluding state and local taxes).

** Rates are for a single room and the Diamond Dining Bucks Plan (excluding state and local taxes).
Undergraduate Academics

William Marcy, Ph.D., PE, Provost and Senior Vice President for Academic Affairs

Office of the Provost | 104 Administration Building
Box 42019 | Lubbock, TX 79409-2019 | T 806.742.2184
F 806.742.1331 | www.depts.ttu.edu/provost

Students are responsible for their academic progress. 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 10 undergraduate instructional colleges of the university and are usually supervised by the departments in each college.

Requirements for undergraduate degrees are established at three different levels:
1. The university as a whole (Uniform Undergraduate Degree Requirements).
2. The college through which the degree is conferred.
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.

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 last 30 hours of coursework must be from Texas Tech. A Texas Tech resident student may apply coursework completed at a distance through the university’s Outreach and Distance Education (ODE) office toward a bachelor’s degree with prior approval of his or her academic dean. A student who has failed a course taken in residence may take that course or a degree-plan alternative through ODE with prior approval of the academic dean.

The term “residence” as a degree requirement should not be confused with “residence” in the state of Texas for tuition purposes. “Residence credit” 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 the program 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 catalog is published each 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.

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. A second bachelor’s degree sought by a student who did not graduate from a public Texas university must include the required Core Curriculum.

Multicultural Requirement

Every student must include at least one 3-hour multicultural course or its equivalent that focuses explicitly on the distinctive subcultures of the United States 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. All students should check with an advisor for appropriate courses. Courses that fulfill the university’s multicultural requirement are listed on the next page.

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, for example, by successful completion of 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.

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.
# Multicultural Requirement

These courses fulfill the university’s multicultural requirement. Select honors courses also may be available and may vary by semester.

<table>
<thead>
<tr>
<th>TTU Course</th>
<th>TCCNS*</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADM 3312</td>
<td>History and Philosophy of Dress</td>
</tr>
<tr>
<td>AGED 2300</td>
<td>Introduction to Agricultural Education</td>
</tr>
<tr>
<td>ANTH 1301</td>
<td>Understanding Multicultural America</td>
</tr>
<tr>
<td>ANTH 2302</td>
<td>Cultural Anthropology</td>
</tr>
<tr>
<td>ANTH 3325</td>
<td>Anthropological Folklore</td>
</tr>
<tr>
<td>ANTH 3331</td>
<td>Indians of North America</td>
</tr>
<tr>
<td>ANTH 3332</td>
<td>Peoples of Latin America</td>
</tr>
<tr>
<td>ANTH 3346</td>
<td>Ancient Civilizations of Middle and South America</td>
</tr>
<tr>
<td>ANTH 4372</td>
<td>Society and Culture of Mexico</td>
</tr>
<tr>
<td>ARCH 2311</td>
<td>History of World Architecture c. 3000 B.C. to c. 1600 A.D.</td>
</tr>
<tr>
<td>ARCH 2315</td>
<td>History of 18th, 19th, and 20th Century Architecture</td>
</tr>
<tr>
<td>ARCH 4311</td>
<td>Architecture in Nonwestern Societies</td>
</tr>
<tr>
<td>ART 1309</td>
<td>Art Appreciation</td>
</tr>
<tr>
<td>ART 1310</td>
<td>Art History Survey I</td>
</tr>
<tr>
<td>ART 2311</td>
<td>Art History Survey II</td>
</tr>
<tr>
<td>ART 3310</td>
<td>Greek and Roman Art</td>
</tr>
<tr>
<td>ART 3311</td>
<td>Native American Arts</td>
</tr>
<tr>
<td>ART 3315</td>
<td>Ancient Near Eastern and Egyptian Art</td>
</tr>
<tr>
<td>ART 3317</td>
<td>Baroque Art</td>
</tr>
<tr>
<td>ART 4315</td>
<td>The Arts of Pre-Columbian America</td>
</tr>
<tr>
<td>CLAS 3303</td>
<td>Sports and Public Spectacles in the Ancient World</td>
</tr>
<tr>
<td>CLAS 3320</td>
<td>The World of Greece</td>
</tr>
<tr>
<td>CLAS 3335</td>
<td>The World of Rome</td>
</tr>
<tr>
<td>CLAS 3350</td>
<td>Comparative Mythology</td>
</tr>
<tr>
<td>C LT 4305</td>
<td>Contemporary Theories of Cultural Meaning</td>
</tr>
<tr>
<td>COMS 3311</td>
<td>Rhetoric in Western Thought</td>
</tr>
<tr>
<td>COMS 3332</td>
<td>Intercultural Communication</td>
</tr>
<tr>
<td>DAN 4301</td>
<td>World Dance Forms</td>
</tr>
<tr>
<td>EDSE 2300</td>
<td>Schools, Society, and Diversity</td>
</tr>
<tr>
<td>ENGL 2371</td>
<td>Language in a Multicultural America</td>
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<tr>
<td>ENGL 3335</td>
<td>Ancient and Medieval World Literature</td>
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<tr>
<td>ENGL 3336</td>
<td>Early Modern World Literature</td>
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<td>ENGL 3337</td>
<td>Modern and Contemporary World Literature</td>
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<td>ENGL 3387</td>
<td>Multicultural Literatures of America</td>
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<td>ENGL 3390</td>
<td>Literatures of the Southwest</td>
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<td>ESS 3354</td>
<td>Sport in World Cultures</td>
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<td>FIN 4328</td>
<td>International Finance</td>
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<td>FREN 3930</td>
<td>French Culture</td>
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<td>FREN 4322</td>
<td>Civilisation Française: French Civilization</td>
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<tr>
<td>GEOG 2300</td>
<td>Introduction to Human Geography</td>
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<td>GEOG 2351</td>
<td>Regional Geography of the World</td>
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<td>GEOG 3360</td>
<td>Technology and the Human Landscape</td>
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<td>GEOG 3363</td>
<td>Geography of South America</td>
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<td>GEOG 3364</td>
<td>Geography of Middle America</td>
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<td>GERM 3301</td>
<td>German Culture and Society</td>
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<td>GERM 3306</td>
<td>Contemporary Germany</td>
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<td>GERM 3312</td>
<td>Literature of the Holocaust</td>
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<tr>
<td>GERM 3331</td>
<td>Northern Myths and Legends</td>
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<tr>
<td>GERM 4305</td>
<td>Readings in German Language and Literature</td>
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<tr>
<td>HDPS 3350</td>
<td>Development in Cross-Cultural Perspective</td>
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<tr>
<td>HIST 2322</td>
<td>World History to 1500</td>
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<td>HIST 3306</td>
<td>African American History to 1877</td>
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<td>HIST 3307</td>
<td>African American History from 1877 to Present</td>
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<td>Social and Cultural History of the Southwest</td>
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<td>HIST 3312</td>
<td>Spanish-Speaking Peoples in the United States</td>
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<td>HIST 3318</td>
<td>The Plains Indians</td>
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<td>HIST 3325</td>
<td>History of Mexican Americans in the United States</td>
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<td>HIST 3326</td>
<td>History of Native Americans in the U.S.</td>
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<td>HIST 3381</td>
<td>Colonial Latin America</td>
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<td>HIST 3382</td>
<td>Modern Latin America</td>
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<tr>
<td>HIST 3384</td>
<td>History of Brazil</td>
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<td>HIST 3389</td>
<td>The British Empire, 1783 to Present</td>
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<td>HIST 4318</td>
<td>Colonial Mexico and the Spanish Borderlands</td>
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<td>HIST 4391</td>
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<td>HIST 4393</td>
<td>Modern China</td>
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<td>HIST 4394</td>
<td>Modern Japan</td>
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<td>HIST 4395</td>
<td>Modern Vietnam</td>
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<td>Latin America and Iberia: An Interdisciplinary Introduction</td>
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<td>LAIS 3300</td>
<td>Topics in Latin American and Iberian Studies</td>
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<td>International Politics</td>
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<td>Governments of Mexico and the Caribbean</td>
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<td>POLS 3376</td>
<td>Asian Governments and Politics</td>
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<td>PSY 3398</td>
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<td>RHIM 3350</td>
<td>Travel and Tourism</td>
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<td>Russian Civilization through Literature in the 19th Century</td>
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<td>20th Century Russian Civilization through Literature in Translation</td>
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<td>RUSN 3304</td>
<td>Russian Culture</td>
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<td>RUSN 4301</td>
<td>The Great Russian Realists: Tolstoy and Dostoevsky</td>
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<td>RUSN 4302</td>
<td>Contemporary Russian Literature in Translation</td>
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<td>Civilización Hispánica: Hispanic Civilization</td>
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<td>Social Work with Diverse Populations</td>
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<td>History of Theatre I</td>
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<td>TH A 3309</td>
<td>History of Theatre II</td>
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<td>TURK 3307</td>
<td>Turkish Culture</td>
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<tr>
<td>W S 4327</td>
<td>Gender, Race, and Class in U.S. Law (HIST 4327)</td>
</tr>
</tbody>
</table>

* For an explanation of TCCNS (Texas Common Course Numbering System), see page 18.
The foreign language requirement may be met through credit by examination, described elsewhere in this catalog. Students who petition to complete the foreign language requirement via study abroad through a non-Texas Tech affiliated program must agree to have foreign language credit applied to their degrees based on scores on a language placement test administered by the language laboratory after their 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.

Core Curriculum

The Core Curriculum is designed to give all graduating students the opportunity to acquire a general knowledge of study areas 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, mathematics, 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, sciences, social sciences, mathematics, humanities, visual and performing arts, and the tools of language and thought.”

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 United States or on the culture of another society (see previous page). 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 Core Curriculum courses that follow their degree plans. The following courses have been approved for the Core Curriculum:

A. Communication: 9 hours

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**
   - ENGL 1301 Essentials of College Rhetoric
   - ENGL 1302 Advanced College Rhetoric

   In addition to the 6 hours of composition and rhetoric, a writing-across-the-curriculum requirement includes 6 hours of writing intensive courses in each degree plan (see criteria on page 49).

2. Oral—Speech: 3 hours

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

   **TTU Course**
   - CIAS 2300 Communication, Civility and Ethics
   - CH E 2306 Exposition of Technical Information
   - COMS 1300 Introduction to Communication Studies
   - COMS 2300 Public Speaking
   - COMS 3358 Business and Professional Communication
   - MGT 3373 Managerial Communication
   - PETR 3308 Engineering Communications

   **TCCNS**
   - SPCH 1311
   - SPCH 1315

B. Mathematics: Logic, college-level algebra or equivalent, finite math, statistics, calculus or above: 6 hours (at least 3 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**
   - AAEC 3401 Agricultural Statistics
   - I E 3341 Engineering Statistics
   - MATH—All mathematics courses above 1300, except 3430
   - MATH 1320 (College Algebra) or MATH 1300 or MATH 1420 (only 1 of the 3); or any math course 1321 or higher, except 3430
   - MUTH 3303 Form, Analysis, and Synthesis
   - PHIL 2310 Logic
   - PHIL 4310 Advanced Logic
   - PSY 3400 Statistical Methods
   - SOC 3391 Introduction to Social Research

   **TCCNS**
   - MATH 1314

C. Natural Science: 8 hours (related 1-hour laboratory course must accompany 3-hour lecture courses)

   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**
   - ANSC 3404 Consumer Selection and Utilization of Meat Products
   - ANTH 2300 Physical Anthropology
   - ANTH 2100 Physical Anthropology Laboratory
   - ASTR 1400 Solar System Astronomy
   - ASTR 1401 Stellar Astronomy
   - ATMO 1300 Introduction to Atmospheric Science
   - ATMO 1100 Atmospheric Science Laboratory
   - BIOL 1305 Ecology and Environmental Problems
   - BIOL 1113 Environmental Problems Lab
   - BIOL 1401 Biology of Plants
   - BIOL 1402 Biology of Animals

   **TCCNS**
   - ANTH 2301
   - ANTH 2101
   - PHYS 1411
   - PHYS 1412
   - GEOL 1347
   - GEOL 1447
   - GEOL 1447
   - GEOL 1447
   - BIOL 2106
   - BIOL 2106
   - BIOL 2406
   - BIOL 2406
   - ENVR 1301
   - ENVR 1401
   - ENVR 1401
   - BIOL 1411
   - BIOL 1413

* See page 18 for an explanation of TCCNS (Texas Common Course Numbering System).
* * Does not include lab course.
General Information / Undergraduate Academics

<table>
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<th>Course Code</th>
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<td>I E 4363</td>
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<td>PHYS 1406</td>
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<td>MUSI 3341</td>
<td>Introduction to Technology for Musicians</td>
<td>MUSI 3341</td>
<td>EM&amp;C 3300</td>
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</table>

**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.
### E. Humanities: 3 hours

The objective of the humanities in a core curriculum is to expand the student's 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.

<table>
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<tr>
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<tbody>
<tr>
<td>ADM 3312 History and Philosophy of Dress</td>
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<tr>
<td>ANTH 3223 Religion of Culture</td>
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<tr>
<td>ANTH 3325 Anthropological Folklore</td>
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<tr>
<td>ANTH 3346 Ancient Civilizations of Middle and South America</td>
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<td>ANTH 3351 Language and Culture</td>
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<td>ARCH — All architecture history courses</td>
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<tr>
<td>CLS 3302 Classical Mythology</td>
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<tr>
<td>CLS 3303 Sports and Public Spectacles in the Ancient World</td>
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<tr>
<td>CLS 3320 The World of Greece</td>
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<td>CLS 3330 The World of Rome</td>
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<td>CLS 3350 Comparative Mythology</td>
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<td>C LT 4305 Contemporary Theories of Cultural Meaning</td>
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<tr>
<td>COMS 3311 Rhetoric in Western Thought</td>
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<tr>
<td>COMS 3318 Persuasion and Social Movements</td>
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<tr>
<td>ENGR 4392 Engineering Ethics and Its Impact on Society</td>
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<td>HONS 1301 Honors First-Year Seminar in Humanities</td>
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<td>HONS 3301 Honors Seminar in Humanities</td>
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<td>HUM 2301 Introduction to Humanities</td>
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<td>JOUR 3350 History of American Journalism</td>
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<td>LAIS 2300 Latin America and Iberia: An Interdisciplinary Introduction</td>
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<tr>
<td>LAIS 3300 Topics in Latin American and Iberian Studies</td>
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<td>LAIS 4300 Seminar in Latin American and Iberian Studies</td>
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<td>LARC 3302 Dev. of Landscape Architecture</td>
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<td>NHH 1301 The Natural History Tradition</td>
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<td>PHIL 2300 Beginning Philosophy</td>
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<td>PHIL 2320 Introduction to Ethics</td>
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<td>PHIL 2350 World Religions and Philosophy</td>
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<td>PHIL 3303 Modern European Philosophy</td>
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<td>PHIL 3304 Existentialism and Phenomenology</td>
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<td>PHIL 3320 Introduction to Political Philosophy (POLS 3331)*</td>
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<td>PHIL 3322 Biomedical Ethics</td>
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<td>PHIL 3324 Philosophy of Religion</td>
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<td>VPA 3301 Critical Issues in Arts and Culture</td>
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<td>W S 2300 Women's Studies</td>
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<td>W S 3341 Women in European Civilization (HIST 3341)*</td>
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<td>W S 4327 Gender, Race, and Class in U.S. Law (HIST 4327)*</td>
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<tr>
<td>W S 4374 Love, Death, and Magic in Europe 1500–1800 (HIST 4374)*</td>
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</table>

*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 the student's 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.

<table>
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<tr>
<th>TTU Course</th>
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<td>ARCH 1441 Architectural Delineation I</td>
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<td>ART 1303 Drawing Introduction</td>
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<td>ART 1309 Art Appreciation</td>
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<td>ART 1310 Art History Survey I</td>
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<td>DAN 4301 World Dance Forms</td>
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<td>EM&amp;C 3308 Visual Communications</td>
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<td>HONS 1304 Honors First-Year Sem. in Fine Arts</td>
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<td>HONS 2302 Honors Experience in Fine Arts II</td>
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<td>HONS 3304 Honors Seminar in Fine Arts</td>
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<td>LARC 1401 Landscape Architecture Drawing and Drafting</td>
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*Cross-listed courses: Cannot receive credit for both courses.
The objective of a social and behavioral science component of a core curriculum is to increase the student’s 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 | HIST 1301
HIST 2301 | HIST 1302
HIST 3310 | HIST 3323*
W S 3323 | 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 | GOVT 2301
POLS 2302 | GOVT 2304

3. Individual or Group Behavior: 3 hours

AAEC 2305 | Fundamentals of Agricultural and Applied Economics
ADRS 3325 | Family Dynamics of Addiction and Recovery
ADV 4313 | International Advertising
ANTH 1301 | Understanding Multicultural America
ANTH 2301 | Introduction to Archeology
ANTH 2302 | Cultural Anthropology
ANTH 3305 | Anthropological Linguistics
ANTH 3306 | Women in Culture and Society

*Cross-listed courses: Cannot receive credit for both courses.
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<td>SOC 1320</td>
<td>Current Social Problems</td>
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*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 to 29 hours completed; sophomore, 30 to 59; junior, 60 to 89; senior, 90 to completion of degree requirements. The junior and senior ranks 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 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. Students are considered to be making satisfactory progress toward a degree objective when they complete at least 30 credit hours in each calendar/academic year, achieve a GPA of 2.00 or higher in each semester, and maintain an overall GPA 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 take without specific permission of the academic dean is as follows: 19 hours per long semester, 16 hours per long semester for students on scholastic probation, and 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 would 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 following colleges or schools of the university: Agricultural Sciences and Natural Resources, Architecture, Arts and Sciences, Business Administration, Education, Engineering, Honors, Human Sciences, Mass Communications, 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:

- Concurrent enrollment
- Pass–fail option
- Credit by examination
- Withdrawal and honorable dismissal from the university
- Graduation requirements and candidacy for a degree
- Applicability of transfer credits to degree programs

**Dropping a Course.** Dropping a course delays graduation. Students should plan their schedules and make a serious commitment to academic success. When it becomes necessary to drop a course, the procedure varies according to the following:

1. **Undergraduate and Graduate Students Entering Before Fall 2004**

   Students who entered Texas Tech before fall 2004 may officially drop a course through the 45th class day of a long semester or the 15th class day of a summer term and receive
the grade of W regardless of their progress in the class. The student must initiate the drop by following the procedures listed at www.techsis.admin.ttu.edu/student. Further information can be obtained at 806.742.3661.

2. First-Time Freshmen and Transfer Students Entering Fall 2004 or Thereafter
   • First-time freshmen entering in the fall of 2004 or thereafter have four W's permitting them to drop a maximum of four courses during their time at Texas Tech. Any student who entered as a first-time freshman and did not drop a course during the pursuit of a degree may take one course without paying institutional tuition (as opposed to state tuition) during the last semester of that degree program.
   • Transfer students have three W's permitting them to drop a maximum of three courses.
   • Students may use their limited drops (W's) up to the 45th class day of the long semester and the 15th class day of the short summer terms. Students must initiate a drop by following the procedures listed on the Web for Students at www.techsis.admin.ttu.edu/student. Further information can be obtained at 806.742.3661.
   • The student-initiated drop/add period at the start of the term lies outside these limits in regard to the number of drops.
   • After all W's have been used by a student who was either a first-time freshman (4 drops) or a transfer (3 drops) entering in the fall of 2004 or thereafter, the student must complete all courses taken and receive a grade.
   • Students who find it necessary to withdraw completely from the university before the end of the semester will not have to use their W's for withdrawal. See Operating Procedure (OP) 34.05.

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 ensure that they can meet all enrollment requirements. Students should then complete an academic transfer form in the receiving dean's office. The last day to change colleges is the first day of open registration for the next semester.

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 Residence Life.

Administrative Holds. Failure to meet certain university obligations may result in an administrative hold being placed on a student's access to such university procedures as registration, release of transcripts, and course add/drops. Administrative holds may be placed on a student's record until resolution of such problems as an outstanding debt to the university, disciplinary action, academic suspension, incomplete admission forms or substandard test scores. 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 student records may be obtained online at www.techsis.admin.ttu.edu/student.

Class Attendance. Responsibility for class attendance rests with the student. Instructors set an attendance policy for each course they teach. The university expects regular and punctual attendance at all scheduled classes, and the university reserves the right to deal at any time with individual cases of nonattendance. 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 the event of excessive absences, the student must visit the instructor to discuss his or her status in the course. If the drop occurs before the 45th class day of the long semester or the 15th class day of the summer term, the instructor will assign a grade of W (see sections on dropping a course and on withdrawal). If the drop occurs after that time period, the student will receive a grade of F. This drop can be initiated by the instructor but must be formally executed by the academic dean. 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 of the trip. 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 Handbook and the Residence Halls Handbook.

Absence Due to Religious Observance. A student may be excused from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused for this purpose may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused.

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 confirming 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 of Student Conduct for details of this policy.

“Scholastic dishonesty” includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

“Cheating” includes, but is not limited to, the following:
1. Copying from another student's test paper.
2. Using materials during a test that have not been authorized by the person giving the test.
3. Failing to comply with instructions given by the person administering the test.
4. Possessing materials during a test that are not authorized by the person giving the test, such as class notes or specifically designed “crib notes.” The presence of textbooks constitutes a violation only if they have been specifically prohibited by the person administering the test.
5. Using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program.
6. Collaborating with or seeking aid or receiving assistance from another student or individual during a test or in conjunction with an assignment without authority.
7. Discussing the contents of an examination with another student who will take the examination.
8. Divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructor has designated that the examination is not to be removed from the examination room or not to be returned to or kept by the student.
9. Substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment.
10. Paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program, or information about an unadministered test, test key, homework solution, or computer program.
11. Falsifying research data, laboratory reports, and/or other academic work offered for credit.
12. Taking, keeping, misplacing, or damaging the property of the university, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct.

"Plagiarism" includes, but is not limited to, the appropriation of, buying, receiving as a gift, or obtaining by any means material that is attributable in whole or in part to another source, including words, ideas, illustrations, structure, computer code, other expression and media, and presenting that material as one's own academic work being offered for credit. Any student who fails to give credit for quotations or for an essentially identical expression of material taken from books, encyclopedias, magazines, Internet documents, reference works or from the themes, reports, or other writings of a fellow student is guilty of plagiarism.

"Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.

"Falsifying academic records" includes, but is not limited to, altering or assisting in the altering of any official record of the university, and/or submitting false information or omitting requested information that is required for or related to any academic record of the university. Academic records include, but are not limited to, applications for admission, the awarding of a degree, grade reports, test papers, registration materials, grade change forms, and reporting forms used by the Office of the Registrar. A former student who engages in such conduct is subject to a bar against readmission, revocation of a degree, and withdrawal of a diploma.

"Misrepresenting facts" to the university or an agent of the university, but is not limited to, providing false grades or resumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual; or providing false or misleading information in an effort to injure another student academically or financially.

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 syllabi relating to behavioral expectations in the classroom.

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 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 presented to 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; and W, withdrawal. 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. Prior to assigning the I, the instructor must fill out a form provided on the Web for Faculty stating the reasons beyond the student's control for granting the I and the conditions to be met to remove the I. Both the student and faculty member must sign the form. The I may be replaced by an R if the course is repeated, and the appropriate grade will be given for the second registration. The grade of I will revert to an F after one calendar year if the conditions for completing the I as stated on the form have not been met.

For students who entered Texas Tech prior to fall 2004, a grade of W will be given for a course officially dropped through the 45th class day of a long semester or the 15th class day of a summer term. Regardless of a student's grade status at the time a course is dropped, only a W will appear on the student's records.

First-year freshmen entering Texas Tech in the fall of 2004 or thereafter will be allowed only four W's to be used at any time during their college career to drop a course through the 45th class day of a long semester or the 15th class day of a summer term.

Transfer students entering in the fall of 2004 or thereafter will be allowed only three W's. Regardless of a student's grade status at the time a course is dropped, only a W will appear on the student's records. When a student who entered Texas Tech in the fall of 2004 or thereafter has used all allotted W's, the student must complete every course taken and receive a grade.

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

When a faculty member determines according to Part II B 2 of the Student Handbook that academic dishonesty has occurred and assigns a grade of F for the course, the grade of F will stand as a final grade, notwithstanding a subsequent withdrawal from the course by the student. A faculty member shall notify the registrar of the intention to assign a grade of F for the course, in addition to the notifications of the department chairperson and the student's academic dean, as provided in Part II B 2 of the Student Handbook.

Grade Appeals. A student who wishes to appeal a final course grade should first consult with the course instructor, then with the department chairperson, and then, if the matter remains unresolved, 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 student Web site or as a hard copy. Students wishing to receive a hard copy should update their grading address on the student Web site.

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
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Credit value of the course in which the grade is received. All other grades have no assigned grade points.

**Grade Point Averages.** Only courses taken and grades received at this university are used in calculating 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 for an F, 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.

**Grade Replacement Policy.** Students may apply to the registrar for grade replacement after a Texas Tech course has been retaken at Texas Tech and prior to their graduation. The grade replacement is for the purpose of providing an adjusted grade point average. 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 designation.

The most recent passing grade will replace all previous grades in that course. First-time freshmen and transfer students who entered Texas Tech in the fall of 2004 or thereafter will not be allowed to repeat a course in which they have earned a grade of C or above. When students repeat a course after having received a grade of D or F, they can repeat the course for credit only one time at the normal tuition rate. Students repeating a course more than once after having received a grade of D or F must pay an additional fee.

A student placed on academic 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 academic dean.

After the current semester academic procedures have been completed, students can initiate a grade replacement by obtaining an application in the Office of the Registrar or online at www.depts.ttu.edu/registrar. Students may apply after the passing grade is received in the replacing course. Students wanting to replace a grade received before fall 1983 should contact their academic dean’s office.

**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 (IS 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. The names of students taking a course pass-fail will not be made known to the instructor.

Students wishing to take a course pass-fail should contact the academic dean’s office of the college in which they are enrolled. Students must declare their intent to take a course pass-fail no later than the last day on which a 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 grade option. A grade of F received on a course taken pass-fail will be computed into the grade point average.

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.

University students may take elective courses through Outreach and Distance Education (ODE) on a pass-fail basis under the same regulations governing resident students. ODE 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 ODE college courses must adhere to the provisions outlined in the Undergraduate/Graduate Catalog concerning the Texas Success Initiative (formerly known as TASP). For additional TSI information, contact the Texas Success Initiative Office in Admissions, 116 West Hall.
Credit by Examination for Matriculated Students. Matriculated students may be given the opportunity to receive credit by special examination in courses in which proficiency may be determined by examination. Credit earned by examination is the same as credit earned by successfully passing the equivalent Texas Tech course. A grade of Pass (P) will be given to those students earning course credit by examination, but no credit by exam will be recorded until a student officially completes 12 credit hours at Texas Tech. For more detailed information, see “Undergraduate Credit by Examination” in the Admission to the University section of this catalog.

Writing Intensive Course Requirement. Each degree program will include six hours of writing intensive coursework in the specific area of study. The fundamental premise of a writing intensive course is that students will write often. Furthermore, student writing will be critiqued by the instructor, and the student will rewrite, based on that critique.

The writing intensive course emphasizes the process as well as the products of writing. Faculty use writing to reinforce learning. Students write to formulate ideas, raise questions, and express considered opinions. Students write to analyze, integrate, and synthesize as well as to communicate.

Graduation Requirements. Graduation requirements include a minimum adjusted or cumulative GPA of 2.0 for all courses, including repeated courses, attempted in the degree program in which students seek graduation. 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. Detailed graduation rates are available from the Office of Communications and Marketing.

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 103 West Hall. Students under the age of 18 should first consult their parents and secure from them a written statement that they have permission to withdraw. Although a W will be recorded for all classes that semester or term, these W’s will not be counted as one of the four W’s permitted for first-time freshmen or one of the three W’s permitted for transfer students who entered in the fall of 2004 or thereafter.

A student who withdraws from a residence course with a grade of W may complete the course through the Division of Outreach and Distance Education (ODE) by registering for correspondence work, provided the course is regularly offered through ODE and provided the instructor who taught the residence course is assigned as the instructor.

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

Undergraduate Honors

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 enrolled in the South Plains College (SPC) Spanish courses taught on the TTU campus (SPCS 1501, 1502) may count the SPC hours to accumulate enough hours to qualify for the President’s Honor Roll and the Dean’s Honor List if they would otherwise qualify for those honors without the SPC courses. The SPC grades are not sufficient to advance students to qualify for the President’s or Dean’s list, but the courses can be used to acquire the necessary number of hours (minimum of 12) to qualify and thus keep the student eligible.

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 Laude; 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 that half must include the senior year. Only grades earned at Texas Tech are counted, and only the cumulative GPA is used to calculate honors.

Those who graduate from the Honors College after acquiring at least 24 Honors credit hours (including two Honors seminars) graduate with "Honors," a distinction that is noted on diplomas and transcripts and receives special recognition at graduation ceremonies. Those who also complete a senior thesis consisting of 6 additional hours graduate with "Highest Honors."

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

Texas Tech offers one of the best honors programs in the nation for highly motivated and academically talented students who want to maximize their college education. Students must make special application to be considered for admission to the Honors College either as an entering freshman or as a continuing Texas Tech or transfer student. With the exception of those in the natural history and humanities major and the arts and letters major, students accepted into the Honors College are also enrolled concurrently in the college that houses their major area of study.

Honor Societies and Organizations. The honorary societies listed here represent more than 20 university organizations open to undergraduates who qualify as a result of their academic achievements. To view a comprehensive listing of all honorary societies at Texas Tech, visit www.depts.ttu.edu/centerforcampuslife/StuOrg/

- Phi Beta Kappa — Eligibility is limited to upper-division students with outstanding records of achievement in what the Phi Beta Kappa Society designates as the liberal arts and sciences. Phi Beta Kappa is the oldest honorary society in America and has only three chapters at public universities in Texas.

- Mortar Board — Mortar Board is a national honor society that recognizes college seniors for distinguished ability and achievement in scholarship, leadership, and service. The Texas Tech chapter is limited to 50 of the top seniors on campus, and members are chosen each spring.

- Omicron Delta Kappa — Omicron Delta Kappa is a national leadership honor society in which student membership candidates must rank in theupper 35 percent in scholarship of their school or college and must show leadership in at least one of five areas: scholarship; athletics; campus or community service, social and religious activities, and campus government; journalism, speech, and the mass media; and creative and performing arts.

- Phi Kappa Phi — The Honor Society of Phi Kappa Phi is the nation’s oldest all-discipline honor society. Membership is by invitation only to the top 7.5 percent of second semester juniors and the top 10 percent of seniors and graduate students.

- National Society of Collegiate Scholars — The National Society of Collegiate Scholars is an honors organization recognizing outstanding academic achievement among first- and second-year students who rank in the top 20th percentile of their class and have a minimum GPA of 3.4. Chapters are involved in service to their campus and local communities as well as scholastic and social activities.
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- **Honor Societies for Freshmen** — Alpha Lambda Delta and Phi Eta Sigma are national honor societies that recognize scholastic attainment during the freshman year. Membership is offered to students who earn a grade point average of at least 3.50 during the first semester of their freshman year while completing at least 12 semester hours of coursework. Students who do not qualify during the first semester may become eligible by earning a grade point average of at least 3.50 for the first two semesters of work combined.

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**Undergraduate Academic Status Policy**

**Good Standing, Probation, Suspension**

Texas Tech University has four possible academic status levels for students:

1. **Academic Good Standing** — The student has an adjusted GPA at or above 2.0 and is eligible for all extracurricular activities as governed by the rules of the specific activity. Some academic and extracurricular programs have requirements over and above the adjusted GPA of 2.0. Students who have an adjusted GPA above 2.0 but whose current semester GPA is below 2.0 should seek advice from their academic dean. Cumulative GPA will determine academic status for those students without an adjusted GPA.

2. **Academic Probation.** A student whose adjusted GPA falls below 2.0 will be placed on “academic 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 semester GPA is below 2.0 in his/her first semester must complete XL 0201, Strategies for Learning, the next semester and pay a nonrefundable course fee. A student on academic probation remains eligible for all extracurricular activities as governed by the rules of the specific activity.

3. **Continued Academic 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 academic probation” until the adjusted GPA is 2.0 or higher. A student remains eligible for all extracurricular activities as governed by the rules of the specific activity subject to the conditions established by the academic dean or committee granting permission to attend classes. Failure to meet the conditions established will result in academic suspension.

4. **Academic 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 for courses completed at that time raise the adjusted GPA above 2.0. The student must initiate grade replacements in the Registrar’s Office. Any courses that are completed after probation or suspension 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 academic dean. A student on academic suspension is not permitted to take classes and is ineligible to participate in any extracurricular activities once the suspension is posted. If the circumstances that resulted in the suspension are mitigating, an appeal may be directed to the appropriate academic dean or committee. The student is ineligible to participate in extracurricular activities during the appeal process. If the appeal results in granting the student permission to attend classes, then the student will be reinstated and placed on continued academic probation until the student meets the conditions established by the academic dean or committee granting the appeal and/or achieves an adjusted GPA at or above 2.0.

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**Reinstatement, Readmission After Suspension**

Students wishing to return to the university after suspension will be treated as former students for reinstatement purposes and must provide copies of transcripts for all academic work completed at institutions other than Texas Tech. Application materials and deadlines for former Texas Tech students are available at www.depts.ttu.edu/formertech.

Reinstatement granted after suspension will be probationary, and students who apply for reinstatement after suspension will be required to undergo any testing and/or counseling considered necessary by the academic dean.

**Conditions of Return from a First Academic Suspension.**

Students on academic 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 are reinstated after first suspension will be required to complete XL 0201 Strategies for Learning successfully during their first semester of reinstatement and pay a nonrefundable course fee (see www.depts.ttu.edu/passxl). Attendance in XL 0201 is mandatory from the first day of classes. Absences accumulate from the beginning of the semester. Three absences will result in a student being withdrawn from the university.

Students who are reinstated from a first suspension and desire to change colleges to pursue a different major or career goal must (1) contact the associate academic dean of the college to which they desire to transfer and ensure they meet enrollment requirements, (2) complete an academic transfer form in the receiving dean’s office, and (3) complete the process by the last day to change colleges, which is the first day of open registration for the next semester.

**Subsequent Suspensions and Conditions of Return.** Students who have received more than one suspension may seek readmission after two semesters. Both summer terms are considered to be a semester for the purpose of serving a suspension. A student’s academic dean must approve readmission after the student has been suspended for a second or subsequent time. Readmission is rare and solely at the discretion of the academic dean. Permission to change colleges following a second or subsequent suspension is granted infrequently, only when good cause has been shown, and then by agreement of the deans of both affected colleges.

If a student is readmitted following a second or subsequent suspension, the student must meet with the academic dean or advisor upon return to the university to determine an appropriate plan for academic success. The student’s dean may require that a student sign a contract indicating his or her intention to complete that plan. A student who fails to adhere to the terms of such a contract may be withdrawn from the university and/or barred from enrolling in other Texas Tech courses until the terms of the contract are successfully completed.

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**Course Descriptions for Strategies for Learning (XL)**

- **0201. Strategies for Learning (0:3:0).** Explores strategies for academic success and personal management and techniques for implementation of those strategies. The class meets 3 hours a week for 11 weeks.

- **0201. Strategies for Learning (0:6:0).** Explores strategies for academic success and personal management and techniques for implementation of those strategies. The class meets 6 hours a week for seven weeks.
Graduate-On-Time (GOT): Saves You Money and Time

The university’s Graduate-On-Time (GOT) program will not only help students save money but also will help catapult them into a career or graduate/professional program as soon as possible. More than 70 percent of degrees at Texas Tech are designated to take four years to complete. These degree programs require only a minimum semester course load of 15 to 16 hours. Students who spend five and a half years getting a four-year degree also will spend more than $26,300 extra for a college education.

The GOT contract is a two-party agreement signed by the student and the Provost of Texas Tech University. The contract is offered to first-year freshmen to help ensure that their college investment will be used as efficiently as possible. Only students who enter the university directly from high school are eligible to sign the agreement and participate in the GOT contract. First-year students will receive information about the Graduate-On-Time initiative during summer orientation and academic advising sessions. Students may sign a letter of intent during summer orientation. Because of the importance of choosing a major and deciding on a course of study, the contract must be signed in the office of the student’s academic advisor anytime prior to advance registration during the second long semester of classes (early April for students who enter in the fall).

Both the student and the student’s advisor will develop an educational plan to assist the student in graduating within the specified time period. The plan will include, but is not limited to:

- A semester-by-semester plan of course sequencing.
- A time line for making informed decisions leading to a choice of major and career.
- A means of making efficient use of academic support services available to the student.

**STUDENT COMMITMENT**

By signing the GOT contract, the student agrees to the following conditions:

- Choose a major that qualifies for the GOT contract.
- Be admitted to a major (or change majors) in time to meet the sequence of required courses in the contract period.
- Stay on track by earning a minimum of 30 credit hours per academic calendar year (September to August).
- Avoid being placed on academic suspension.
- Maintain a current email address, local mailing address, and other contact information. Make changes to these addresses at anytime on www.techsis.admin.ttu.edu/students.
- Meet with the academic program advisor at least once each semester to discuss progress toward graduation and identify courses needed the next semester.
- Register during the advanced registration period.
- Enroll in and successfully complete the courses needed for the chosen academic program of study with the understanding that certain courses must be taken during specific terms to allow for appropriate progress toward the degree and timely graduation.
- Accept responsibility for monitoring academic progress so that the student can stay on schedule for graduating on time. This includes filing a degree plan and applying for graduation by the stipulated deadlines.
- Keep documentation to prove that all these requirements were satisfied.
- Avoid cancellation of an advanced course registration schedule by meeting all payment obligations to Texas Tech.
- Accept responsibility for timely annual application for all necessary financial assistance.
- Notify the academic program advisor immediately if graduation appears in danger of being delayed.

**TEXAS TECH COMMITMENT**

Texas Tech University assures GOT Contract participants that they will be able to enroll in courses that permit graduation in the specified and mutually agreed upon time period. The plan does not apply to programs combining a baccalaureate and master’s degree. Texas Tech will ensure the availability of courses. In the event the university does not satisfy the commitments made herein and the student would be unable to graduate due to the unavailability of a course(s), the department and college offering the major will choose one of the following options as the exclusive remedy for GOT contract signers:

- Allow the student to graduate in the specified and mutually agreed upon time period, substituting a different course(s) or independent study assignment for the unavailable course(s) as determined by the department and college offering the major.
- Allow the student to graduate on time by waiving the requirement to be met by the department or college offering the major.
- Allow the unavailability of a course(s) to delay the student from graduating on time, in which case the university will pay the institutional tuition and fees for the student to take the unavailable course(s) at Texas Tech University in a later term.

For more information on the GOT program and its benefits, refer to www.graduateontime.ttu.edu or contact Senior Administrator—University Academic Advising, Room 8 Holden Hall, 806.742.0876.
Under the conditions of the GOT contract, students majoring in the areas listed below pledge to complete their degrees within the time period specified. Texas Tech, in turn, pledges to ensure that the courses needed by a participating student are available. In the event that the courses are not available and the student may experience a delay in graduation, the student's academic program advisor will seek a substitute or an exemption. If neither of these measures is possible and the student must exceed the specified time limit, Texas Tech will not charge institutional tuition and fees for the course(s) needed to complete the degree.

<table>
<thead>
<tr>
<th>MAJOR*</th>
<th>YEARS TO COMPLETE DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agricultural Sciences and Natural Resources</strong>&lt;br&gt;Agribusiness (joint)</td>
<td>4</td>
</tr>
<tr>
<td>Agriculture and Applied Economics</td>
<td>4</td>
</tr>
<tr>
<td>Agricultural and Applied Economics/ General Business (dual)</td>
<td>5 (144 hrs.)</td>
</tr>
<tr>
<td>Agricultural Communications</td>
<td>4</td>
</tr>
<tr>
<td>Agronomy</td>
<td>4</td>
</tr>
<tr>
<td>Animal Science</td>
<td>4</td>
</tr>
<tr>
<td>Environmental Conservation of Natural Resources</td>
<td>4</td>
</tr>
<tr>
<td>Food Science</td>
<td>4.5 (134 hrs.)</td>
</tr>
<tr>
<td>Horticulture</td>
<td>4</td>
</tr>
<tr>
<td>Interdisciplinary Agriculture (Agric. Education)</td>
<td>4</td>
</tr>
<tr>
<td>Landscape Architecture</td>
<td>5 (148 hrs.)</td>
</tr>
<tr>
<td>Plant Biotechnology</td>
<td>4</td>
</tr>
<tr>
<td>Range Management</td>
<td>4</td>
</tr>
<tr>
<td>Wildlife and Fisheries Management</td>
<td>4</td>
</tr>
<tr>
<td><strong>Architecture</strong>&lt;br&gt;Architecture (Bachelor of Science)</td>
<td>4.5 (131 hrs.)</td>
</tr>
<tr>
<td>Architecture/General Business (dual)</td>
<td>5.5 (161 hrs.)</td>
</tr>
<tr>
<td>Architecture/Civil Engineering (dual)</td>
<td>5.5 (177 hrs.)</td>
</tr>
<tr>
<td><strong>Arts and Sciences</strong>&lt;br&gt;Anthropology</td>
<td>4</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>4.5 (132-134)</td>
</tr>
<tr>
<td>Biology</td>
<td>4</td>
</tr>
<tr>
<td>Cell and Molecular Biology</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry</td>
<td>4.5 (129-134)</td>
</tr>
<tr>
<td>Classics (Classical Languages)</td>
<td>4</td>
</tr>
<tr>
<td>Communication Studies</td>
<td>4</td>
</tr>
<tr>
<td>Economics</td>
<td>4</td>
</tr>
<tr>
<td>English</td>
<td>4</td>
</tr>
<tr>
<td>Exercise and Sport Sciences</td>
<td>4</td>
</tr>
<tr>
<td>French</td>
<td>4</td>
</tr>
<tr>
<td>General Studies</td>
<td>4</td>
</tr>
<tr>
<td>Geography</td>
<td>4</td>
</tr>
<tr>
<td>Geosciences with geology or geophysics concentrations</td>
<td>4</td>
</tr>
<tr>
<td>German</td>
<td>4</td>
</tr>
<tr>
<td>Health (Community)</td>
<td>4</td>
</tr>
<tr>
<td>Health (School)</td>
<td>4.5 (133 hrs.)</td>
</tr>
<tr>
<td>History</td>
<td>4</td>
</tr>
<tr>
<td>International Economics</td>
<td>4</td>
</tr>
<tr>
<td>Latin American/Iberian Studies</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics/Computer Science (dual)</td>
<td>5.5 (159 hrs.)</td>
</tr>
<tr>
<td>Mathematics</td>
<td>4</td>
</tr>
<tr>
<td>Microbiology</td>
<td>4</td>
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<tr>
<td>Philosophy</td>
<td>4</td>
</tr>
<tr>
<td>Physics</td>
<td>4.5 (132 hrs.)</td>
</tr>
<tr>
<td>Political Science</td>
<td>4</td>
</tr>
<tr>
<td>Psychology</td>
<td>4</td>
</tr>
<tr>
<td>Russian Language and Area Studies</td>
<td>4</td>
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<tr>
<td>Social Work</td>
<td>4</td>
</tr>
<tr>
<td>Sociology</td>
<td>4</td>
</tr>
<tr>
<td>Spanish</td>
<td>4</td>
</tr>
<tr>
<td>Zoology</td>
<td>4</td>
</tr>
<tr>
<td><strong>Business</strong>&lt;br&gt;Accounting</td>
<td>4</td>
</tr>
<tr>
<td>Agribusiness (joint)</td>
<td>4</td>
</tr>
<tr>
<td>Agric. and Applied Eco./Gen. Business (dual)</td>
<td>4.5 (132 hrs.)</td>
</tr>
<tr>
<td>Architecture/General Business (dual)</td>
<td>5.5 (161 hrs.)</td>
</tr>
<tr>
<td>Economics</td>
<td>4</td>
</tr>
<tr>
<td>Energy Commerce</td>
<td>4</td>
</tr>
<tr>
<td>Finance</td>
<td>4</td>
</tr>
<tr>
<td>General Business</td>
<td>4</td>
</tr>
<tr>
<td>International Business</td>
<td>4</td>
</tr>
<tr>
<td>Management</td>
<td>4</td>
</tr>
<tr>
<td>Management Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>Marketing</td>
<td>4</td>
</tr>
<tr>
<td><strong>Education</strong>&lt;br&gt;Multidisciplinary Studies</td>
<td>4.5 (126-139)</td>
</tr>
<tr>
<td>Multidisciplinary Science</td>
<td>4.5 (129)</td>
</tr>
<tr>
<td><strong>Engineering</strong>&lt;br&gt;Chemical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Chemical Engineering/Computer Science (dual)</td>
<td>5.5 (155 hrs.)</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Civil Engineering/Architecture (dual)</td>
<td>5.5 (178 hrs.)</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>4.5 (129 hrs.)</td>
</tr>
<tr>
<td>Computer Science</td>
<td>4</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>4.5 (129 hrs.)</td>
</tr>
<tr>
<td>Electrical Engineering/Computer Science (dual)</td>
<td>5.5 (150 hrs.)</td>
</tr>
<tr>
<td>Engineering Physics</td>
<td>4.5 (125-133)</td>
</tr>
<tr>
<td>Engineering Technology with concentrations in either construction, electrical/electronics, or mechanical&lt;br&gt;Environmental Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Industrial Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics/Computer Science (dual)</td>
<td>5.5 (159 hrs.)</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Petroleum Engineering</td>
<td>4.5 (129 hrs.)</td>
</tr>
<tr>
<td><strong>Honors College</strong>&lt;br&gt;Natural History and Humanities</td>
<td>4</td>
</tr>
<tr>
<td>Honors Arts and Letters</td>
<td>4</td>
</tr>
<tr>
<td><strong>Human Sciences</strong>&lt;br&gt;Apparel Design and Manufacturing</td>
<td>4</td>
</tr>
<tr>
<td>Community, Family and Addiction Services</td>
<td>4</td>
</tr>
<tr>
<td>Early Childhood</td>
<td>4.5 (137 hrs.)</td>
</tr>
<tr>
<td>Family and Consumer Sciences</td>
<td>4</td>
</tr>
<tr>
<td>Human Development and Family Studies</td>
<td>4</td>
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<tr>
<td>Interior Design</td>
<td>4</td>
</tr>
<tr>
<td>Nutritional Sciences</td>
<td>4</td>
</tr>
<tr>
<td>Personal Financial Planning</td>
<td>4</td>
</tr>
<tr>
<td>Restaurant, Hotel, and Institutional Management</td>
<td>4</td>
</tr>
<tr>
<td>Retailing</td>
<td>4</td>
</tr>
<tr>
<td><strong>Mass Communications</strong>&lt;br&gt;Advertising</td>
<td>4</td>
</tr>
<tr>
<td>Electronic Media and Communications</td>
<td>4</td>
</tr>
<tr>
<td>Journalism with broadcasting, news editorial or online concentrations</td>
<td>4</td>
</tr>
<tr>
<td>Photocommunications</td>
<td>4</td>
</tr>
<tr>
<td>Public Relations</td>
<td>4</td>
</tr>
<tr>
<td><strong>Visual and Performing Arts</strong>&lt;br&gt;Art History</td>
<td>4</td>
</tr>
<tr>
<td>Dance</td>
<td>4</td>
</tr>
<tr>
<td>Communication Design (Art)</td>
<td>4</td>
</tr>
<tr>
<td>General Studies</td>
<td>4</td>
</tr>
<tr>
<td>Music (Bachelor of Arts)</td>
<td>4</td>
</tr>
<tr>
<td>Music (Teacher Certification)</td>
<td>4.5 (137-138)</td>
</tr>
<tr>
<td>Music Composition</td>
<td>4.5 (137 hrs.)</td>
</tr>
<tr>
<td>Music Performance</td>
<td>4.5 (122-135)</td>
</tr>
<tr>
<td>Music Theory</td>
<td>4.5 (134 hrs.)</td>
</tr>
<tr>
<td>Studio Art</td>
<td>4</td>
</tr>
<tr>
<td>Theatre Arts (Bachelor of Arts)</td>
<td>4</td>
</tr>
<tr>
<td>Theatre Arts with acting or design/technology concentrations</td>
<td>4.5 (130 min.)</td>
</tr>
<tr>
<td>Visual Studies (Art Teacher Certification)</td>
<td>4.5 (135 hrs.)</td>
</tr>
</tbody>
</table>

* 4-year degree plans = 120 to 128 hours<br>Teacher certification requires additional hours.
Academic Support Services

Academic Advising

Texas Tech University believes in the potential of each student to succeed and values their pursuit of excellence. Therefore, Texas Tech provides academic advisors and advising programs to inform, guide, empower, and encourage students from the time of their new student orientation until graduation. While students are responsible for their academic progress, academic advisors assist with educational planning that leads to timely matriculation and graduation. Students’ success requires their commitment to and investment in an action-oriented decision-making process. This fosters intellectual and personal development which results in informed and invested educational choices.

**Students’ Responsibilities.** The advising process is designed to prepare students to be leaders and decision-makers. To that end, students are responsible for being active and invested participants, especially by:

- Investing the time and energy necessary to meet and exceed the highest standards of academic excellence.
- Engaging in a mutually respectful working relationship with their academic advisor(s).
- Making and keeping a minimum of one appointment per semester with the appropriate academic advisor(s).
- Creating a class schedule based on deliberate examination of educational, career, and life goals.
- Coordinating and communicating with the university by reading and responding to all official communications.
- Reading and acting in accordance with official university documents related to institutional procedures, degree program requirements, standards of academic progress, and the code of student conduct.
- Completing required paperwork and adhering to university deadlines.
- Discussing the Graduate-On-Time (GOT) contract program with an academic advisor to determine its merits to their educational plan and, when deemed appropriate, signing a contract in the academic advisor’s office before the university-stipulated deadline.
- Keeping advisors informed about circumstances that could influence academic performance (e.g., work schedules, illness, family situations).
- Notifying advisors immediately when receiving a course grade of D or F, when dropping a course, or when withdrawing from the university.
- Exploring and, as appropriate, utilizing available student resources.
- Investigating opportunities to study abroad, conduct undergraduate research, and participate in service learning.
- Documenting and maintaining records of all university interactions.

**Advisors’ Responsibilities.** Advising is a process through which students examine themselves, explore their opportunities, determine their best-fit educational paths, and develop action plans for achieving their university degrees. Academic advisors facilitate this process. Additionally, advisors advocate for students in the university system, serve as resource brokers for the university community, and help students thrive in a large university setting. Academic advising programs identify relevant and desirable student learning and development outcomes and provide programs and services that encourage the achievement of those outcomes. The most important outcome of academic advising is self-discovery: each student’s educational goals are matched with offerings of the university. To that end, advisors are responsible for:

- Reinforcing student self-direction and self-sufficiency.
- Assisting students in assessing their interests and abilities, making decisions, and developing short-term and long-term plans to meet their objectives.
- Discussing and clarifying educational, career, and life goals to assist in the development of a meaningful educational plan.
- Assisting students to understand the educational context within which they are enrolled.
- Assisting students to make the best academic decisions possible by encouraging identification and assessment of alternatives and consideration of the consequences of their decisions.
- Instructing students in the use of course selection tools and registration systems.

**Student Growth and Development**

- Interpreting university policies, procedures, and standards, and clarifying requirements for both general education and their chosen academic major.
- Providing current, accurate, and timely information, especially for the selection of appropriate courses and other educational experiences.
- Making advising conferences available to students each academic term in a format that is convenient to the student (i.e., in person, by telephone, or online, individually or in groups).
- Allowing an appropriate amount of time for students to discuss plans, programs, courses, academic progress, and other subjects related to their educational programs.

**Accuracy and Availability**

- Directing students with educational, career or personal concerns, or skill/learning deficiencies to resources and programs on the campus when necessary.
- Making students aware of and referring to educational, institutional, and community resources and services (e.g., internship, study abroad, honors, service-learning, research opportunities).
- Identifying environmental conditions that may positively or negatively influence student academic achievement and proposing interventions that may neutralize negative conditions.
- Evaluating and monitoring student academic progress and the impact on achievement of goals.
- Collecting and distributing relevant data about student needs, preferences, aspirations, and performance for use in institutional decisions and policy.

Departments in each academic college provide academic advisors who specialize in specific majors. Texas Tech also values students who have yet to choose an academic major or who are uncertain of their educational direction. The Texas Tech University Advising Center serves these students through retention-based academic advising and conducts university-wide transition programs to facilitate the persistence and success of all students.

When faced with a difficult question or challenging situation, the University Advising Center is always a good place to begin. From here, it’s possible.

**Contact information:** Texas Tech University Advising Center, 79 Holden Hall, T 806.742.2189, F 806.742.2200, advising@ttu.edu, www.advising.ttu.edu

Academic Testing Services

Academic Testing Services provides a wide variety of standardized exams integral to the admissions, enrollment, matriculation, and graduation/certification/licensure requirements of Texas Tech, the state, and specific employers recruiting TTU graduates. These standardized exams meet specific requirement needs for undergraduate, graduate, and professional career path programs at Texas Tech. Exams administered include, but are not limited to: Accuplacer, ACT, GRE, LSAT, MAT, MCAT, MPRE, NICET, OKAP, PCAT, PRAXIS, Texas Educator Certification (formerly TeXes), THEA, and TOEFL.

Note: Students may choose to take the International English Language Testing System (IELTS) rather than the TOEFL. However, IELTS is not administered on the Texas Tech campus. A full list of test centers is available on the IELTS Web site at www.ielts.org. Information regarding scores accepted at Texas Tech for both the TOELF and the IELTS can be found in the Admissions section of this catalog and the Graduate School section.

CLEP exams for course credit and Distance Education/Distance Learning exams may expedite the matriculation time of enrolled students. All exams are administered in a proctored, standardized testing environment.

Contact Information: Pat McConnel, Director; 214 West Hall; 806.742.3671; testing@ttu.edu; www.depts.ttu.edu/testing

Cross-Cultural Academic Advancement Center

The Cross-Cultural Academic Advancement Center was established to help ensure that all Texas Tech students are prepared for a pluralistic society. The center focuses on retention activities; referral services; and collaboration with enrollment management, academic departments, and student affairs. The objectives of the center include:

Affirming identity

• Through the sponsorship of culturally sensitive programming and in concert with academically relevant support services, the center supports an environment that “maximizes the intellectual and leadership potential of [our] students.”

Building community

• By affording students a physical location in which to meet their need for affirmation and encourage their willingness to engage with others across lines of difference.

• By serving as a respite for students to engage and affirm their own sense of identity and that of others.

Cultivating academic achievement

• By carefully coordinating and tracking referral services (i.e., existent counseling service, ACTT, PEGASUS Program, McNair Scholars Program, Career Center, college/departmental advising, and PASS).

• By monitoring targeted students (i.e., those likely to leave Texas Tech prematurely).

• By establishing opportunities to participate in graduate and undergraduate research.

• By establishing academic apprentice relationships with faculty through the Lauro Cavazos and Ophelia Powell-Malone Mentoring Program (Mentor Tech).

Contact Information: Cross-Cultural Academic Advancement Center, 806.742.8682

DISCOVERY! Program

Begin with the DISCOVERY! Major Map.

Choosing a major is a big decision, but it doesn’t have to be difficult. DISCOVERY! helps you find your direction by examining your values, skills, interests, and abilities. Once you have identified your direction, you will be ready to determine which academic majors are the best fit for you. Through a deliberate study of yourself and one-to-one meetings with an academic advisor, you will narrow the range of academic alternatives and be equipped to choose a compatible career.

Then, the DISCOVERY! Academic Physical will help you:

• Determine your style of procrastination, learn how to manage it, and begin to take action.

• Understand how to learn in a classroom in which your preferred learning style is different from the instructor’s style of teaching.

• Identify your Top 10 Survival Strategies, and design your action plan for success.

DISCOVERY! will help you find your direction to an amazing university experience, an on-time graduation, and a future career field that will be fulfilling and rewarding.

Contact Information: 79 Holden Hall, 806.742.2189, discovery@ttu.edu, www.discovery.ttu.edu

Marsha Sharp Center for Student Athletes

The Marsha Sharp Center for Student Athletes is a facility to support the academic success of student athletes at Texas Tech. The 15,500-square-foot facility has a hall of honor to recognize the academic performance of student athletes, two classrooms, two computer labs, tutoring rooms, a study lounge, and administrative offices.

In addition to enhancing academic performance of student athletes, the center also serves as the primary facility to administer the Life Skills program for student athletes at the university. It is also a meeting facility for the Student Athlete Advisory Committee and for other athletic and campus meetings and events.

McNair Scholars Program

The McNair Scholars Program prepares first generation college undergraduate students from low-income backgrounds for doctoral study. McNair Scholars participate in undergraduate research in partnership with a faculty mentor in a specific field of study. The undergraduate is also paired with a graduate student mentor whose personal and professional interests are similar to those of the McNair Scholar. The graduate student mentor guides the exploration of graduate-level education and assists with the application process.

McNair Scholars attend workshops, conduct research, and receive scholarship and travel funds for academic and professional development. Scholars work with departmental advisors for course selection and meet one-to-one with McNair staff for assistance with such issues as financial, cultural, and personal needs extending beyond the traditional advising relationship.

Contact Information: 341 Administration Building, 806.742.1095, mcnairscholars@ttu.edu, www.mcnairscholars.ttu.edu

PASS Learning Center

Under direction of Programs for Academic Support Services (PASS), the Learning Center provides students with a wide variety of services designed to increase their study strategy effectiveness and enable them to get the most out of their education. In-house and online peer tutoring, a self-help computer lab, and individual academic skills counseling provide learning assistance.
Computer software, printed materials, and video/audio tapes are available in mathematics, English, study skills, and other specific subject areas. Test preparation guides are available for the GRE, GMAT, TOEFL, LSAT, and MCAT. Additionally, study skills and other academic topic presentations are available to faculty and campus organizations. 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 and 8 a.m. to 5 p.m. Friday. Summer hours are 8 a.m. to 5 p.m. Monday through Friday. Departmental information is available at www.iaff.ttu.edu.

PASS Supplemental Instruction

Under direction of Programs for Academic Support Services (PASS), Supplemental Instruction (SI) offers regularly scheduled modified forms of discussion sections in a select number of historically difficult courses. Persistent attendance with SI has proven to assist students in increasing their final course grade as compared to students who do not use SI. For a full list of courses that include SI, go to www.pass.ttu.edu and follow the Supplemental Instruction link.

PEGASUS Program for First Generation College Students

If neither of your parents earned a four-year (bachelor’s) degree, then the PEGASUS Program exists for you. You are set to accomplish what no one in your immediate family has ever done. As a member of PEGASUS, you will have access to an advisor who works specifically with first generation college (FGC) students and to an academic advisor who specializes in your major. You can also take advantage of POWER-Up Workshops to achieve scholarship and unprecedented success in the following important areas:

- Transitioning to the university environment
- Securing financial aid
- Improving study skills
- Managing your time and style of procrastination
- Overcoming personal struggles

You will benefit from one-to-one relationships with FGC PEGASUS Mentors. They have successfully navigated the challenges you are now facing and are ready to help you excel at Texas Tech. Their friendships and experiences will provide meaningful help and real-world advice on how to be successful during your first year of college.

PEGASUS is built around giving back to others. As a member, you are proof of access to higher education for FGC families, foster children, and other historically underrepresented populations. From conducting outreach events to building ongoing relationships, PEGASUS students inspire, inform, and nurture pre-college students to prepare for and enroll in college.

FGC advisors, peer mentors, and PEGASUS members engage in community where common goals will encourage your own academic efforts. PEGASUS students who qualify as scholars also receive scholarships.

Contact information: 79 Holden Hall, 806.742.2189, www.fgc.ttu.edu, pegasus@ttu.edu

Study Abroad Program

In today’s globalized job market, students who participate in a study abroad program or internship are more marketable and competitive in almost every field. An overseas education allows students to gain an international perspective that helps them to function objectively and comfortably in the global marketplace while earning credit towards their degree. Scholarships and financial aid are available to offset additional costs.

The Study Abroad Program, part of the Office of International Affairs, coordinates all study abroad programs for Texas Tech University. The Texas Tech Sevilla Center offers students the opportunity to take Texas Tech catalog classes and receive direct TTU credit since the center serves as a satellite campus in Spain. Students may elect a concentrated Spanish program (equivalent of four semesters of Spanish in one semester) or take other courses that meet general education requirements. Students in Sevilla live with host families and are immersed in the language and culture.

Texas Tech students may participate in a program that ranges from two weeks to a full year. Many departments offer their own faculty-led study abroad programs during the summer. The Study Abroad Program assists students with choosing a program that fits their individual needs and provides guidance during the application and orientation process. All Texas Tech students participating in the university’s Study Abroad Program must go through the Office of International Affairs.

Students participating in any Texas Tech study abroad programs are qualified to apply for the “Study Abroad Competitive Scholarship” and remain eligible for Texas Tech financial aid to help finance the curriculum.

Contact information: Sandra Crosier, Director; Study Abroad Program; International Cultural Center; 806.742.3667; www.iaff.ttu.edu (click on “Study Abroad”)

TECHniques Center

The TECHniques Center is a fee-for-service academic enhancement program that is the only one of its kind in Texas. The program provides supplemental academic support services to meet the needs and promote the retention of undergraduate students with documented evidence of learning disabilities and attention deficit disorders.

Student participants are undergraduates majoring in degree programs that they have chosen. They are expected to meet the same academic requirements and have the same curricula as other students. Qualified staff members work closely with students enrolled in this program to provide support, assistance, and guidance. Certified tutors provide interactive study skills and content tutoring and are trained to work with each student’s individual learning style.

Contact information: 250 West Hall, 806.742.1822, www.techniques.ttu.edu, techniques.center@ttu.edu

University Writing Center

The University Writing Center assists writers during the various stages of their writing projects without regard to their status as either a student (undergraduate or graduate) or faculty member, their level of proficiency, or their particular college.

The center strives to create a supportive environment in which writers and their tutors can work effectively one-to-one either in person or on-screen and online. In addition, the center trains writing tutors to become knowledgeable, effective readers of and responders to texts from various disciplines. Tutors read and respond to texts at any stage of the writing process and address sentence-level issues as well as global issues involving focus, organization, and development. They do not proofread or edit documents for clients but help clients learn to proofread and edit for themselves.

The University Writing Center is located in Room 175 of the English/Philosophy Complex and is open from 9 a.m. to 5 p.m. each weekday. Writers may call the center to make appointments for 30-minute sessions. They also may bring their writing projects as either a hard copy or texts on discs. To submit texts electronically, writers may access the University Writing Center through its Web site at http://english.ttu.edu/uwc01.
Student Services

Alumni Association

Started in 1927 by the first graduating class, the Texas Tech Alumni Association has grown to a membership of more than 27,000 alumni, current students, and friends of Texas Tech.

Located in the Merket Alumni Center, which is part of the original President's Home, the Alumni 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. In addition, the organization sponsors many on-campus activities, including class reunions, homecoming events, and pregame parties at the Frazier Alumni Pavilion.

A national and international alumni chapter network helps members stay in touch with the university. The association also publishes the bimonthly Texas Techsan magazine, hosts ceremonies for The Official Texas Tech Class Ring, and provides lapel pins to all graduates at commencement.

Contact information: 806.742.3641, www.TexasTechAlumni.org

Campus Bus System

The campus bus system, funded by the Transportation 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 of the campus. Off-campus service runs from 7:25 a.m. until 6:45 p.m. Students can access Citibus van shuttle service from 7 p.m. until 3:18 a.m. by calling 806.742.NITE (6483). Students also can ride any Citibus route in Lubbock using their Texas Tech ID.

Career Center

The Career 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. To assist students who are undecided about their majors or career plans, the Career Center offers career assessment inventories, including Strong Interest Inventory, MBTI, and Strengths Quest Program.

The Career Center also sponsors various job fairs that include graduate and professional schools, school districts, summer camps, and two large career expos. Resources at the Career Center include job listings, internship information, mock interviews, resume assistance, and an extensive career library. Counselors are available to meet individually with students to discuss job-related topics (resumes, cover letters, etc.).

Contact information: Career Center, 150 Wiggins Complex, 806.742.2210

Center for Campus Life

The Center for Campus Life promotes each student's learning experience by offering programs and services that focus on student transitions, connecting students to the university and campus traditions, establishing positive relationships with students and families, and maintaining collaborative partnerships. The center offers services related to the following areas:

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

Contact information: Center for Campus Life, 201 Student Union, 806.742.5433, www.campuslife.ttu.edu

Check Cashing / ATM Services

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 SUB.

The Student Union has four automatic teller machines available for student 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 east lobby of the Student Union.

Cocurricular Activities

Students attending Texas Tech have an endless array of experiential opportunities. The Student Union and Activities Department boasts nearly 400 registered student organizations representing academic, professional, honorary, graduate, religious, service, athletic, and special interest groups. Additionally, students can gain volunteer leadership experience through involvement in the Homecoming Committee, the Tech Activities Board and the Annual Arbor Day event. Students can enroll in leadership programs, participate in Greek letter organizations, and experience multicultural programs through the Center for Campus Life. The value of these experiences is immeasurable as students enjoy the luxury of having a practical forum in which to cultivate leadership skills and develop peer and faculty staff/networks.
Student participation in an off-campus activity is strictly voluntary. Students are responsible for their own safety and welfare. Participation in off-campus activities is at the student’s own risk and the university assumes no responsibility. Students are responsible for making their own individual arrangements with instructors for classwork 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 Union and Activities, 203 Student Union, 806.742.3636; Center for Campus Life, 201 Student Union, 806.742.5433

### Greek Life

Fraternities and sororities have been an active part of university life since 1952 by complementing the academic and co-curricular activities of the university’s community life. With more than 40 chapters recognized at Texas Tech University, about 3,600 students are involved in Greek life at Texas Tech. The university promotes a self-governing community, reaffirming an attitude of cooperation, support, and encouragement. The Center for Campus Life is the liaison between Greek-letter organizations, their alumni, and the university administration. **Contact information:** Center for Campus Life, 201 Student Union Building, T 806.742.5433, greeklife@ttu.edu

### 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 Handbook** and questions may be directed to the Ombudsman, 237 Student Union, 806.742.4791.

### Intercollegiate Speech, Debate

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 (administered in the Communication Studies Department) is active in sponsoring campus-wide speech activities. The Red Raider speech and debate team ranks among the top teams nationally and has won four national titles in recent years. In the fall of 2004, Tech won state championships in debate, persuasive speaking, and impromptu speaking. Texas Tech teams actively compete in both debate and individual event competitions across the country. **Contact information:** Director of Forensics, 806.742.1328

### 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 Chorale, Men’s Glee Club, Lubbock Chorale, Court Jesters, Symphonic Band, Concert Band, University Band, Jazz Bands and Combos, Brass Choir, Chamber Ensembles, Chamber Orchestra, Woodwind Ensemble, String Ensemble, Harp Ensemble, Flute Ensemble, Clarinet Choir, Horn Ensemble, Trombone Ensemble, Trumpet Choir, Tuba Ensemble, Percussion Ensemble, Steel Drum Bands, New Music Ensemble, Early Music Ensemble, Celtic Ensemble, 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.

### Ombudsman for Students

The Ombudsman for Students provides informal, neutral, and confidential dispute resolution services for students and can assist with interpersonal misunderstandings 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. Walk-in visitors are welcome. **Contact information:** 237 Student Union, 806.742.4791, www.ttu.edu/ombudsman

### Parent Relations Office, Texas Tech Parents Association

The mission of the Parent Relations Office is to promote each student’s learning by providing programs, services, and activities designed to meet the educational, informational, and constructive involvement needs of their parents and families. The office is also home to the Texas Tech Parents Association and serves all parents, families, and 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 56 scholarships made possible by contributions and memberships to the association. Applications are available to all students after December 1 and are due by February 1. As an incorporated non-profit organization, the association provides valuable programs and services.

The Parent Relations/Tech Parents partnership provides a toll-free hotline and email for parent questions and concerns, the parent Web site, transition programs for parents at new student orientation, publication of The Parent’s Guide, move-in program for parents, publication of The Extension Cord 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, 12 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:** East Basement, Student Union Building; 806.742.3630, toll free 888. 888.7409; fax 806.742.0330; email parent@ttu.edu, or Web site www.parent.ttu.edu

### Red Raider Student Employment Center (RRSEC)

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 and provides a listing of on- and off-campus employment opportunities available to students. Students seeking employment through this service are encouraged to check openings at any time via the internet at www.financialaid.ttu.edu. To learn more about other forms of financial assistance, see “Student Financial Assistance” in the Finances section of this catalog.
RaiderGate
Sponsored by the Student Government Association and the Student Union Building, RaiderGate is the university’s premier student tailgating event. For students it is the most exciting on-campus activity for Texas Tech football’s pregame entertainment. Contact information: Student Government Association, 806.742.3631; Student Union Building, 806.742.3636

Red to Black Program
Red to Black is a group of volunteer students offering free and confidential financial counseling, planning, and education. Peer Financial Planners are Personal Financial Planning (PFP) majors in the College of Human Sciences trained to provide financial help through presentations and seminars as well as individual counseling sessions. All volunteers are supervised and are trained regarding general financial questions as well as specific issues such as paying off debt, creating a budget, choosing a credit card or bank, comparing job offers by looking over employer benefits, reading a credit report, and starting a financial plan. The program also provides many useful online financial tools and resources to help individuals find answers to general questions and download helpful worksheets (www.r2b.ttu.edu). Contact information: 806.742.9781, redbtokblack@ttu.edu

Student Counseling Center
The Student Counseling Center provides professional psychological services to address the variety of concerns affecting a college student's personal life and academic performance. Services are provided by doctoral-level psychologists who are licensed to practice psychology in the state of Texas and by their supervisees. College life is brimming with new challenges and choices. Counseling focuses on the common issues students frequently encounter in this process. This can involve relationship loss, coping with grief, body image concerns, depression, anxiety, stress/time management, alcohol or other substance abuse, gay/lesbian/bisexual identity concerns, communication skills, general adjustment to college, or simply help in understanding oneself better. Counseling can be conducted on an individual, couple, or group basis. The Student Counseling Center offers a variety of topic-specific groups to meet the needs of Texas Tech students, including cutting-edge biofeedback technology to expand students’ stress management techniques. Relationship counseling for students and their partners or family is available during select evening hours as well as the daytime. Student Counseling Center therapists also educate the campus community about strategies for positive mental health through outreach presentations to classes, residence halls, and on-campus organizations. Topics of these presentations span the wide range of issues that students experience. Student Counseling Center services are available to enrolled students and on a consultation/referral basis to faculty and staff. All information is strictly confidential within limits of the law. To make an appointment or request an outreach presentation for a campus group, contact the Student Counseling Center from 8 a.m. to 5 p.m. Monday through Friday. Contact information: 214 West Hall, 806.742.3674, www.depts.ttu.edu/SCC.

Student Government
The Student Government Association (SGA) provides students with opportunities to excel through involvement with SGA and university-wide committees; Freshmen Council; Freshmen Advisory Board; Student Senate; and executive offices. The SGA also provides many services to students, including SafeRide (806.742. RIDGE), night shuttle (806-742-NITE), housing guides, the WORD magazine, new student guide, information maps about Citibus routes, 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 registered student groups. The four executive officers—President, Internal Vice President, External Vice President, and Graduate Vice President—work to represent the views and needs of students to the administration as well as local and state governments. The SGA is always receptive to new programs and practices that can benefit students. Contact information: Student Government Association, 302 Student Union, 806.742.3631, www.sga.ttu.edu

Student Health Insurance
Optional student health insurance is available for all students registered at Texas Tech University. For information contact Student Health Services, Thompson Hall, 806.743.2830.

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 illnesses and injuries, as well as mental health issues. Student Health Services is located in the Student Wellness Center at the corner of Main and Flint on the west side of the campus. Services are available by appointment by calling 806.743.2848. Appointment hours are 8:30 a.m. to 6 p.m. weekdays. Students generally pay a medical services fee that entitles them to access clinic and pharmacy services. A valid Texas Tech ID is required to access the clinic services. More than 200 primary care appointments are available each day. 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 and several sub-specialty clinics. 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; confidential/anonymous HIV testing; and comprehensive alcohol, tobacco, and other drug prevention, intervention, and education.

Pharmacy services are also conveniently located in the Student Wellness Center and can be contacted at 806.743.2636. 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, TechExpress, 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 parents’ 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 endorsed
by Texas Tech University. Contact Student Health Services at 806.743.2860 for enrollment information.

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 hold being placed on the student’s records. Documentation may be mailed to Student Health Services, Medical Records, 3601 4th Street, Lubbock TX 79430-7208 or faxed to 806.743.2122. Include your birth date or ID number on all documentation. Students may obtain the immunization by appointment at Student Health Services. Questions regarding MMR status should be directed to Student Health Services at 806.743.2860 ext. 240.

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 can administer this test. 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 hold being placed on the student’s records.

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 Center for Disease Control (CDC) and the American College Health Association recommend that all college students living in residence halls consider obtaining the meningococcus vaccine. Meningococcal 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 vaccine, 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 transmitted through sex and/or contact with blood and/or body fluids. Students can obtain this immunization through Student Health Services. 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.depts.ttu.edu/studenthealth

**Student Judicial Programs**

Student Judicial Programs is responsible for maintaining and adjudicating alleged violations of the “Code of Student Conduct” as it is found in the Student Handbook. It is the responsibility of this office to ensure that student rights are afforded to all students and that due process is part of every judicial hearing. In addition to adjudicating alleged violations of university policy, this office also serves as the clearinghouse for academic integrity issues at Texas Tech. The Student Judicial Programs office works in conjunction with the Texas Tech Police Department and Housing and Residence Life to provide accurate information for Clery Act reporting. The office provides background checks for current and previous students as well as notary services. Contact information: 020 Student Union, 806.742.1714, www.depts.ttu.edu/studentjudicialprograms

**Student Legal Services**

Student Legal Services is a program designed to bring legal advice and guidance within the reach of students. It was inaugurated at Texas Tech in 1973 and is staffed by three licensed attorneys, a legal secretary, a clerical specialist, law clerks, and student interns from the Texas Tech School of Law. Appointments are encouraged.

The primary objectives of the program are to provide students with confidential legal advice on individual problems and to establish an educational office designed to inform 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. Mediation services are also available.

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. Contact information: 307 Student Union, 806.742.3289

**Student Media**

The Daily Torero, the university student newspaper, is published daily, Monday through Friday. La Ventana is the university yearbook, 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.

**Student Organization Advisory Congress (SOAC)**

The Student Organization Advisory Congress (SOAC) is a melting pot of all registered student organizations on campus. It allows students to have a fair and equal say in university-related matters, to promote the events of their organization, to educate and diversify the campus, and to promote events sponsored by the Student Government Association (SGA). Contact information: SGA, 806.742.3631

**Transcript Service**

Copies of a student’s transcript are available free of charge upon written request to the Registrar’s Office. Please allow 72 hours for transcript processing. To request a transcript, contact the Office of the Registrar, Box 45015, Texas Tech University, Lubbock, Texas 79409-5015 or visit online at www.depts.ttu.edu/registrar. 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 Academic Information section of this catalog. Transcripts furnished from other institutions become the property of Texas Tech University.
Distance, Off-Campus Learning

Texas Tech University offers both semester-based and non-semester-based, independent study courses and programs at a distance or off-campus. If more than half of a course/program is delivered electronically, it is considered a distance course; if more than half is delivered face-to-face, it is considered an off-campus course/program.

Semester-based courses and programs are administered by the colleges; non-semester-based independent study offerings are administered by the Division of Outreach and Distance Education. The Division of Off-Campus Sites manages Coordinating-Board recognized sites in Abilene, Amarillo, Fredericksburg, Highland Lakes, and Junction. Electronic, face-to-face, and blended courses may be taken at these sites and at other sites throughout Texas that do not require recognition by the Texas Higher Education Coordinating Board.

Texas Tech University offers the following degrees, certificate and certificate preparation programs at a distance or through off-campus instruction. Some programs require face-to-face meetings.

Undergraduate Degrees
• Bachelor of General Studies
• Bachelor of Science in Horticulture

Graduate Certificate Programs
• Autism (Texas Tech University)
• Dual Sensory Impairments (Texas Tech University)
• Gerontology (offered through the Great Plains Interactive Distance Education Alliance [GPIDEA])

Graduate Certification Preparation Programs
• Deaf Education (Texas State Board for Educator Certification)
• Educational Diagnostician (Texas State Board for Educator Certification)
• Generic Special Education (Texas State Board for Educator Certification)
• Master Reading Teacher
• Orientation and Mobility (National Certification in Orientation and Mobility through the Association for Education and Rehabilitation of the Blind and Visually Impaired [AER])
• Superintendent Professional
• Visual Impairment (Texas State Board for Educator Certification)

Master’s Degrees
• Master of Agriculture
• Master of Agriculture with Principal Professional Certification
• Master of Art Education
• Master of Arts in Technical Communication
• Master of Education in Educational Leadership with Principal Professional Certification
• Master of Education in Instructional Technology
• Master of Education in Language Literacy Education
• Master of Education in Special Education (emphasis available in Deaf Education, Dual Sensory Impairments, Educational Diagnostician, Generic Special Education, Orientation and Mobility, and Visual Impairment)
• Master of Engineering
• Master of Science in Agricultural Education
• Master of Science in Computer Science
• Master of Science in Crop Science
• Master of Science in Family and Consumer Science Education (offered through the Great Plains Interactive Distance Education Alliance [GPIDEA])
• Master of Science in Horticulture
• Master of Science in Human Development & Family Studies (emphasis in Gerontology – offered through the Great Plains Interactive Distance Education Alliance [GPIDEA])
• Master of Science in Information Technology
• Master of Science in Systems and Engineering Management
• Doctoral Programs
  • Ed.D. in Agricultural Education (joint program with Texas A&M)
  • Ed.D. in Educational Leadership
  • Ph.D. in Computer Science
  • Ph.D. in Technical Communication and Rhetoric
  • Ph.D. in Systems and Engineering Management

Additional distance and off-campus offerings are available through the Division of Off-Campus Sites (DOCS) and through the Division of Outreach and Distance Education. For more information, visit www.de.ttu.edu or call 800.692.6877, ext. 293 or 276.

Division of Outreach, Distance Education

Rosslyn Smith, Ph.D., Vice Provost for Outreach and Distance Education

Division of Outreach and Distance Education
9th Street and Indiana Ave. | Lubbock, TX 79413
T 806.742.7200 | toll-free 800.692.6877
F 806.742.7222 | www.ode.ttu.edu, distlearn@ttu.edu

The Division of Outreach and Distance Education (ODE) administers print and web-based distance learning programs that include college and K–12 courses for credit, a Bachelor of General Studies degree, and an accredited K–12 diploma-granting program—the Texas Tech University Independent School District (TTUISD). ODE also offers non-credit community outreach programs for both students and adults through the Institute for the Development and Enrichment of Advanced Learners (IDEAL), the Intensive English Program (IEP), and the Osher Lifelong Learning Institute (OLLI) at Texas Tech University. Customized employee training and program/conference registration services are available to academic departments through ODE. ODE also assists academic departments in developing and delivering non-credit short courses, certificate programs, or workshops to professionals.

The main offices of the Division of Outreach and Distance Education are located at 9th Street and Indiana Ave. adjacent to the International Cultural Center. IDEAL is located on the third floor of the Administration Building, and the Intensive English Program is located on the second floor of the Foreign Language Building.

College Offerings
The Bachelor of General Studies (B.G.S.) degree is offered by the College of Arts and Sciences through the Division of Outreach and Distance Education. The curriculum consists of the typical liberal arts education as based on Bachelor of Arts general-degree requirements, and can prepare a student to pursue an intellectual interest, a career goal, or graduate or professional study. The BGS degree fea-
ures three core areas of concentration in lieu of a major and minor, each of which meets the minimum requirements of an existing departmental or interdisciplinary minor (e.g., English, psychology, etc.).

A Texas Tech resident student may not enroll in or complete an ODE course during the last semester or summer term before graduation unless his or her academic dean approves the enrollment. A student who has failed a course taken in residence may take that course or a degree-plan alternative through ODE 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 ODE office. Exceptions require instructor approval.

College-level credit courses are offered in an asynchronous, print-based format or, 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 with resident classes. Academic departments ensure that all ODE college credit courses are equivalent in quality to courses taken in residence.

To enroll in an ODE distance education course, complete the enrollment form located in the back of the Outreach and Distance Education Catalog or on the Web site (www.ode.ttu.edu). All Texas Tech students must have the signature of their academic dean on the enrollment form. For information on the cost per semester credit hour and fees for a college-level course taken through Outreach and Distance Education, please go to http://www.depts.ttu.edu/ode/.

University students may take elective courses through ODE on a pass–fail basis under the same regulations governing resident students. ODE 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 ODE college courses must adhere to the provisions outlined in the Graduate and Undergraduate Catalog concerning the Texas Success Initiative (formerly known as the TASP test). Contact the Texas Success Initiative Office in Admissions, 116 West Hall, for additional information.

On occasion, ODE courses are used to fulfill full-time student status. 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 ODE 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 ODE:

### College of Agricultural Sciences and Natural Resources

**Agricultural and Applied Economics (AAEC)**

3303. Cooperatives in Agriculture

**Plant and Soil Science (PSS)**

1411. Principles of Horticulture
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
2305. Introduction to Poetry
2307. Introduction to Fiction
2311. Technical Writing
3325. Modern and Contemporary American Literature
3366. Style in Technical Writing
3387. Multicultural Literatures of America
3389. Short Story

**Geography (GEOG)**

1401. Physical Geography
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
3310. History of Texas
3328. History of Religion in America
3338. History of Sports and Recreation in the U.S.
3339. The History of Baseball: A Mirror on America
4301. The Founding of the American Colonies

**Mathematics (MATH)**

1320. College Algebra
1330, 1331. Introductory Mathematical Analysis
1351, 1352. Calculus I, II
2300. Statistical Methods
2345. Introduction to Statistics with Application to Business
2350. Calculus III

**Political Science (POLS)**

1301. American Government, Organization
2302. American Public Policy
3325. Political Parties
3351. The Judicial Process

**Psychology (PSY)**

1300. General Psychology
3304. Introduction to Social Psychology
3306. Personality
4300. Psychology of Human Sexual Behavior
4305. Abnormal Psychology
4325. Drugs, Alcohol, and Behavior

**Sociology (SOC)**

1301. Introduction to Sociology
1320. Current Social Problems

**Spanish (SPAN)**

1501. A Beginning Course in Spanish I
1502. A Beginning Course in Spanish II

**Rawls College of Business**

**Accounting (ACCT)**

2300. Financial Accounting
2301. Managerial Accounting

**Business Law (BLAW)**

3391. Business Law I

**Marketing (MKT)**

3350. Introduction to Marketing
Division of Off-Campus Sites

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Texas Tech University operates off-campus educational sites at Abilene, Amarillo, Fredericksburg, Highland Lakes, and Junction. Students entering the TTU programs at these locations are held to the same entrance requirements as students at the main campus. Courses, curriculum, and graduation requirements at each site meet the same standards as those on the main campus.

Texas Tech University at Abilene
Texas Tech University established an off-campus educational site in Abilene in 2002 for the purpose of delivering a graduate program in computer science and software engineering. Students have access to funded research and assistantships, allowing them to work closely with Abilene and Lubbock-based professors as well as with agencies such as NASA. In concert with the three private universities in Abilene, TTU at Abilene is planning additional graduate programs to meet the educational needs of the region.

TTU at Abilene is located at 302 Pine Street and is a 27,000-square-foot, three-story facility with a mezzanine between the first and second floors. The second and third floors are the primary location of the Abilene offices, classrooms, and state-of-the-art research computer labs.

Contact information: Visit www.abilene.ttu.edu or call 325.677.1112 or 806.742.6446. TTU at Abilene computer science and software engineering students are advised by the graduate advisor in the Department of Computer Science at Texas Tech in Lubbock. Dr. Jack Barnes is the associate chairperson and academic director in Abilene. Tom Dolan is associate director.

Texas Tech University at Amarillo
Texas Tech University established an off-campus educational site in Amarillo in 2002 for the purpose of delivering master's level engineering education. TTU at Amarillo became a recognized higher education teaching site in 2003 with graduate engineering degree programs. In 2004, master's level education program and certificate courses were added to the offerings at the site. In 2006, a Ph.D. program in systems engineering management (SEM) was approved by the Texas Higher Education Coordinating Board.

TTU at Amarillo is located at 1616 S. Kentucky Avenue, Suite C150, in the Wellington Square office building. The 6,000-square-foot area is on the first floor and provides state-of-the-art technology. It is partitioned into six offices, a reception area, a conference room, a kitchen area, and two classrooms. Both classrooms are equipped with video conferencing equipment.

Contact information: Visit www.amarillo.ttu.edu or call 806.742.6460 or 806.356.4702. Dr. Milton Smith is the director and Dr. Wallace Johnston is the associate director of TTU at Amarillo.

Texas Tech University at Fredericksburg
Texas Tech established a recognized higher education teaching site in Fredericksburg in 2002 for the purposes of delivering undergraduate and graduate programs to the region. Academic programs include the Bachelor of General Studies with three areas of concentration and a variety of graduate education degree and certification preparation.
programs. The Texas Tech University Health Sciences Center School of Nursing offers undergraduate and graduate nursing programs. Administrative offices are located at 102 E. San Antonio St., and classrooms are in dedicated buildings near the Fredericksburg Primary School at 1110 S. Adams St. Two interactive video classrooms, a traditional classroom, and an Internet lab are used for classroom instruction. All facilities have state-of-the-art technology. Austin Community College is the partner offering first- and second-year Core Curriculum courses in the Fredericksburg area.

Contact information: Visit www.fredericksburg.ttu.edu or call 830.990.2717 or 806.742.6440. Dr. James Morris is the director.

Texas Tech University at Highland Lakes

Texas Tech established a recognized higher education teaching site in Marble Falls in 2002 for the purposes of delivering undergraduate and graduate programs to the region. Academic programs include the Bachelor of General Studies with three areas of concentration and a variety of graduate education degree and certification preparation programs. The Texas Tech University Health Sciences Center School of Nursing offers undergraduate and graduate nursing programs. The administrative and classroom facilities provide state-of-the-art technology and are located at 806 Steve Hawkins Parkway, directly off Highway 281 on the south side of Marble Falls. Three interactive video classrooms (two classroom and one conference room), two regular classrooms, and an Internet lab are available for classroom instruction. Central Texas College is the community college partner offering first- and second-year Core Curriculum courses in the Highland Lakes area.

Contact information: Visit www.highlandlakes.ttu.edu or call 830.798.9548 or 806.742.6450. Dr. Will Cohen is director.

Texas Tech University Center at Junction

Texas Tech University Center at Junction is an educational center that encompasses 411 acres on the South Llano River in the Texas Hill Country two miles south of Junction on FM 2169. In addition to degree programs and continuing education opportunities, the TTU Center at Junction offers undergraduate and graduate courses in intensive two-week sessions during May (Intersession) and during the holiday break (WinterSession) as well as two three-week summer sessions. Courses and programs offered at TTU at Fredericksburg and Highland Lakes are available at Junction as well. The community college partner for Junction is Howard College.

The facilities at Junction include an interactive video conferencing classroom and traditional classrooms, a lecture hall, offices, laboratories, a library, a darkroom, Mac and PC computer labs with T1 Internet connections, wireless access, and specialized art facilities. In 2002, TTU opened a Field Research Station at Junction to support a research focus on aquatic and watershed management. Dr. Tom Arsuffi is director.

Texas Tech University Center at Junction is available to Texas Tech student organizations, faculty groups, researchers, and other groups for workshops, retreats, and other special activities. A wide range of housing accommodations and full meal service are available year round for groups from 20 to 200 people. The Junction facility is home to Red Raider Camp, a freshman spirit and orientation camp that operates from mid to late summer. Recreational opportunities include river activities, hiking and nature trails, a sand volleyball court, and a large swimming pool.

Contact information: Visit www.junction.ttu.edu or call 325.446.2301, 806.742.6434. Dr. Grant Hall is director.
Graduate School

John Borrelli, Ph.D., Dean
Graduate School | 02 Holden Hall | Box 41033
Lubbock, TX 79409-1033 | T 806.742.2787
F 806.742.1746 | gradschool@ttu.edu
www.gradschool.ttu.edu

About the Graduate School
Graduate study is much more than a continuation of undergraduate work. It is distinguished by a 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, the Texas Tech University Graduate School exercises selectivity in its 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 in his or her best interest or that of the university.

Mission Statement
The Graduate School facilitates graduate education by ensuring standards of excellence; promoting diverse programs; and assisting and supporting the recruitment, retention, and graduation of quality students.

Academic Diversity
Established in 1923, Texas Tech is one of the youngest major research universities in the country. Consistent dedication to quality and research has earned numerous graduate programs national and international respect. From a creative writing program to an advanced ceramics program, from a nationally recognized personal financial planning program to a semi-conductor processing program, the Texas Tech University Graduate School offers unlimited opportunity for the aspiring scholar.

The Graduate School is remarkable for its diversity, offering 106 master’s programs and 57 doctoral programs, outnumbering those available at most other multipurpose universities. The number of doctorates awarded during the last five years averaged more than 175, placing Texas Tech in close degree-granting competition with many of the nation’s other major research universities. Last year the university conferred 1,052 master’s degrees and 213 doctoral degrees.

The Graduate School strives to maintain flexibility through a combination of options from traditional degree programs to progressive interdisciplinary and multidisciplinary choices. The Graduate School values the student’s interests, personal research aims, and career goals. In keeping with that spirit, many outstanding facilities and international respect. From a creative writing program to an advanced ceramics program, from a nationally recognized personal financial planning program to a semi-conductor processing program, the Texas Tech University Graduate School offers unlimited opportunity for the aspiring scholar.

Graduate Admissions
Duane W. Crawford, Ph.D., Associate Dean and Associate Professor of Human Development and Family Studies

Graduate Council
The Graduate Council is composed of 14 members. The graduate faculty elects 11 of the members, the dean appoints two, and the Faculty Senate elects one from its graduate faculty membership. All 14 are voting members of the Graduate Council. The dean is ex officio chairperson of the council; associate deans, the provost (or a designated representative), and others appointed by the dean are ex officio and nonvoting members of the council.

Elected members other than the Faculty Senate representative serve for a three-year period and are not eligible for immediate reelection unless they have been chosen to fill an unexpired term. Appointed members serve for two years. By a system of rotation, some new members join the council each year, replacing those whose terms of office have expired. The dates listed below indicate the year of expiration of term of office. In addition, the dean appoints a student representative each year.

The Graduate Council, assisted by the graduate faculty, is charged with the responsibility of formulating the policies of the Graduate School and the requirements for graduate degrees. The dean administers these policies.

- Terry Collins (2008), Ph.D., Engineering
- Pat Delucia (2009), Ph.D., Social Sciences
- Stephen Ekwaro-Osire (2007), Ph.D., Engineering
- Nora Griffin-Shirley (2007), Ph.D., Education
- Saif-ul Haq (2007), Ph.D., Architecture
- Gary Harris (2008), Ph.D., Sciences and Mathematics
- Scott Hein (2008), Ph.D., Business Administration
- Janice Killian (2009), Ph.D., Visual and Performing Arts
- David Lawver (2007), Ed.D., Agricultural Sciences
- Madame Miner (2008), Ph.D., Humanities
- Arturo Olivarez Jr. (2006), Ph.D., Faculty Senate Representative
- Mike Parkinson (2007), Ph.D., J.D., Mass Communication
- Comfort Pratt (2008), Ph.D., Classical and Modern Languages
- Mariam Muslow (2009), Ph.D., Human Sciences
Graduate Degrees

In addition to this list of graduate degrees, many departments offer specializations or concentrations in various fields.

• **Agricultural Sciences and Natural Resources**
  Agribusiness, M.A.B.
  Agricultural and Applied Economics, M.S., Ph.D.
  Agricultural Communications, M.S.
  Agricultural Education, M.S., Ed.D.
  Agriculture, M.Ag.
  Agronomy, Ph.D.
  Animal Science, M.S., Ph.D.
  Crop Science, M.S.
  Entomology, M.S.
  Fisheries Science, M.S., Ph.D.
  Food Science, M.S.
  Horticulture, M.S.
  Landscape Architecture, M.L.A.
  Range Science, M.S., Ph.D.
  Soil Science, M.S.
  Wildlife Science, M.S., Ph.D.

• **Architecture**
  Architecture, M.Arch., M.S.
  Land-Use Planning, Management, and Design, Ph.D.

• **Arts and Sciences**
  Anthropology, M.A.
  Applied Linguistics, M.A.
  Applied Physics, M.S.
  Atmospheric Science, M.S.
  Biological Informatics, M.S.
  Biology, M.S., Ph.D.
  Chemistry, M.S., Ph.D.
  Classics, M.A.
  Communication Studies, M.A.
  Economics, M.A., Ph.D.
  English, M.A., Ph.D.
  Environmental Toxicology, M.S., Ph.D.
  Exercise and Sport Sciences, M.S.
  Geosciences, M.S., Ph.D.
  German, M.A.
  History, M.A., Ph.D.
  Mathematics, M.A., M.S., Ph.D.
  Microbiology, M.S.
  Philosophy, M.A.
  Physics, M.S., Ph.D.
  Political Science, M.A., Ph.D.
  Psychology, Clinical, Ph.D.
  Psychology, Counseling, M.A., Ph.D.
  Psychology, Experimental, M.A., Ph.D.
  Public Administration, M.P.A.
  Romance Languages (French or Spanish), M.A.
  Sociology, M.A.
  Spanish, Ph.D.
  Sports Health, M.S.
  Statistics, M.S.
  Technical Communication, M.A.
  Technical Communication and Rhetoric, Ph.D.
  Zoology, M.S., Ph.D.

• **Business**
  Accounting, M.S.A.
  Business Administration, M.B.A.
  Business Administration, M.S., Ph.D.
  Business Administration–Telecom and Network Management, M.S.
  International Business, I.M.B.A.

• **Education**
  Bilingual Education, M.Ed.
  Counselor Education, M.Ed., Ph.D.
  Curriculum and Instruction, M.Ed., Ed.D., Ph.D.
  Educational Leadership, M.Ed., Ed.D.
  Educational Psychology, M.Ed., Ph.D.
  Elementary Education, M.Ed.
  Higher Education, M.Ed., Ed.D., Ph.D.
  Instructional Technology, M.Ed., Ed.D.
  Language Literacy Education, M.Ed.
  Multidisciplinary Science, M.S.
  Multidisciplinary Studies, M.S.
  Secondary Education, M.Ed.
  Special Education, M.Ed., Ed.D.

• **Engineering**
  Chemical Engineering, M.S.Ch.E., Ph.D.
  Civil Engineering, M.S.C.E., Ph.D.
  Computer Science, M.S., Ph.D.
  Electrical Engineering, M.S.E.E., Ph.D.
  Engineering, M.Engr.
  Environmental Engineering, M.Env.E.
  Environmental Technology Management, M.S.E.TM.
  Industrial Engineering, M.S.I.E., Ph.D.
  Manufacturing Systems and Engineering, M.S.M.S.E.
  Mechanical Engineering, M.S.M.E., Ph.D.
  Petroleum Engineering, M.S.P.E., Ph.D.
  Software Engineering, M.S.
  Systems and Engineering Management, M.S.S.E.M., Ph.D.

• **Health Sciences**
  Athletic Training, M.A.T.
  Audiology, Au.D.
  Biotechnology, M.S.
  Cell and Molecular Biology, M.S., Ph.D.
  Clinical Practice Management, M.S.
  Communications Sciences and Disorders, Ph.D.
  Biochemistry and Molecular Genetics, M.S., Ph.D.
  Medical Microbiology, M.S., Ph.D.
  Medicine, M.D.
  Molecular Pathology, M.S.
  Nursing, M.S.N., Ph.D.
  Occupational Therapy, M.O.T.
  Pharmaceutical Sciences, M.S., Ph.D.
  Pharmacology and Neuroscience, M.S., Ph.D.
  Physician Assistant Studies, M.P.A.S.
  Physiology, M.S., Ph.D.
  Rehabilitation Counseling, M.R.C.
  Speech-Language Pathology, M.S.

• **Human Sciences**
  Environmental Design, M.S.
  Environmental Design and Consumer Economics, Ph.D.
  Family and Consumer Sciences Education, M.S., Ph.D.
  Hospitality Administration, Ph.D.
  Human Development and Family Studies, M.S., Ph.D.
  Marriage and Family Therapy, M.S., Ph.D.
  Nutritional Sciences, M.S., Ph.D.
  Personal Financial Planning, M.S.
  Restaurant, Hotel, and Institutional Management, M.S.

• **Mass Communications**
  Mass Communications, M.A., Ph.D.

• **Visual and Performing Arts**
  Art, M.F.A.
  Art Education, M.A.E.
  Fine Arts (Art, Music, Theatre Arts), Ph.D.
  Musical Arts (Composition, Conducting, Performance, Piano Pedagogy), D.M.A.
  Music Composition, M.M.
  Music Education, M.M.Ed.
  Music Musicology, M.M.
  Music Pedagogy, M.M.
  Music Theory, M.M.
  Performance (Music), M.M.
  Theatre Arts, M.A., M.F.A.

• **Interdisciplinary Programs**
  Biotechnology, M.S.
  Heritage Management, M.S.
  Interdisciplinary Studies, M.A., M.S.
  Museum Science, M.A.

• **Joint Programs**
  Business Administration/Architecture, M.B.A.–M.Arch.
  Business Administration/Environmental Toxicology, M.B.A.–M.S.
  Business Administration/Personal Financial Planning, M.B.A.–M.S.
  Business Administration/Personal Financial Planning, M.S.–M.S.
  Business Administration/Medicine, M.B.A.–M.D.
  Business Administration/Foreign Languages, M.B.A.–M.A.
  Law/Accounting, J.D.–M.S.A.
  Law/Agricultural and Applied Economics, J.D.–M.S.
  Law/Biotechnology, J.D.–M.S.
  Law/Business Administration, J.D.–M.B.A.
  Law/Crop Science/Horticulture/Soil Science/Entomology, J.D.–M.S.
  Law/Environmental Toxicology, J.D.–M.S.
  Law/Personal Financial Planning, J.D.–M.S.
  Law/Public Administration, J.D.–M.P.A.
  Physiology/Health, Exercise, and Sport Sciences, Ph.D.
  Public Administration/Economics, M.P.A.–M.A.
Graduate Faculty

Members of the graduate faculty participate in all phases of the graduate program, assist in determining policy, and vote on candidates for graduate degrees. Membership is a means of recognizing the members of the faculty for scholarly activities, creativity, direction of graduate research and study, and other contributions to the graduate programs of the university and the Health Sciences Center. Except in special cases approved by the graduate dean, only graduate faculty may serve as instructors of graduate courses, conduct graduate examinations, and serve on thesis and dissertation committees.

Research Opportunities

With a full range of graduate programs presently in place, Texas Tech offers advanced study not only in the complete spectrum of basic disciplines, but also in many unique areas. Every department has its own particular strengths, with each college possessing special resources, centers of investigation, and research opportunities. For example, Texas Tech’s renowned College of Engineering is deeply involved in research and provides exciting opportunities through both traditional programs and more specialized initiatives such as the Wind Science and Engineering Research Center, the Center for Pulsed Power and Power Electronics, and the Water Resources Center. The college also supports the Nano Tech Center, the Space Science Research Institute, and the National Institute for Engineering Ethics—all of which have attracted national interest.

The Natural Science Research Laboratory, an archive of representative recent fauna of the American Southwest and other areas, functions as a natural history library for studies of biodiversity, biogeography, ecology, evolution, genetics, molecular biology, parasitology, systematics, and virology. The collections, extensively used for investigations worldwide, include specimens of 72,000 mammals; 4,500 birds; more than 15,000 reptiles, amphibians, and fish; 250,000 insects; and 75,000 cryogenically preserved tissue samples, providing hands-on training for graduate students in biology and museum sciences.

The Plant Stress and Water Conservation research program in the College of Agricultural Sciences and Natural Resources investigates plant growth and development under conditions of thermal and water stress to aid in creating new crop varieties and management systems that will minimize the impact of climatic extremes. Students can explore other specializations through the Thornton Agricultural Finance Institute and the Wildlife and Fisheries Management Institute, among numerous additional options.

The Health Sciences Center has developed major research strengths in reproductive biology, neuroscience, hematology and immunology, the mysteries of sleep, and Alzheimer’s disease. Texas Tech’s innovative Sports Health program combines the resources of personnel from the Health Sciences Center and the Department of Health, Exercise, and Sport Sciences, as well as related sciences. An internal VAX-11/750 system, microcomputer labs, and a remote-access center linked to the university’s central computing facilities permit students to train with state-of-the-art resources located in the College of Business Administration. Research facilities include the Center for Professional Development, and the Institute for Banking and Financial Studies.

The nationally top-ranked College of Human Sciences boasts a spacious and attractive learning environment together with many special research programs and centers. Community support services are offered through the Institute for Child and Family Studies, and the Child Development Research Center, which in turn enhance ongoing research. Other centers within the College of Human Sciences include the Curriculum Center for Family and Consumer Sciences, the Texas Wine Marketing Research Institute and the Center for the Study of Addiction and Recovery.

The Center for Environmental Radiation Studies, the Psychology Clinic, and the innovative Center for Forensic Studies—which has attracted state and regional media attention for its work in criminology—figure among a broad spectrum of prominent research endeavors within the College of Arts and Sciences. The Institute for Studies in Pragmatism is one of two national focal points for investigations of the thought of American philosopher Charles S. Peirce.

Special study and research opportunities in Arts and Sciences include the Center for Public Service and the Institute for Communications Research. Many such programs have their own specialized libraries or collections and nearly all are linked to the professional achievements and scholarly contributions of a distinguished faculty.

The Biotechnology and Genomics Center, established to encourage and support multidisciplinary research in biochemistry, cell biology, genetics, molecular biology, and related areas, offers a training program for Ph.D. students interested in interdisciplinary research in plant stress, including research teams in areas of cotton improvement and drug design. The institute’s sophisticated core instrument facility provides services such as DNA sequencing.

ICASALS, Texas Tech’s International Center for Arid and Semi-arid Land Studies, was established over a quarter century ago and encourages study of arid and semiarid environments as well as the human problems peculiar to such areas. As a part of its special goal, ICASALS hosts numerous international visitors to the Texas Tech campus. The center operates an international data exchange and coordinates research in a variety of regional and global land-use programs.

The Vietnam Center has become a nationally recognized research center. The Vietnam Archives have made Texas Tech a major center for studies of that country, with Texas Tech having become a focus for doctoral dissertations on Vietnam studies.

Some unique research opportunities are independent of specific programs. Examples include the Archive of Turkish Oral Narrative, the one-of-a-kind collection of Modernist periodicals in the library of the Instituto de Estudios Hispánicos, and the nationally known Comparative Literature Symposium, which has existed for nearly four decades.

Reflecting many of the university’s research strengths, the publications of the Texas Tech University Press appeal to academic tastes and those of the general reader. They range from cutting-edge scholarship to award-winning popular books.

The Graduate School is justifiably proud of the many outstanding teachers, honored scholars, and internationally known experts who are part of the graduate faculty at Texas Tech. Graduate students in every college have the opportunity to work with a distinguished group of professors; interact with present and future leaders of their respective disciplines; and, most importantly, enjoy the rap-

The Archive of the Vietnam Conflict

The Archive of the Vietnam Conflict is the one national focal point in the nation for investigations of the Vietnam War. The collection covers the period from 1945 to 1975, and includes everything from official military documents to private letters and diaries. The collection is housed in a climate-controlled facility.
port that comes from mutual enthusiasm for learning, research, and shared interests. Comments from present and former students indicate their deep appreciation for faculty whose doors are always open and who are easily accessible for consultation and assistance despite research and editorial involvements, activities in professional organizations, and the daily demands of an expanding curriculum. The quality of graduate faculty-student interaction is enhanced by a small class size that allows a professor to devote personal attention to each student. Standards for graduate students are continually rising and many programs have admissions requirements that exceed the university-wide standard. At the same time, the Graduate School uses a holistic process for determining admission into the various programs.

Research Centers and Institutes

In addition to extensive research activity on the part of its individual faculty, the university sponsors the following institutes and centers that conduct both basic and applied research and provide various services to the public:

**Agricultural Sciences and Natural Resources**
- CASNR Water Center
- Center for Agricultural Technology Transfer
- Center for Feed and Industry Research and Education
- Cotton Economics Research Institute
- Fire Ecology Center
- International Center for Food Industry Excellence
- International Textile Center
- Pork Industry Institute for Research and Education
- Thornton Agricultural Finance Institute
- Wildlife and Fisheries Management Institute

**Architecture**
- Architecture Research Center

**Arts and Sciences**
- Center for Environmental Radiation Studies
- Center for Geospatial Technology
- Center for Historic Preservation and Technology
- Center for Public Service
- Institute for Studies in Pragmatism
- Leather Research Institute
- Southwest Center for German Studies
- The Vietnam Center

**Business Administration**
- Center for Advanced Analytics and Business Intelligence
- Center for Entrepreneurship and Family Business
- Center for Health Care Leadership and Strategy
- Center for Professional Development
- Institute for Banking and Financial Studies
- Institute for Internet Buyer Behavior
- Institute for Leadership Research
- Texas Center for Innovative Organizations

**Education**
- The Burkhart Center for Autism Education and Research
- Center for Diversity Leadership in Education
- Center for Integration of Science Education and Research
- Virginia Murray Sowell Center for Research and Education in Visual Impairment

**Engineering**
- Center for Advanced Intelligent Systems
- Center for Applied Petrophysical Studies and Reservoir Studies
- Center for Engineering Outreach
- Center for Pulsed Power and Power Electronics
- Institute for Ergonomics Research
- MRI Petrophysical Applications Center
- Murdough Center for Engineering Professionalism
- Nano Tech Center (Sensor Systems)
- National Institute for Engineering Ethics
- Thornton Agricultural Finance Institute

**Human Sciences**
- Center for Development and Resiliency
- Center for Financial Responsibility
- Center for the Study of Addiction and Recovery
- Child Development Research Center
- The Curriculum Center for Family and Consumer Sciences and Education
- Institute for Child and Family Studies
- Texas Wine Marketing Research Institute

**Law**
- Center for Biodefense, Law and Public Policy
- Center for Military Law and Policy
- Center for Water Law and Policy

**Mass Communication**
- Center for Communications Research
- Institute for Hispanic and International Communications
- Survey Research Institute

**Other**
- Center for Biotechnology and Genomics
- Institute for the Development and Enrichment of Advanced Learners (IDEAL)
- The Institute of Environmental and Human Health
- International Center for Arid and Semiarid Land Studies (ICASALS)
- Northwest Texas Small Business Development Center
- Teaching, Learning, and Technology Center
- Wind Science and Engineering Research Center
- Texas Tech Center for the Southwest

**Finances**

Texas Tech offers graduate study opportunities that are affordable when compared to other institutions. Texas Tech is outstanding among the state's universities for its reasonable costs and its ability to help many graduate students with some form of financial assistance. With the below-average cost of living in Lubbock, graduate education at Texas Tech is an exceptional investment value.

**Graduate Program Tuition.** A complete explanation of tuition and fees is available online at www.sbs.ttu.edu.

**Residency Status Determination.** Texas Higher Education Coordinating Board rule 21.731 requires each U.S. citizen/immigrant permanent resident applying to enroll at an institution to respond to a set of core residency questions for the purpose of determining the person’s eligibility for classification as a resident. For rules governing the determination of residency status as defined by the Texas Higher Education Coordinating Board, see www.tex Ashton.edu/?Chapter_ID=21&Subchapter=X.

**Academic Common Market**

Texas Tech participates in the Academic Common Market, an interstate agreement that provides reciprocal higher education opportunities to citizens of states declared as parties to the Southern Regional Education Compact. Graduate students who are from these states and are admitted into approved out-of-state programs qualify for resident tuition if the program of study is not offered in their home state.

Approved programs at Texas Tech University and the member states from which qualified students may gain resident tuition are as follows:
- **Master of Architecture** (Alabama, Kentucky)
- **Master of Science, Doctor of Philosophy—Range Science** (Arkansas, Louisiana)
- **Doctor of Philosophy—Fine Arts** (Arkansas, Louisiana, Tennessee, Virginia)
Graduate School

- Doctor of Philosophy—Home Economics Education (Kentucky)
- Doctor of Philosophy—Land-Use Planning, Management, and Design (Alabama, Arkansas, Kentucky, Louisiana, Virginia)
- Doctor of Philosophy—Marriage and Family Therapy (Kentucky)
- Doctor of Philosophy—Technical Communication and Rhetoric (Tennessee)

Two steps are necessary to qualify for these programs: (1) Applicants must be accepted into a program for which an interstate agreement has been arranged, and (2) applicants must submit to Student Business Services proof of legal residency in a member state by providing documentation from the qualifying state's Coordinating Board or Board of Regents.

A list of state coordinators is available from the Southern Regional Education Board, 1340 Spring Street, N.W., Atlanta, GA 30309. For information about the ACM program in Texas, contact the Program Development Division of Senior Colleges and Universities, Texas Higher Education Coordinating Board, Box 12788, Capitol Station, TX 78711.

Graduate Admission

The Graduate School of Texas Tech University aspires to have a diverse student body. Although all students are admitted to the university by the dean of the Graduate School, applications for degree programs also must be evaluated by the department to which the student is applying.

Three general categories of criteria are used as part of a holistic process to evaluate all applicants for admission and competitive scholarships:

1. Academic Records—All academic records may be considered.

2. Test Scores—Official scores on the General Test of the Graduate Record Examination (GRE) or, for programs in the College of Business Administration, the Graduate Management Admission Test (GMAT) must be no more than five years old. Each score is considered separately with percentile scores viewed by broad major. Check with the individual program to determine whether it requires the GRE or GMAT. In accordance with Texas Education Code §51.842, the applicant’s performance on a standardized test may not be used in the admissions or competitive scholarship process as the sole criterion for consideration of the applicant or as the primary criterion to end consideration of the applicant. International students must submit official scores on the TOEFL (Test of English as a Foreign Language) or IELTS (International English Language Testing Service) examinations. TOEFL and IELTS results must be no more than two years old.

3. Individual Profiles—Profiles may include recommendations, research background, motivation, multilingual proficiency, undergraduate institution, presentations, portfolios, interviews, work experience, demonstrated commitment to a particular field of study, community involvement, and family and socioeconomic background. The department to which the student applies may have additional requirements, including a separate application form.

For information about services for students with disabilities, contact Student Disability Services, 335 West Hall or Box 45007, Texas Tech University, Lubbock, TX 79409-5007, 806.742.2405.

Domestic and Permanent Resident Student Admissions

Admission to any graduate degree program is granted by the dean of the Graduate School upon the recommendation of the department of proposed study. The applicant must have been in good standing in the school last attended. Applications will not be evaluated until all admission requirements have been met. All materials submitted become the property of Texas Tech University and are not returnable or refundable. Submit the following information to the Office of Graduate Admissions:

1. Application—Applications should be submitted at least three months prior to date of intended enrollment. The applications are available at www.gradschool.ttu.edu. Falsification of application information will void admission to Texas Tech University.

2. $50 Nonrefundable Application Fee—Acceptable methods of payment are credit card, money order, cashier’s check, and traveler’s check. Full-time Texas Tech employees, their spouses, and dependents under age 25 are exempt from this fee. The faculty/staff fee waiver form may be obtained from the Office of Graduate Admissions.

3. Official Transcripts

- The applicant must have earned a bachelor’s degree from a regionally accredited college or university.
- The applicant must submit an official transcript from each college or university attended. All degrees earned must appear on an official transcript.
- The applicant who, because of current enrollment, cannot provide final transcripts at the time of application must submit transcripts of all completed study. Consideration may then be given for tentative admission upon the condition that final transcripts are provided within the initial semester of enrollment at Texas Tech.

The applicant must have been in good standing in all schools attended at final matriculation.

4. Official GRE Score Report—The GRE must not be more than five years old. This is a requirement of most degree programs. Check with the individual graduate program if you are not certain if the GRE is required. Information about the GRE may be obtained from the Educational Testing Service, P.O. Box 6000, Princeton, NJ 08541-6000. All test scores are received by Graduate Admissions, not the department. The institution code for Texas Tech is 6827.

GRE—866.473.4373 (U.S., U.S. Territories and Canada), 609.771.7670 (all other locations), www.gre.org

Send all official documents to the following address:

Office of Graduate Admissions
Texas Tech University
PO. Box 41030
Lubbock, TX 79409-1030

5. Official GMAT score report (for College of Business Administration and other select programs)—The GMAT must not be more than five years old. Check with the individual program if you are not certain if the GMAT is required. Information about the GMAT may be obtained from Pearson VUE, PO. Box 581907, Minneapolis, MN 55458-1907. All test scores are received by the Office of Graduate Admissions, not the department. The institution code for Texas Tech is 6827.

GMAT—800.717.4628, 952.681.3680, Fax 952.681.3681, www.mba.com, GMATCandidateServicesAmerica@pearson.com

GFS-3F-17 Master’s in Accounting
GFS-3F-24 M.B.A., Flexible Part Time
GFS-3F-05 M.B.A., Full Time
GFS-3F-64 Ph.D. Program
GFS-3F-96 M.S. in Business Administration
GFS-3F-29 Other Programs

Send all official documents to the following address:

Office of Graduate Admissions
Texas Tech University
PO. Box 41030
Lubbock, TX 79409-1030
**Contact Your Department.** Prospective students must also contact the department in which they are planning to study to obtain information regarding any special admission requirements, such as additional tests, applications, or letters of recommendation. You may find online applications at the Web sites of each department by viewing the main Texas Tech Web site at www.ttu.edu and selecting “Academics.” You also may call Texas Tech directory assistance at 806.742.2011 and ask for the department of interest to you.

**Evaluating Applications.** Application files will not be evaluated until all of the above requirements have been met. Applicants will be notified by the Office of Graduate Admissions when an admissions decision has been made. Some departments that operate with a limited number of spaces for students will make final decisions for the fall semester in early spring. U.S. or permanent resident applicants who, for whatever reason, cannot provide all documents required for admission to a degree program by the time of planned initial enrollment may request permission to register for graduate courses through temporary non-degree admission (GTMP).

**Admission to a Second Graduate Degree Program.** Permission to work toward a second graduate degree of the same level is granted only upon approval by the relevant department and review by the graduate dean. In addition, the applicant is subject to all requirements as a new student. While there is no guarantee that any work from the first degree may apply to the second, at least one full year (24 semester hours) must be taken specifically for the new degree program.

**International Student Admissions**

Over the years, Texas Tech has been fortunate to attract numbers of highly qualified and talented international students. Recognizing the difficulties involved in moving from their home countries and home schools to a new environment and new scholarly procedures and expectations, Graduate Admissions is committed to helping international students in this important transition.

The following procedures should be followed carefully in order for international students to be admitted to a master’s or doctoral degree program at Texas Tech University. Applications will not be evaluated until all admission requirements have been met. All materials submitted become the property of Texas Tech and are not returnable or refundable.

1. **Application**—Applications may be obtained from the Web site www.gradschool.ttu.edu. Falsification of application information will void admission to Texas Tech University. The applicant’s name must be the same as it appears on the passport.

2. **$60 Nonrefundable Application Fee**—Acceptable methods of payment are credit card, money order, cashier’s check and traveler’s check. Full-time Texas Tech employees, their spouses, and dependents under age 25 are exempt from this fee. The faculty/staff fee waiver form may be obtained in the Office of Graduate Admissions.

3. **Official Transcripts**
   - The applicant must have earned a bachelor’s degree from a regionally accredited institution in the United States or its equivalent from a foreign institution. Foreign institutions must be recognized by their government/governmental ministry as a degree-granting institution.
   - The applicant must submit an official transcript from each college or university attended. All degrees earned must appear on an official transcript.
   - The applicant who, because of current enrollment, cannot provide final transcripts at the time of application must submit transcripts of all completed study. Consideration may then be given for tentative admission upon the condition that final transcripts are provided within the initial semester of enrollment at Texas Tech. Applicants must submit at least six semesters of coursework to be eligible for admission consideration.

The applicant must have been in good standing in all schools attended at final matriculation.

In addition to these standard requirements, international applicants must also provide an official English translation of all transcripts or mark sheets if the documents are not provided in English. Certification of the translation must be made by an official government or educational institution with the original signature and/or the university issuing the transcript or mark sheets with original signature and seal. Graduate Admissions will not accept a public notary certification. If the applicant has not completed his/her degree at the time of application, six semesters or three years of coursework are required to complete an evaluation. Once the degree is completed, a final transcript showing the degree awarded must be submitted.

If an international student has attended another U.S. university and wishes to transfer to Texas Tech, an official transcript from that university is required.

4. **Degree**—An official degree certificate, diploma, or statement that the degree has been granted is required, including an official English translation. Certification of the translation must be made by an official government or educational institution with the original signature and/or the university issuing the degree with original signature and seal. Graduate Admissions will not accept a public notary certification.

5. **Official GRE (or GMAT for College of Business Administration and Other Select Programs) Score Report**—The GRE/GMAT must not be more than five years old. This is a requirement of most degree programs. Check with the individual program if you are not certain if the GRE/GMAT is required. Programs may also occasionally allow other standardized tests to substitute for the GRE/GMAT. Information about the GRE or GMAT may be obtained from the Educational Testing Service, P.O. Box 6000, Princeton, NJ 08541-6000. All test scores are received by Graduate Admissions, not the department. The institution code for Texas Tech is 6827.

   GRE — 866.473.4373 (U.S., U.S. Territories and Canada), 609.771.7670 (all other locations), www.gre.org

   GMAT — 800.462.8669 and/or 609.771.7330, www.gmat.org

6. **Official TOEFL/IELTS**—TOEFL/IELTS score reports must not be more than two years old. The TOEFL score must be received directly from the Educational Testing Service (ETS), and the IELTS score must be received directly from ielts.org. All test scores are received by Graduate Admissions, not the department. Photocopies are not considered official. The minimum TOEFL score required is 550 (paper-based version), 213 (computer-based version), or 79 (internet-based version); the minimum IELTS required score is an overall band score of 6.5. The TOEFL/IELTS examinations are not waived unless an applicant has a degree from a U.S. university or from a university in 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 about the TOEFL may be obtained from the Educational Testing Service, PO. Box 6151, Princeton, NJ 08541-6151. The institution code for Texas Tech is 6827.

TOEFL — 877.863.3546 (U.S., U.S. Territories and Canada), 609.771.7100 (all other locations), www.toefl.org
IELTS — Information about the IELTS may be obtained from IELTS International, 100 East Corson Street, Suite 200, Pasadena, CA 91103, T 626.564.2954, F 626.564.2981, www.ielts.org, ielts@ieltsintl.org. The institution code for Texas Tech is 6827. There is no IELTS institution code for Texas Tech University.

To determine whether additional English training is required along with graduate coursework, further evaluation of English proficiency will be given after the student arrives on campus. If a student is accepted by a department, the Office of Graduate Admissions will then determine if there is enough financial information to issue an I-20. If there is, the I-20 will be issued by the Office of Graduate Admissions and mailed to the student. If financial information is needed it should be in the form of a bank statement converted to U.S. currency. This statement should not be sent to the department. A statement of support from the sponsor must accompany the bank statement. Students should check with Graduate Admissions about the current amounts needed in their bank accounts. These amounts include tuition, books, living expenses, etc. Amounts will vary depending upon the financial assistance awarded by the department.

Students should be certain to give their full names on the envelope return address. Correspondence should include the full name and date of birth. All entries into the records system are made by family name (last name), first name, middle name. Send all official documents to the following address:

Office of Graduate Admissions
Texas Tech University
PO. Box 41030
Lubbock, TX 79409-1030

Evaluating Applications. Applications will not be evaluated until all of the above requirements have been met. Applicants will be notified by the Office of Graduate Admissions when an admissions decision has been made. Some departments, operating with a limited number of spaces for students each year, make final decisions for the fall semester in early spring.

Deadlines. Deadlines for international applicants are as follows:

• March 1 for fall semester
• September 1 for spring semester
• February 1 for summer session

Contact Your Department. Prospective students must also contact the department in which they are planning to study to obtain information regarding any special admission requirements, such as additional tests, applications, or letters of recommendation. You may find online applications at the Web sites of each department by viewing the main Texas Tech Web site (www.tt.edu) and select “Academics.” You may also do so by calling the main university switchboard number 806.742.2011 and asking for the department in which you are interested.

SEVIS — International students, exchange visitors and scholars attending school or conducting research in the United States are required to pay a $100 SEVIS fee prior to obtaining their visas. The fee is associated with the Student Exchange and Visitor Information System (SEVIS) and took effect September 1, 2004. The $100 SEVIS fee will be refunded as a stipend upon entrance and enrollment in a graduate program at Texas Tech University.

Admission to a Second Graduate Degree Program. Permission to work toward a second graduate degree of the same level is granted only upon approval by the relevant department and review by the graduate dean. In addition, the applicant is subject to all requirements as a new student. While there is no guarantee that any work from the first degree may apply to the second, at least one full year (24 semester hours) must be taken specifically for the new degree program.

Non-Degree Student Admission Procedures

Admission to a non-degree program is not a guarantee of admission to a graduate degree program at a later date, nor does it guarantee that credits earned in a non-degree program will count toward a graduate degree.

• PGRD (Post Graduate)—PGRD category is for students who have earned an undergraduate degree and desire to take only undergraduate courses. In this status, a student may register indefinitely as a non-degree graduate student but may not be appointed to teaching assistantships or research assistantships. Students in this category may not register for graduate courses.

• GTMP (Graduate Temporary)—A student in this category is considered a temporary non-degree student and may enroll for no more than 12 hours.

• CERT (Teacher Certification), FCSC (Teacher Certification/Human Sciences)—A student who desires to earn certification through the College of Education or the College or Human Sciences may apply for this type of non-degree status. Graduate courses may be taken, but if the student wishes to pursue a degree at a later time, only 12 graduate hours completed before admission to a degree program can be counted toward a degree. The student must also apply through the College of Education or the College of Human Sciences, in addition to Graduate Admissions.

• CPED (Continuing Professional Education Development)—CPED is designed to meet the needs of professionals such as engineers, certified public accountants, architects, social workers, teachers, and others who require continuing professional educational development. In addition to applying to Graduate Admissions, students must request permission for this non-degree status from the graduate advisor or faculty administering the program in their department. The GRE will be waived as long as a GPA of 3.0 or greater is maintained as a non-degree student.

• GCRT (Graduate Certificate Program)—GCRT is intended to meet the supplemental educational needs of professionals. A graduate certificate program is comprised of a set of courses that provide a coherent knowledge base. These courses may be derived from more than one academic program and may be more practice-oriented than the courses in a graduate academic program. Students applying for a graduate certificate program are not required to submit GRE or GMAT scores but must meet all other requirements for graduate admission.

Applicants seeking non-degree admission in any category must provide the following:

1. Application—Applications should be submitted at least three months prior to date of intended enrollment. The online forms are available at www.gradschool.ttu.edu. Falsification of application information will void admission to Texas Tech University.

2. $50 Nonrefundable Application Fee—Acceptable methods of payment are credit card, money order, cashier’s check and traveler’s check. Full-time Texas Tech employees, their spouses, and dependents under age 25 are exempt from this fee. The faculty/staff fee waiver form may be obtained in the Office of Graduate Admissions.

3. Official Transcripts—The bachelor’s degree must be equivalent to one from Texas Tech. A student who, because of current enrollment, cannot provide final transcripts at the time of application must submit transcripts of all completed study, as well as incomplete transcripts from the current institution. Consideration may then be given for tentative admission upon the condition that final transcripts are provided within the initial semester of enrollment at Texas Tech. Official transcripts showing the prospective student is in good standing from all higher education institutions attended are required.
Graduate School Readmission / Deferment

Students who fail to register or who leave school during a spring or fall semester must fill out and submit the Returning Student Form. The returning student form may be found online at www.gradschool.ttu.edu. Select “Forms.” Student should check the box labeled “Request to Re-Admit.” Automatic readmission is not guaranteed; departments will consider students on a case-by-case basis. The Office of Graduate Admissions will notify the student of the department’s decision.

Previously enrolled students who do not enroll for more than 12 months must fill out and submit a new application.

International and domestic students who defer admission to a semester for which they did not originally apply must fill out and submit the Request to Change the Initial Entry Date form and check the box labeled “Request to Change the Initial Entry Date.” The form can be found online at www.gradschool.ttu.edu. Automatic readmission is not guaranteed; departments will consider students on a case-by-case basis. The Office of Graduate Admissions will notify the student of the department’s decision.

Enrollment

Students who have been granted admission to the Graduate School are expected to register for coursework whether or not they contemplate degree work. Failure to register in the term for which admission is granted requires the student to reapply for admission. The details of registration are under the jurisdiction of the registrar’s office, which furnishes each enrollee complete instructions for all steps in the procedure. Students should follow carefully such instructions and those found in this section of the catalog. Graduate students are permitted to register at any time beginning with the first day of advance registration. Advance registration usually begins in April for the summer and fall sessions and in November for the spring semester. Online registration is available to all admitted students. Instructions for Web registration and add-drop can be found at www.techtis.admin.ttu.edu/student.

Departmental Approval of Courses. Students should have a schedule of courses approved by an official representative of their major department at the time of registration. It is the student’s responsibility to see that the registrar’s printout corresponds exactly to the courses for which the student has registered.

Enrollment of a graduate student in any course that carries graduate credit is automatically considered to be for graduate credit and affects relevant grade point averages accordingly.

Full-Time Study. Normal full-time enrollment varies between 9 and 13 hours for doctoral students and 9 and 16 hours for other graduate students in the regular semester. The minimum enrollment for full-time graduate status is 9 hours in the regular semester. Full-time enrollment in a summer term is from 3 to 6 hours. Students on fellowships, assistantships, or other appointments designed for the support of graduate study should enroll for 9 hours in each regular semester and at least 3 hours in a summer term.

If a student is devoting full time to research, using university facilities and faculty time, the schedule should reflect at least 9 hours enrollment (6 hours in each summer term). Doctoral students who have completed coursework, passed qualifying exams, been admitted to candidacy, and accumulated at least 85 doctoral hours may register as full-time students for one semester, taking the number of hours (not less than 3) that will bring the total to 93 hours. Then they may register as full-time students for up to two more semesters of 3 hours each, thus constituting full enrollment for employment purposes only. (Two summer terms will count as one semester.) Such lower enrollment may affect financial aid status; students are encouraged to check with financial aid, scholarship, and loan officers before taking the 3-hour option.

Normally, the maximum allowable hours per semester is 13 for doctoral students, 16 for other graduate students, and 6 in a six-week summer term. The general rule is that a student may not earn more than 1 hour of credit for each week of the enrollment period. Any exceptions to this rule must have the prior approval of the graduate dean.

Registration in an individual study, research, or similar course implies an expected level of effort on the part of the student comparable to that associated with an organized class with the same credit value.

A doctoral student shall not be required to register for more than 9 credit hours during any long semester or 6 credit hours during a summer term and may not register for more than 13 and 6 hours, respectively, without the prior permission of the dean of the Graduate School.

A doctoral student who is required to register solely for the purpose of satisfying a continuous enrollment requirement need not register for more than 1 credit hour during each term. However, a doctoral student who is involved in internship, research, or another type of academic study should register for credit hours in proportion to the teaching effort required of the program faculty.

Leave of Absence. Any student who fails to register during a fall or spring semester and who does not have an official leave of absence from study is subject to review for readmission by the standards in effect at the time of reconsideration. Official leave of absence, which is granted by the dean of the Graduate School upon departmental recommendation, may be requested only in case of serious medical conditions and other exceptional reasons. Normally, leaves of absence will not exceed one year. Leaves of absence do not extend the maximum time allowed for completion of the degree.

Continuous Enrollment. Students who have begun thesis or dissertation research must register for 6000 or 8000 courses in each regular semester and at least once each summer until all degree requirements have been completed, unless granted an official leave of absence from the program for medical or other exceptional reasons. Off-campus students may register for 1 hour of 6000 or 8000 with departmental approval until their final semester, at which time they must enroll for at least 3 hours. Students receiving financial assistance must register for the number of hours required by Financial Aid. Approval of a leave of absence will not extend the allowed time for completion of the degree.

Registration for Thesis or Dissertation Hours. Registration for at least 6 hours of 6000 is required for the master’s thesis and at least 12 hours of 8000 for a doctoral dissertation. Once the project is begun, a student must be enrolled in such courses every semester until completion. A student should enroll under the committee chairperson; however, in those instances in which other professors on the committee are making substantial contribution to the student’s research, it is permissible for the student to enroll proportionally under those professors. Students certified as off-campus may enroll for as little as 1 hour until their final semester, at which time 3 hours minimum are required.

Students may not enroll in thesis or dissertation courses before formal admission to a degree program by the graduate dean.

Enrollment for thesis or dissertation courses is permitted only during a regular registration period. Students away from the campus may, however, register for such courses by mail, provided arrangements are made with the registrar’s office by telephone or electronically prior to the beginning of a registration period.

Students are required to register for appropriate courses in every semester or summer term in which they expect to receive assistance, use the facilities of the university; or take comprehensive examinations.

The number of hours for which students must enroll in each semester depends on their level of involvement in research and their use of university facilities and faculty time. Students in residence who are devoting full time to research should enroll for 9 to 12 hours.
Registration in Session of Graduation. There are three official graduation dates: December, May, and August. Every candidate for a graduate degree must be registered in the Graduate School in the session of graduation for at least 3 hours of 6000/8000, if all requirements are not met, or 1 hour of 7000 individual study for nonthesis, if all requirements are met. Failure to graduate at the expected time requires such additional registrations as may be necessary until graduation.

Maximum Allowable Doctoral Hours. Students not making timely progress toward completion of the doctoral degree are subject to termination by the graduate dean. The Texas Legislature has capped fundable graduate study at 99 doctoral hours for most programs and may impose sanctions upon universities permitting registration for excess hours. Graduate students with more than 99 doctoral hours will be required to pay out-of-state tuition, regardless of residence status. The maximum time allowed for completing the doctoral degree is eight years from the first doctoral semester or four years from admission to candidacy, whichever comes first. The graduate dean must approve exceptions or extensions in advance.

Maximum Allowable Graduate Hours. Students who are in programs other than doctoral programs and are not making timely progress toward completion of their degree are subject to termination by the graduate dean. Graduate students beyond the maximum allowable graduate hours as determined by the Texas Legislature may be required to pay out-of-state tuition, regardless of residence status. The maximum time allowed for completing a master’s degree is six years. The graduate dean must approve exceptions or extensions in advance.

Changes in Schedule and Withdrawal. A graduate student who wishes to add or drop a course must initiate such action with the graduate advisor for his or her program. A student who quits a course without official withdrawal is likely to receive an F in that course.

Enrollment by Faculty and Staff. Full-time members of the faculty and staff of Texas Tech University may enroll for courses by permission of the department chairperson concerned. In registering for graduate work, they become subject to the regulations of the Graduate School. However, no member of the faculty who has held rank higher than instructor at Texas Tech is eligible to pursue a graduate degree program at this institution unless prior approval of the faculty and staff of Texas Tech University is obtained on special forms available in the Graduate School at the time of registration. No course taken without this approval may be counted for graduate credit. With the approval of the dean of the instructional college and the dean of the Graduate School, students may take graduate courses for undergraduate credit. Students may not, however, receive both graduate and undergraduate credit for the same course, except for up to 9 hours for an approved joint undergraduate and graduate degree program.

The maximum amount of work that may be scheduled by an undergraduate taking courses for graduate credit is 16 hours in a semester or 6 hours in a summer term, including graduate and undergraduate work. Undergraduates permitted to enroll for graduate work are expected to receive their bachelor’s degree within a year of their first graduate enrollment.

An undergraduate may not receive credit for more than 12 semester hours of graduate work completed prior to admission to the Graduate School as an applicant for a graduate degree.

Students not attending Texas Tech University must be admitted to the undergraduate program prior to being allowed to enroll in graduate classes. No one should apply to graduate school that does not anticipate undergraduate graduation prior to beginning graduate classes.

Continuation in Graduate School

Every student enrolled in the Graduate School, whether working toward a degree or not, is required to maintain a high level of performance and to comply fully with policies of the institution. The Graduate School reserves the right to place on probation or to suspend any post-baccalaureate or graduate student who does not maintain satisfactory academic standing or who fails to conform to the regulations of the university.

Students who are admitted to the Graduate School or to a degree program on condition of maintaining a required GPA are automatically admitted on a probational basis. Failure to fulfill the conditions stipulated at the time of admission will result in termination from the Graduate School.

Academic Probation and Suspension

If a student’s graduate GPA for a particular semester falls below 3.0, the student will be placed on academic probation. (A 3.0 average is the minimum requirement of the Graduate School; individual academic areas may, and often do, impose a higher grade point average for continuation in their academic programs.) A student must make a 3.0 GPA or better in the next semester in which he or she is enrolled. Failure to do so, or to maintain a 3.0 current GPA in each succeeding semester, will result in academic suspension from further enrollment as a graduate student or in graduate courses at Texas Tech. Regulations governing scholastic probation are based on semester grade point averages and will be applied regardless of overall grade point average. Any student who has been suspended must appeal to the Graduate School if reinstatement is desired. Appeal of suspension may be made in writing to the dean of the Graduate School. If the graduate dean rejects the student’s appeal, the student may request a hearing before the Student Affairs Committee of the Graduate Council. This committee will render a decision as to whether or when the student may be readmitted to graduate study.

A student may be suspended for unprofessional conduct such as cheating or plagiarism. Any appeal is subject to the provisions of the Code of Student Conduct. See the Student Handbook for further information.

General Information

The Graduate School, like other colleges and schools of Texas Tech, reserves the right to institute, after due notice and during the course of a student’s work toward a degree, any new ruling that may be necessary for the good of the university and therefore, ultimately, of its degree recipients. Normally a student may graduate under the provisions of the catalog in effect the semester of admission into the degree program.

Responsibility of Students. Each graduate student is expected to become thoroughly familiar with both departmental and Graduate School regulations and with the requirements for degrees. Failure to follow the regulations and requirements almost inevitably results in complications for which the Graduate School cannot assume responsibility.

To facilitate communications, graduate students should promptly notify the Graduate School of changes of address.

Graduate Advisors. The dean of the Graduate School is the general advisor for all graduate students, but, insofar as the particular courses are concerned, students are counseled by the chairpersons of their major and minor departments or by other professors designated for such counseling. Advisement in matters pertaining to teachers’ certificates is the responsibility of the director of teacher certification in the College of Education.

Extracurricular Activities. Graduate students may participate in extracurricular activities within university policies. They are encouraged to participate in honor societies for which they may be qualified.
Prerequisites for a Graduate Major. For a graduate major, an applicant must have completed, or must take, sufficient undergraduate work to ensure adequate background for successful graduate work in the proposed field. With approval of the department, the student may receive credit by examination for such leveling requirements. Any department may specify additional prerequisites if they are considered necessary and may require an applicant to pass an examination before being accepted.

Transfer Credit and Distance Courses. There is no automatic transfer of credit from another university toward a graduate degree at Texas Tech. In general, all such work is subject to review and approval by the student’s department and by the graduate dean. No work completed with a grade of less than B will be considered.

Graduate credit may be granted for courses taken by distance learning at another university. Distance learning completed through Texas Tech’s Division of Outreach and Distance Education may be considered if the student had been officially admitted to the Graduate School prior to enrolling for the courses (see discussion of distance learning in master’s program requirements). Graduate credit is not granted for courses taken by correspondence.

Grades. The grades used in the Graduate School are the same as those used in undergraduate work (A, B, C, D, and F), but graduate credit is allowed only for courses completed with grades of A, B, and C, although grades of D and F are used in computing grade point averages. Instructors may choose to add a plus or a minus to the grade. These will be entered on the transcript but will not be used in calculating the grade point average.

Departments have the option to use pass–fail grades (P and F) for individually arranged courses, professional seminars, and certain other courses. No more than one-fourth of a student’s program coursework may be graded pass–fail, however.

No final grade assigned for a graduate-level course may be raised unless an error has been made. Substituting another course for one completed with a low grade is not permitted.

Work completed at another graduate school with a grade less than B will not be accepted, nor will grades of pass or satisfactory. Grades on transferred work will not raise the grade point average on courses completed at Texas Tech.

Symbols CR, NC, I, and W. The symbol CR (credit) or NC (no credit) normally is assigned for every enrollment for a master’s thesis or doctor’s dissertation until the completed document has been approved by the student’s committee and accepted by the dean of the Graduate School. At that time a grade of A or B will be entered for the final enrollment.

CR may be given by a professor when a student’s work in other individual research courses is not finished but is satisfactorily in progress at the end of a semester. When the research is completed, a standard letter grade should be entered for the final semester. PR is not an appropriate grade for any graduate course.

The symbol I (incomplete) may be given by a professor when a student’s work in a course has not been completed at the end of a semester and when failure to complete the work has been due to causes beyond the student’s control. It is not used as a substitute for F. When the I is given, the instructor should file a form with the Graduate Office specifying the reasons for the grade and the work remaining to be done.

Students may officially drop a course through the 45th class day of a long semester or the 15th class day of a summer term and receive the grade of W regardless of their progress in the class. After this time period, students must complete all courses and receive a grade.

Proficiency in English. An international student found deficient in English may be required to complete certain specified courses in English usage (without graduate credit) satisfactorily before being considered for admission to candidacy for a graduate degree.

Statement of Intention to Graduate. A student planning to graduate must file in the Graduate School’s office a “Statement of Intention to Graduate” at the beginning of the semester of intended graduation. A list of deadlines will be sent to all students who indicate a current-semester graduation date on their program forms. No candidate’s name will be placed on the “Tentative List of Graduates” for any graduation date unless this statement has been received at the Graduate Office by the specified deadline.

A candidate who fails to graduate at the expected time is required to file a new “Statement of Intention to Graduate” for any subsequent graduation.

Teacher Certification. Prospective students should understand that the material in this catalog applies only to requirements for graduate degrees and has no direct relation to certificates for public school teachers. The Graduate School gives no assurance that a program for a graduate degree and a program for a certificate will coincide. Students interested in certificates should confer with the director of teacher certification in the appropriate program at the outset of their work.

Master’s Program

General Requirements

The degree requirements set forth here are in addition to those listed on previous pages of the graduate studies section of the catalog.

Prerequisites. Admission to a master’s degree program is dependent upon the applicant’s undergraduate record; scores on the Aptitude Test of the Graduate Record Examination or, for business applicants, the Graduate Management Admissions Test (except in programs in which either test has been waived); other relevant information; and the recommendation of the proposed major department.

A substantial body of undergraduate work in the major subject and considerable breadth of background are essential for graduate study. Therefore, students whose undergraduate programs are considered deficient in breadth or depth may be required to complete additional preparatory work without degree credit. Such undergraduate “leveling” courses must be completed with a grade of C or better. Some programs may require a grade better than a C.

Major Subject. Every program for a master’s degree not granted special exception must embody a major comprising at least 18 semester hours of graduate work (which may include a thesis) in a subject that has been approved for major work and for which the student has, or completes without degree credit, the necessary prerequisites for a graduate major.

Minor. Programs for a master’s degree may include two or three courses outside the major area. Departments offering master’s programs may permit students to take all of their work for the degree within the department. A minor may be completed in a single department or in several departments, but the courses comprising the minor are subject to the following limitations: (1) must carry graduate credit, (2) must be acceptable to the student’s major department, and (3) must be approved for the student by the department offering the course. This approval is indicated in the degree plan by the signature of the department chairperson (or graduate advisor). The purpose of this process is to make sure that a student is properly prepared for a course prior to enrollment.

Basic Plans for the Master’s Degree

There are two basic plans for master’s degree work:

1. A minimum of 24 hours of graduate coursework plus 6 hours of thesis (6000). The courses for the master’s degree with a thesis should be approved by the research advisor and not the graduate advisor.

2. A minimum of 36 hours of graduate coursework without a thesis. (Some degrees have a greater minimum hour requirement. An example is the Master of Fine Arts degree program, which
requires 60 hours of graduate coursework and a thesis or an exhibition.)

The option to offer thesis or nonthesis programs is a departmental decision. In addition, no more than 6 hours of individual study courses (aside from the thesis) ordinarily will be permitted in the master’s program.

**Filing the Official Degree Program.** During the first semester of enrollment, the student should submit to the dean of the Graduate School a “Program for the Master’s Degree and Application for Admission to Candidacy” as prepared by an official representative of the proposed major department and of other departments as indicated under “Minor” in the preceding section. Delay in submission of a degree program may result in postponement of admission to candidacy and graduation. Forms for the “Program for the Master’s Degree and Application for Admission to Candidacy” are available at the Graduate Office or www.gradschool.ttu.edu.

When the student receives an approved copy of the “Program” from the Graduate Office, he or she is expected to follow it as the basis of all subsequent enrollments. Substitution of courses can be made only by the written recommendation of the department or departments concerned and approval of the graduate dean.

Approval of a “Program for the Master’s Degree” does not, however, constitute admission to candidacy for a master’s degree. It merely signifies that the proposed program will be acceptable if the student satisfies all Graduate School regulations and all of requirements connected with the degree program.

**Annual Review.** The Graduate School strongly encourages faculty of master’s programs to conduct a formal review of the progress of their students at least once a year. Any student not making satisfactory progress toward the degree may be placed on probation and given conditions to stay in the program. Continued unsatisfactory progress in any area of graduate work will cause for dismissal.

**Minimum Residence.** The minimum residence for any master’s degree is ordinarily a full academic year or its equivalent of graduate work carrying residence credit. Part-time enrollment is evaluated on an individual basis.

**Transferred Work.** There is no automatic transfer of credit toward a master’s degree, but, in general, work completed in residence at another accredited graduate school may, on the recommendation of the departments concerned, be accepted for as much as 6 semester hours toward a master’s degree. Exceptions to this rule are granted in the case of the Master of Engineering degree and in certain other instances upon agreement between the college or department concerned and the Graduate School. Work completed at another graduate school with a grade less than B will not be accepted. Transfer credit will not alter a student’s grade point average at Texas Tech.

**Extension.** A maximum of 6 semester hours of extension work completed through Extended Studies at Texas Tech may be credited on the coursework for a master’s degree (or a maximum of 9 hours on a 36-hour program) if the student had been officially admitted to the Graduate School prior to enrolling for the extension work. Graduate credit is not granted for courses taken by extension at another university or taken by correspondence.

**Grade Requirement for Graduation.** For the master’s degree, the minimum requirement for graduation is an average of 3.0 in the major subject and an overall average of 3.0 on all courses, exclusive of the thesis, comprising the official program for the degree. Individual departments or colleges may have higher standards.

**Admission to Candidacy.** Every applicant for a master’s degree is required to make formal application for admission to candidacy for the master’s degree as soon as 9 to 12 semester hours of the master’s degree work, excluding leveling courses, have been completed. This application is submitted to the dean of the Graduate School on the form entitled “Program for the Master’s Degree and Application for Admission to Candidacy.”

Admission to candidacy will be granted at such time as all of the following requirements have been met:

1. All conditions relating to admission to the program have been met.
2. At least 9 semester hours of the graduate work required for the master’s degree have been completed (exclusive of transfer and extension courses).
3. All required leveling work has been completed with C or better grades.
4. An average grade of 3.0 or better has been maintained in all courses comprising the official program exclusive of leveling work.
5. Proficiency in a foreign language or tool subject required for the particular degree has been acceptably demonstrated.
6. The general field of the thesis has been stated and approved.
7. Work to date is acceptable to the departments concerned, as attested by their approval of the application for admission to candidacy.
8. The entire program conforms with the general requirements of the Graduate School and the requirements of the particular degree.

**Time Limit.** With the exception of certain specially approved programs, work credited toward a master’s degree must be completed within six years. Students whose graduate study at Texas Tech is interrupted by military service will be granted an extension of time for the period of their military duty, not exceeding five years.

**Language, Tool Subject Requirements**

**Language Requirement.** Many departments require a reading knowledge of one or more foreign languages, although it is not a school-wide requirement. When this requirement exists, see the appropriate departmental section in this catalog for further information. The essential purpose for a language requirement is to assure that the student gains access to scholarly literature of his or her field in more than one language. Foreign students may use their native language (if it is not English) to meet this requirement if this essential purpose is served thereby and their major department approves. Foreign students must provide official documentation of acceptable grades in languages taken abroad or be tested as described below.

To qualify for Admission to Candidacy in a program that requires knowledge of a foreign language, the applicant must demonstrate proficiency in one of the following ways (as specified by the department) not more than seven years prior to submission of an official program of study: (1) passing with a C- or better the second course of the sophomore sequence of the required language; (2) passing with a B- or better the second half of one of the special 6-hour programs for graduate students offered in French, German, and Spanish; (3) passing a standardized examination in French, German, Spanish, or Latin given in the Department of Classical and Modern Languages and Literatures or one of the examinations in French, German, or Spanish furnished by the Educational Testing Service and administered by the university’s Testing Center. Arrangements for these examinations should be made in the applicable unit. The Department of Classical and Modern Languages and Literatures will administer the examinations in any other foreign language in which instruction is offered by the department. Arrangements for testing for other foreign languages will be approved by the graduate dean.

Students majoring or minoring in foreign languages in the Department of Classical and Modern Languages and Literatures are subject to higher performance levels in satisfying the master’s requirement. Students should consult the graduate advisor of the appropriate language for guidelines.

**Tool Subject Requirement.** Some departments require a tool subject in lieu of or in addition to the language requirement. When this requirement exists, further information can be found in the appropriate departmental section within this catalog. When this provision can be satisfied by a formal course(s), a grade of B or better is required either in a single course or in the last of a sequence of such courses.
Master’s Thesis

The master’s thesis should represent independent work by the student, be conducted under the supervision of an advisory committee, and be written clearly and concisely in standard English (or another language when appropriate). As soon as the student’s area for thesis research has been determined, the graduate dean will appoint an advisory committee upon recommendation of the major department. The committee must consist of at least two members of the graduate faculty, including one from the department granting the degree. All members of the committee must sign the Thesis/Dissertation Approval Form and the ETD Signature Form printed by the student from the thesis/dissertation Web page. The student must earn a grade of B or better on thesis work to qualify for graduation.

A manual entitled Texas Tech University Graduate School Formatting Guidelines (Revised 2007) is available at the university Web site www.depts.ttu.edu/gradschool/current/THDGuidelines.php. All manuscripts must conform to published policies. The final copy of the thesis must be submitted electronically in PDF file format as an ETD to the University Library’s server. Deadlines and more information on this process are available through the Graduate School Web site. The Graduate Council mandates that students must provide their committee chairperson with a bound paper copy of the thesis unless a waiver form is submitted by the student and signed by the chairperson. The waiver form is available on the Graduate School Web site. Paper copies may be required by the academic unit in which the student pursues the degree.

During the semester of graduation, the candidate will pay Student Business Services a document fee to cover the cost of electronically storing the official copy (ETD) of the thesis. This fee is paid only once. The Document Fee is posted to students’ accounts by the Graduate School after Intent to Graduate forms have been processed for the graduating semester. Payment due dates are listed under the current semester’s deadlines at the Web site www.depts.ttu.edu/gradschool/current/Deadlines.php. Fees for Health Sciences Center students are slightly higher because two bound paper copies of the thesis are required.

Final Comprehensive Evaluation

The Graduate School requires a final comprehensive evaluation for all students in each program. The comprehensive evaluation is most often administered in the semester of intended graduation. This should be in a format most appropriate to the major field. At departmental discretion, the evaluation format may differ for thesis and nonthesis or professional and predoctoral students. The final evaluation should require a synthesis and application of knowledge acquired during the course of study and research leading to the master’s degree; no student should expect the evaluation to be based solely on performance in the classroom.

A student is eligible to undergo evaluation only after having been admitted to candidacy by the graduate dean. As soon as possible after the evaluation, a written report of the outcome should be sent to the graduate dean. A student who does not receive a satisfactory evaluation may be assessed once again after an interval of three months or more. At the discretion of the program concerned, a student who receives a satisfactory evaluation but who does not graduate within 12 months may be required to repeat the assessment.

Doctoral Program

General Requirements

The degree requirements set forth here are in addition to those listed on previous pages of the graduate studies section of the catalog.

Admission to Doctoral Study. Admission to doctoral study is restricted to applicants whose backgrounds show definite promise of success on this, the highest level of academic endeavor. Each doctoral department has its own requirements that applicants must satisfy for admission. It is essential that the student communicate with departmental advisors on this matter.

Years of Study. A minimum of three years of graduate study beyond the bachelor’s degree is required for the doctorate. Work completed for the master’s degree may be considered as a part of this period if it forms a logical sequence in the entire program.

Credit ordinarily will not be given for work completed more than seven years prior to admission to the doctoral program at Texas Tech University. Exceptions to this policy will require written justification through the student’s department and approval by the graduate dean.

Work completed in the doctoral program of another recognized graduate school will be considered on the recommendation of the departments concerned, but no assurance can be given that such work will reduce the course or residence requirements here. In no case can transferred credit reduce the minimum residence (see “Residence Requirement” in next column).

Doctoral study cannot be calculated solely in terms of credit hours, but the program for the doctorate requires completion of at least 60 or more semester hours of work beyond the bachelor’s degree, exclusive of credit for the dissertation. No more than 6 hours of course credit will be given for individual study course or research hours. Prior approval by the dean is required for any exceptions.

Grade Requirement. For the doctor’s degree, the minimum requirement for graduation is a grade point average of 3.0 in the major subject, exclusive of credits for the doctoral dissertation, and a grade point average of 3.0 in all other courses taken for graduate credit outside the major. Individual departments and colleges may have higher standards than this minimum, school-wide requirement.

Major and Minor. The doctorate requires at least 60 semester hours of graduate work, exclusive of the dissertation. The Graduate School does not require a formal minor. However, the student may pursue a minor or one may be required by the student’s advisory committee or by the program faculty in which the major is taken. If a minor is taken, it must include at least 15 graduate hours in a program outside the student’s major. The minor will be declared in the student’s “Program for the Doctoral Degree” (see “Filing a Doctoral Degree Plan”). If a minor is taken, the major requires a minimum of 45 semester hours.

Courses listed for the major will be primarily in one academic program. However, courses from other academic programs may be included (other than courses for a minor, if one is declared) if they provide coherent support for the program courses in the major. The courses for the doctoral degree will be approved by the research advisor and not the graduate advisor.

If a formal minor is declared, it must be represented on the student’s doctoral committee (see “Advisory Committee”) and must be covered on the qualifying examination (see “Qualifying Examination”). Programs at variance with this description may be approved in exceptional circumstances. The advisory committee and the program faculty must approve such proposed exceptions before they are submitted to the Graduate School for consideration.

Residence Requirement. The purpose of residence in a doctoral program is to ensure the intellectual immersion of students in a research and learning environment with faculty, peers, and staff. This intellectual immersion can take place in forms other than those of a full-time student on campus. Recognizing that there are several ways to acquire the benefits of residence, programs are allowed to set the residence requirements that best fit their particular program. Students are expected to consult their departments about specific residence requirements for their degree.

If a doctoral program does not specify a residence requirement, then the residence requirement for that program is fulfilled by the completion of a full schedule (at least 12 semester hours) of graduate coursework in each of two consecutive terms. Students holding half-
time graduate assistantships may satisfy the requirement by taking at least 9 hours of coursework in each of the two long terms and 6 hours in the summer. Other patterns require approval of the graduate dean.

The plan for fulfilling the residence requirement must be indicated on the doctoral program form (Program for the Doctoral Degree) submitted to the Graduate School in the first year of doctoral study and must be approved in advance of the beginning of the residence year. (For any program variations in this requirement, see the college or department sections in this catalog.)

**Filing a Doctoral Degree Plan.** Early in a student's doctoral studies a formal evaluation will be made of his or her background preparation in the major field. This evaluation may vary according to the academic unit involved; in some cases it may consist of a formal written or oral exam, in others, a review meeting with a committee or graduate advisor, in still another, the successful passing of a key course or courses. On the basis of this evaluation, whatever form it takes, the student's course of study will be projected and submitted to the Graduate School on the appropriate form. This evaluation will occur during the student's first year of doctoral study and the "Program for the Doctoral Degree" will be submitted to the Graduate School before the second year of work has begun. Revisions of the plan are permitted as needed.

**Transfer of Coursework.** There is no automatic transfer of credit toward the doctorate degree. On the recommendation of the department or program, the graduate school may review transfer courses for acceptance. Transfer credit will not alter the grade point average at Texas Tech University. No more than 30 semester credit hours of an earned master's degree from another institution may be transferred. Grades from transfer courses will not appear on Texas Tech University's transcripts. Doctorate students may take approved courses at another approved institution and transfer up to 12 semester credit hours into their degree program.

**Advisory Committee.** As soon as the course of study for an applicant has been determined, an advisory committee of at least three members of the graduate faculty (including the minor area, if a minor is declared) will be appointed by the graduate dean on the recommendation of the advisor concerned. This committee will meet as often as necessary with the applicant and will direct his or her work at all stages. Either the chair or the co-chair of a student's committee must be a regular member of the department or program faculty from which the student will receive the doctorate.

**Annual Review.** The Graduate School strongly encourages faculty in each doctoral program to conduct a formal review of their students’ progress at least once each year. From the third year onward, such review is required. Any student not making satisfactory progress may be placed on probation and given conditions to meet to stay in the program. Continued unsatisfactory progress in any area of a student’s work will be cause for dismissal.

**Time Limit.** All requirements for the doctoral degree must be completed within a period of eight consecutive calendar years or four years from admission to candidacy, whichever comes first. Graduate credit for coursework taken at Texas Tech more than eight calendar years old at the time of the final oral examination may not be used to satisfy degree requirements. Absent an extension, the student may be permitted to retake the qualifying examination, and, upon passing that examination, be readmitted to candidacy by the Graduate Council for some period of time not to exceed four years.

Final corrected copies of the dissertation must be received in the Graduate School no later than one year after the final examination or within the eight-year or four-year time limit, whichever occurs first. Failure to complete this step will result in the degree not being awarded.

**Admission to Candidacy.** Authority for admitting an applicant to candidacy for a doctor's degree is vested in the Graduate Council. Upon receipt of a recommendation from the advisory committee, the graduate dean will submit it to the Graduate Council for approval. By written communication, the graduate dean will transmit the results of the council’s action to the applicant, to the chairperson of the advisory committee, and to the chairperson of the department concerned. A student must be admitted to candidacy for the doctorate at least four months prior to the proposed graduation date.

**Language, Tool Subject Requirements**

**Doctor of Philosophy.** Each department offering a doctoral program determines its language requirements, subject to the approval of the Graduate Council. Language requirements, if any, are described in the sections of this catalog devoted to instructional departments. To qualify for admission to candidacy in those programs that have a language requirement, applicants must demonstrate their competence in one of the following ways:

1. Students may fulfill the reading knowledge requirement by passing with a C- or better the second course of the sophomore sequence of the required language. Those seeking to present a high level of competency will pass with a B- or better any literature course at the third-year level or beyond.

2. Students may satisfy the standard competency level by enrolling in one of the special 6-hour programs for graduate students offered in French, German, and Spanish by the Department of Classical and Modern Languages and Literatures. The second half of such a program must be passed with a grade of B- or better.

3. The third method of fulfilling the language proficiency requirement is by passing a standardized examination in French, German, Spanish, or Latin given in the Department of Classical and Modern Languages and Literatures or by passing one of the examinations in French, German, or Spanish, furnished by the Educational Testing Service and administered by the university's Testing Center. Arrangements for these examinations should be made in the applicable unit. The Department of Classical and Modern Languages and Literatures will administer the examinations in any other foreign language in which instruction is offered by the department. Arrangements for testing in foreign languages will be approved by the graduate dean.

Students majoring or minoring in foreign languages in the Department of Classical and Modern Languages and Literatures are subject to higher performance levels in satisfying the doctoral requirement. Students should consult the graduate advisor of the appropriate language for guidelines.

Some departments require a tool subject in lieu of or in addition to the language requirement. When this requirement exists, see the appropriate departmental section in this catalog for further information. If this provision is satisfied by formal courses, a grade of B or better is required either in a single course or in the last of a sequence of such courses passed not more than seven years prior to the student’s approval for doctoral work.

**Doctor of Education.** To qualify for admission to candidacy, applicants for the Ed.D. degree are required to show competency in educational research methods and educational statistics as well as a foreign language if their research requires such competency.

**Qualifying Examination, Final Examination**

**Qualifying Examination.** The Qualifying Examination for Admission to Candidacy for the doctor’s degree is one of the major features of the doctoral program and will be administered in both the major and minor areas of study (if a formal minor has been declared). The examination requires a synthesis and application of knowledge acquired during the course of study for the doctoral degree; consequently, satisfactory performance in coursework does not necessarily guarantee successful performance on the qualifying examination. A student is eligible to stand for this examination after receiving approval of the doctoral degree plan from the dean of the Graduate School, completing all language and tool requirements, and completing most of the coursework prescribed by the approved plan. Students must take this examination within one
understanding of the subject matter and its background, and a
the subject of the dissertation at least four months before the
The advisory committee and the graduate dean must approve
her committee early in the course of the research.
required to present and defend a dissertation proposal before his or
quently, successful performance in other areas does not necessarily
except for the Doctor of Musical Arts,
the advisory committee will send a written notice to the Graduate
participate in the examination but have no vote in determining the
The advisory committee and the graduate dean or a profes
semester's defense deadline and after the committee has read the
committee on an appropriate class day prior to the graduating
performance in other aspects of doctoral study.
Final Examination. At least four months must intervene between
the qualifying examination and the final examination. A final
public oral examination, usually over the general field of the dis
servation, is required of every candidate for the doctorate. The oral
examination must be scheduled by the student and his advisory
committee on an appropriate class day prior to the graduating
semester's defense deadline and after the committee has read the
completed dissertation. The Graduate School requires three weeks
notification prior to the oral examination. The required Defense
Notification Form noting the time, place, and other information
concerning the examination is available on the thesis/dissertation
The advisory committee and the graduate dean or a profes
designated to act in place of the graduate dean conduct the
examination. All members of the committee participate fully in the
examination and cast a vote. Professors other than members of
the committee, including the graduate dean's representative, may
participate in the examination but have no vote in determining the
outcome. At the conclusion of the examination, the chairperson of
the advisory committee will send a written notice to the Graduate
School giving the result of the examination.

Dissertation

Except for the Doctor of Musical Arts, a dissertation is required of
every candidate for a doctoral degree. This requirement is separate
and apart from other requirements in doctoral programs; conse-
quence, successful performance in other areas does not necessarily
ensure acceptance of a dissertation. The dissertation work must
earn a grade of at least B to qualify the student for graduation.
The Graduate School strongly recommends that each student be
required to present and defend a dissertation proposal before his or
her committee early in the course of the research.
The advisory committee and the graduate dean must approve
the subject of the dissertation at least four months before the
candidate's proposed date of graduation. The dissertation must
demonstrate a mastery of the techniques of research, a thorough
understanding of the subject matter and its background, and a
high degree of skill in organizing and presenting the materials.
The dissertation should embody a significant contribution of new
information to a subject or a substantial reevaluation of existing
knowledge presented in a scholarly style. The work on the disserta-
tion is constantly under the supervision of the advisory committee
and any other professors the committee or the graduate dean may
consider necessary.
All manuscripts must conform to published policies that can be
found at www.depts.ttu.edu/gradschool/current/THDGuidelines.
php. The final copy of the thesis must be submitted electronically in
PDF file format as an ETD to the University Library's server. Dead-
lines and more information on this process are available through
the Graduate School Web site. The Graduate Council mandates that
students must provide the committee chairperson with a bound
paper copy of their dissertation unless a waiver form is submitted
by the student and signed by the chairperson. The waiver form is
available on the Graduate School Web site. Paper copies may be
required by the academic unit in which the student pursues the
degree. All copies of a dissertation, electronic or paper, must be
accompanied by an abstract of no more than 350 words.

Dissertation Fees. During the semester of graduation, the can-
didate will pay Student Business Services a document fee to cover
the cost of electronically storing and microfilming the official copy
(ETD) of the dissertation. This fee is paid only once. The Document
Fee is posted to students' accounts by the Graduate School after Intent
to Graduate forms have been processed for the graduating semester.
Payment due dates are listed under the current semester's deadlines at
www.depts.ttu.edu/gradschool/current/Deadlines.php. Fees for Health
Sciences Center students are slightly higher because two bound
paper copies of the thesis are required.

Graduate Certificate Programs

Graduate certificates are intended to meet the supplemental post-bac-
caulareate education needs of professionals. A graduate certificate
program is a set of courses that provides in-depth knowledge in a sub-
ject matter. The set of courses provides a coherent knowledge base.
A student applying for a graduate certificate program will be admit-
ted with a “GCRT” designation and will not be required to take
the GRE or GMAT but will need to meet all other requirements for
graduate admission. To take any graduate course, all prerequisite
courses (including undergraduate courses) must be taken and
necessary background obtained before attempting the course. A
student will be required to have a baccalaureate degree to start a
graduate certificate program. There is only one exception to having
a baccalaureate degree. If an undergraduate student from Texas
Tech University has a 3.00 GPA or better and is within 12 hours of
completion of a baccalaureate degree, the student may start taking
graduate courses toward a graduate certificate. The student must
have a baccalaureate degree to receive a graduate certificate.
Graduate credits earned while the student is enrolled in a graduate
certificate program may not be applied toward a graduate degree
unless the student completes the GRE or GMAT and enrolls as a
fully accredited graduate student. After taking the GRE or GMAT
and fulfilling all other admission requirements, a student may use
the courses taken for a graduate certificate degree if the courses
fulfill the requirements of the program of study for the degree.
Graduate students may pursue a graduate certificate that is outside
their graduate program of study.
No more than one transfer course (if approved by the advisor of
the graduate certificate program and the Graduate School) will be
allowed for a graduate certificate program. If a graduate student is in
good standing and is dropping out of the graduate program, the stu-
dent may receive a graduate certificate if the necessary courses have
been taken. To receive a graduate certificate, a student must have a
GPA of 3.00 or better. No grade lower than a C will be accepted.
Current graduate certificate offerings include:

- Graduate Certificate in Autism
- Graduate Certificate in Linguistics
- Graduate Certificate in Dual Sensory Impairment
- Graduate Certificate in Women’s Studies
- Graduate Certificate in Personal Financial Planning
- Graduate Certificate in Addictions and the Family
- Graduate Certificate in Mental Health Counseling
- Graduate Certificate in Piano Pedagogy
- Graduate Certificate in Historic Preservation
- Graduate Certificate in Visualization
- Graduate Certificate in Teaching English in International Contexts
- Graduate Certificate in Community Design and Development
- Graduate Certificate in Ethics
- Graduate Certificate in Software Engineering
- Master Mentor Teacher Certificate

Publication of Student Work

Research is an integral facet of graduate study, and students are encouraged to seek publication of work done in pursuit of advanced degrees. Many theses and dissertations completed at Texas Tech are eventually published. In research involving close collaboration with faculty advisors, it is appropriate in some disciplines for publications to be co-authored. In disciplines in which authorship order is not always alphabetical, the student will generally be first author in publications resulting from a thesis or dissertation. In cases of considerable revision or addition of other data, order of authorship should be subject to mutual agreement and based on the nature and extent of contribution by the parties concerned and in accordance with accepted practice in the discipline.

The faculty member may choose to use the data in pursuing publication when the student was supported in full or in part by the university or through a faculty grant to do the research involved or when the faculty member contributed to the work in a way that was substantially above and beyond that normally expected of a major advisor and the student elects not to pursue publication within a reasonable time. The faculty member must list the student as co-author according to the conventions of the discipline involved and the relative extent of contribution or additional work required.

Opportunities for Interdisciplinary Master’s Degrees

The Graduate School of Texas Tech encourages interdisciplinary study and research, believing that our nation’s complex society and the world’s rich cultural heritage can be understood best from the perspective of many academic disciplines. Few settings offer a better opportunity for such study than the university with its graduate programs, libraries, laboratories, and diversely trained faculty. Although academic specialization is the common pattern in such an environment, the Graduate School is committed to building bridges and facilitating movement across the disciplines for those who are interested. As a result, opportunities for interdisciplinary work have increased through the years as a testimony to the university’s commitment to academic diversity.

Several formal interdisciplinary options appear on the following pages. However, students should be aware of innumerable informal options that exist because the programs have been designed by individual students in conjunction with their advisors for the Interdisciplinary Studies degree programs. Such flexibility in custom-designing programs affords maximum adaptability for the rapidly changing global marketplace.

In addition to the graduate programs listed in this section, the following interdisciplinary programs are discussed in other sections related to the college or department responsible for administering each program: Applied Linguistics; Comparative Literature; Ethnic Studies; Fine Arts; Land-Use Planning, Management, and Design; Latin American and Iberian Studies; Multidisciplinary Science; Public Administration; and Sports Health.

Biotechnology

Co-Directors: Dr. David B. Knaff, Horn Professor of Chemistry and Biochemistry; Dr. Daniel M. Hardy, Associate Professor of Cell Biology and Biochemistry.

Texas Tech University and the Texas Tech Health Sciences Center jointly offer an interdisciplinary Master of Science in Biotechnology degree designed to prepare students for a laboratory research career in biotechnology. In addition, the College of Law and the Graduate School offer a joint program leading to the degrees of Doctor of Jurisprudence (J.D.) and Master of Science in Biotechnology.

Master of Science in Biotechnology. Students may pursue either of two tracks within the program: the biomedical track or the applied sciences track. The Graduate School of Biomedical Sciences (GSBS) at the Health Sciences Center administers the biomedical track, and the Texas Tech Center for Biotechnology and Genomics administers the applied sciences track.

The applied sciences track is a two-year program, with the first two semesters consisting of required and elective coursework. The second year (nine to 12 months) is devoted in its entirety to full-time laboratory research. Students may satisfy the research requirement in either of two ways. They may complete an M.S. thesis, based on research carried out in the laboratory of a participating faculty member in one the following departments: Animal and Food Sciences, Biological Sciences, Chemistry and Biochemistry, or Plant and Soil Science. Alternatively, students may complete a nonthesis internship in a biotechnology laboratory. The internship may be carried out at an industrial research laboratory, a government laboratory, or a not-for-profit foundation laboratory.
The biomedical track is a 21-month program consisting of two semesters (nine months) of coursework and 12 months of full-time laboratory research. It is anticipated that students in this track will complete all of their coursework during their first year, with the second year devoted completely to the research component of the degree plan. The research component may be completed either at the HSC campus or through an internship at a biotechnology laboratory. Internship locations are similar to those described for the applied sciences track. Students who choose to do their research at the HSC campus will work with a member of the biotechnology graduate faculty and will have the option of writing an M.S. thesis. All biotechnology graduate faculty members have active research programs that emphasize use of molecular biology methods.

First-year students in both tracks take a common core curriculum consisting of a seminar course (BTEC 6101), an introductory lecture course (BTEC 6301), an introductory lab course (BTEC 5338), a course on the ethics of research (GSBS 5101), and a bioinformatics course (BINF 5301). The biomedical track requires a series of lab rotations during the second semester of the first year, while the applied sciences track requires a second, more advanced lab course. The remaining coursework requirements for the biomedical track consist of specific HSC courses, while the remaining course-work requirements for the applied sciences track are satisfied by selections from a broad list of approved electives.

Students interested in the program should have an undergraduate science degree that provides a sound background in biological sciences, preferably from a molecular perspective. A minimum of one semester of organic chemistry is required. A second semester of organic chemistry and at least one semester of physical chemistry are highly recommended. Admission will be based on the student's undergraduate record and GRE scores and on other considerations such as previous research experience and letters of recommendation. Applications from students interested in the applied sciences track should be submitted through the Texas Tech Office of Graduate Admissions, and applications from students interested in the biomedical track should be submitted through the Graduate School of Biomedical Sciences at the Health Sciences Center.

J.D.–M.S. in Biotechnology. The joint degree candidate must choose to pursue both degrees by the end of the third or fourth semester in law school and must meet admission requirements for the M.S. degree. Typically, all prerequisites are met, both degree programs can be finished within four and one-half years, including summer sessions.

The joint degree program is designed principally for the student with an interest in intellectual property law in the area of biotechnology. A candidate for the J.D./M.S. in Biotechnology may credit up to 12 nonlaw hours of approved courses toward the J.D. degree and 12 law hours may be credited toward the M.S. degree.

**Biotechnology (BTEC)**

*(To interpret course descriptions, see page 8.)*

### Graduate Courses

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5302</td>
<td>Advanced Cell Biology (3:3:0)</td>
<td>Prerequisite: 8 hours of biology; 8 hours of chemistry; plus at least one semester of organic chemistry; or consent of instructor. Structure and function of cells with introduction to modern techniques for cell study. Offered to graduate students with no formal training in cell biology. (BIOL 5302)</td>
<td>3</td>
</tr>
<tr>
<td>5304</td>
<td>Growth and Development (3:3:0)</td>
<td>A study of differentiation, development, growth, and fattening of domestic animals and hereditary and environmental influences and interactions. SS. (ANSC 5304)</td>
<td>3</td>
</tr>
<tr>
<td>5321</td>
<td>Plant Breeding Theory (3:3:0)</td>
<td>Breeding and plant improvement presented at an advanced level. S, even years. (PSS 5321)</td>
<td>3</td>
</tr>
<tr>
<td>5325</td>
<td>Transgenic and Plant Cell Genetics (3:3:0)</td>
<td>Genome organization in plants, interspecific hybridization, cytoplasmic male sterility, self-incompatibility, tissue culture, in-vitro screening, and transformation technologies. F, odd years. (PSS 5325)</td>
<td>3</td>
</tr>
<tr>
<td>5337</td>
<td>Enzymes (3:3:0)</td>
<td>Prerequisite: CHEM 3311, 3312 or CHEM 4303 or equivalents. Structure, mode of action, and kinetics of enzymes. (CHEM 5337)</td>
<td>3</td>
</tr>
<tr>
<td>5338</td>
<td>Biochemical Methods (3:1:6)</td>
<td>Prerequisite: CHEM 4303 or 3311 or equivalent. Methodology for the isolation and characterization of macromolecules and metabolites. (CHEM 5338)</td>
<td>3</td>
</tr>
<tr>
<td>5339</td>
<td>Nucleic Acids (3:3:0)</td>
<td>Prerequisite: CHEM 3312 or 4303 and BIOL 4320 or 5320. Eukaryotic and prokaryotic DNA cloning strategies, DNA sequence analysis and manipulation, recombinant DNA expression. (CHEM 5339)</td>
<td>3</td>
</tr>
<tr>
<td>5403</td>
<td>Biometry (4:3:2)</td>
<td>Introduction to biological statistics. Observation, probability, “t” test, analysis of variance, mean separation procedures, linear regression and correlation, and chi-square. Introduction to computerization of statistical analyses. F. (ANSC 5403)</td>
<td>4</td>
</tr>
<tr>
<td>5408</td>
<td>Microbial Genetics (4:3:3)</td>
<td>Prerequisite: MBIO 5301 or consent of instructor. Topics include current techniques of genetic analysis, molecular biology, molecular genetics, nucleic acid metabolism, and gene regulation in microorganisms, with emphasis on bacteria and bacteriophages. May not be taken for credit by students who have taken MBIO 4406. F. (MBIO 5408)</td>
<td>4</td>
</tr>
<tr>
<td>5414</td>
<td>Advanced Plant Biotechnology (4:3:2)</td>
<td>Prerequisite: Consent of instructor. Principles of biotechnology and genetic engineering. Genetic manipulations applied to problems in agricultural research and practice. F, odd years.</td>
<td>4</td>
</tr>
<tr>
<td>6000</td>
<td>Master's Thesis (V1-6)</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>6001</td>
<td>Biotechnology Internship (V1-9)</td>
<td>Research and training in a private-sector or government laboratory. Consent of program director required. For nonthesis students.</td>
<td>9</td>
</tr>
<tr>
<td>6101</td>
<td>Biotechnology Seminar (1:1:0)</td>
<td>Presentation of current research topics in areas directly relevant to biotechnology. (GBTC 6101)</td>
<td>1</td>
</tr>
<tr>
<td>6301</td>
<td>Introduction to Biotechnology (3:3:0)</td>
<td>Prerequisite: CHEM 3311, 3312, 3313. Scientific bases of biotechnology techniques. Applications of biotechnology and ethical and social impact. (GBTC 6301)</td>
<td>3</td>
</tr>
<tr>
<td>6315</td>
<td>Regulation of Gene Expression (3:3:0)</td>
<td>Prerequisite: BIOL 5320 or 4320. An advanced, in-depth analysis of current research on mechanisms that regulate eukaryotic gene expression at transcriptional and post-transcriptional levels. (BIOL 6315)</td>
<td>3</td>
</tr>
<tr>
<td>6322</td>
<td>Advanced Plant Breeding (3:3:0)</td>
<td>Qualitative and quantitative inheritance, heterosis, selection theory and breeding methodology for crop plant improvement, genotype by environment interaction, and application of cellular and molecular techniques to plant breeding. S, odd years. (PSS 6322)</td>
<td>3</td>
</tr>
<tr>
<td>6424</td>
<td>Molecular, Genetic, and Plant Genomics (3:3:0)</td>
<td>Genome mapping in plants, gene structure and expression, recombinant DNA and gene cloning methods, molecular markers, QTL analysis, physical mapping, DNA chip technology, and functional genomics. S, even years. (PSS 6424)</td>
<td>3</td>
</tr>
<tr>
<td>7000</td>
<td>Research in Biotechnology (V1-9)</td>
<td>Full-time laboratory research under the direct supervision of a TTU or TTUHSC graduate faculty member. For thesis-option students. (GBTC 7000)</td>
<td>9</td>
</tr>
</tbody>
</table>

**Fibers and Textiles**

Dr. M. Dean Ethridge, Managing Director, International Textile Center; Adjunct Faculty in Agricultural and Applied Economics and in Merchandising, Design, and Consumer Economics.

Known internationally for its expertise in cotton, the International Textile Center (ITC) focuses on research, education, and technology transfer pertinent to fibers and textiles. In collaboration with the Colleges of Agricultural Sciences and Natural Resources, Arts and Sciences, Engineering, and Human Sciences, the ITC offers opportunities for students to execute special projects and thesis research. The ITC also teaches several graduate-level courses within the College of Agricultural Sciences and Natural Resources.

The ITC is located on Lubbock’s East Loop 289 in a 110,000-square-foot facility with a multimedia classroom, materials library, and executive conference room. The center contains laboratories for materials evaluation, short staple spinning, nonwovens, weaving, chemical processing and finishing, chemical analysis, and fabric care. In addition, the ITC engages in multidisciplinary research with diverse units of Texas Tech University, the Health Sciences Center, the Texas Agricultural Experiment Station, and the Agricultural Research Service.
Heritage Management

Coordinator: Gary F. Edson, Professor of Museum Science and Executive Director, Museum of Texas Tech University

The Master of Science in Heritage Management degree program emphasizes extensive investigation in the field of heritage management. Graduates from the program are prepared to enhance local, regional, and national sociological and scientific values; encourage preservation and stewardship of cultural and natural heritage; advocate public service; and direct educational programming designed to derive maximum advantage from innovative technology without the loss of cultural identity and biodiversity.

The program is configured to allow individual students to emphasize areas of special interests such as heritage administration, conservation, interpretation, education, and use (ecotourism). The program offers both theoretical and practical coursework designed to prepare graduates to be leaders in the heritage management field.

Applicants will be considered for admission to the Heritage Management program after the following materials are received: two letters of recommendation from persons knowledgeable of the student's professional abilities and a career summary statement. Forms will be furnished on request.

Prior to being considered for admission to the program, students must complete the appropriate application forms and satisfy the requirements of the university, including official transcript of complete undergraduate coursework and GRE scores. Once that process is concluded, program admission and competitive scholarship awards are based on three general categories of criteria.

- Academic Record: All academic records may be considered—60 hours, total, major, post-baccalaureate, etc.
- Test Scores: Scores on the General Test of the Graduate Record Examination (GRE) should be no more than five years old. Each score is considered separately, with percentile scores viewed by broad major. No test score will be considered the sole criterion.
- Individual Profile: Profiles may include recommendations, research background, motivation, multilingual proficiency, undergraduate institution, presentations, and interviews. Other information that admission and scholarship committees may consider is work commitment, demonstrated commitment to a particular field of work or study, and community involvement.

Interested persons should contact the Museum of Texas Tech University for a comprehensive packet of information about the program. The program is administered by the Executive Director of the Museum.

The Heritage Management program uses a variety of existing courses offered by various departments within the university to address individual educational and career goals. All students must develop competency in the core courses taught by selected members of the graduate faculty. (Competency is construed to mean an understanding of professional practices.)

A student majoring in the program must take at least 12 hours from the Heritage Management core curriculum, a minimum of 15 hours prescribed elective courses, 12 of elective graduate-level courses, plus 6 hours of thesis or internship. Required core courses for the program are MUSM 5327, MUSM 5331, HMGT 5323, HMGT 5327. (Internships are to be at locations approved by the student's advisory committee.) A total of 45 credit hours of graduate-level work is required for graduation. In addition, each student must pass a qualifying exam prior to beginning either the internship or thesis and must pass comprehensive written and oral exams at the conclusion of his or her studies. Students pursuing the thesis option must write and defend the thesis.

Following the first 9 credit hours of graduate study, each student's curriculum will be formalized through consultation with a graduate faculty advisory committee that consists of at least three members and reflects the student's area of emphasis. This degree plan will be approved by the program coordinator and the Executive Director of the Museum and will then be submitted to the Graduate School.

When approved, it will serve as a tool for advising and review to assure completion of degree requirements.

A minor at the master's level in heritage management consists of 9 approved credit hours in the core curriculum; a minor at the doctoral level consists of 15 hours of heritage management courses, at least 9 of which must be from the core curriculum.

Core Courses

HMGT 5323 Principles of Heritage Management (3:3:0)
HMGT 5327 Heritage Planning (3:3:0)
MUSM 5327 Museum Collection Management (3:2:3)
MUSM 5331 Museum Interpretation and Communication (3:2:3)

Prescribed Elective Courses

HMGT 5324 Heritage Resource Management (3:3:0) or NRM 5312 Ecology of Renewable Natural Resources (3:3:0)
MUSM 5330 Museum Law; Ethics, and Standards (3:3:0) or LAW 6025 Land-Use Planning Law (3:3:0)
MUSM 5340 Museum Data Management (3:1:6) or C S 5356 Advanced Database Management Systems (3:3:0)
HMGT 7000 Research (3) or MKT 5360 Marketing Concepts and Strategies (3:3:0)
MUSM 5325 Museum Field Methods (3:1:6) or MUSM 5328 Museum Practicum (3:1:6)

Heritage Management (HMGT)
(To interpret course descriptions, see page 8.)

Graduate Courses

5321. Park Management (3:3:0). Prerequisite: Consent of instructor. Review of techniques and processes to instill an understanding of the legal and ethical responsibilities associated with the care, management, and operation of heritage properties.
5323. Principles of Heritage Management (3:3:0). Prerequisite: Consent of instructor. Provides a theoretical framework and examines issues of evaluation, legislation, sustainability, socioeconomic impact, and communication to foster global responsibility and present integrative approaches to managing heritage.
5324. Heritage Resource Management (3:3:0). Prerequisite: Consent of instructor. Provides core knowledge in the principles, methods, laws, stewardship, and governance of heritage resources as a foundation for leadership in the heritage management field.
5327. Heritage Planning (3:3:0). Prerequisite: Consent of instructor. Explores practical approaches and methods to heritage planning with emphasis on the integration of related disciplines to attain environmentally sound and socially responsible preservation, management, and development initiatives.
6000. Master's Thesis (V1-6).
6001. Internship (V1-6). Prerequisite: Advancement to candidacy status. Internship carried out under the supervision of the student’s major advisor. Internship at the Lubbock Lake Landmark or similar approved location to provide practical experience for the heritage management profession.
7000. Research (V1-12).

Interdisciplinary Studies

Coordinators: Dr. Wendell Aycock, Professor of English and Comparative Literature, Associate Dean of the Graduate School; Dr. Clifford Fedler, Professor of Civil Engineering, Associate Dean of the Graduate School

The Master of Arts or Master of Science degree program in Interdisciplinary Studies is intended for students who wish to continue education at the graduate level but do not seek specialized training concentrated in a major area. This program is not a substitute for the traditional master’s degree; rather, it is designed for students with broader interests in several fields or for those whose career goals do not match fully with a single identifiable academic unit or department. Emphasis is placed on continued intellectual and cul-
tural development in a constantly changing society in which new career interests may extend over several traditional specializations.

Each program, exclusive of those tracks with required courses, is developed individually according to the students' interests and background. Among the few restrictions are the requirements that work be taken in at least three different subject areas and that no more than 12 hours be presented in any one area. Also, no more than 18 hours may be taken within a single college, except Arts and Sciences. No more than 12 hours can be taken in the Rawls College of Business. Most students pursue the 36-hour nonthesis plan, but the thesis option (24 hours of graduate coursework plus 6 hours of thesis [6000]) may be appropriate in occasional circumstances when the student's previous work seems to qualify him or her for research. For the 36-hour nonthesis option, students may choose either the master's examination or the portfolio as their terminal project.

The standard admission policy for applicants to other degree programs will apply to those seeking admission to the interdisciplinary master's program. Applicants must submit satisfactory GRE or GMAT scores and undergraduate records. Students must have a 3.0 GPA on previous graduate work. For further information, contact the coordinator of the program in the Graduate School office.

Students normally select areas of study that meet their own educational and career requirements, as described above. However, a number of study themes are identified in the following paragraphs that provide somewhat more specialized focus, while maintaining the interdisciplinary nature of the program as originally approved.

**Arid-Land Studies and International Development.** Students may devise a plan of study focusing on aspects of international development in various parts of the world. This theme will be oriented to applied knowledge and international issues in general. Another theme addresses specifically the problems of arid and semi-arid lands. Students may take courses in several departments to satisfy the requirements in either of these areas. For further details, contact Dr. A.C. Correa, director of the International Center for Arid and Semi-Arid Land Studies, 806.742.2218.

**Environmental Evaluation.** Students may gain a holistic view of environmental evaluation by taking courses that focus upon problems and techniques relating to natural resources and their utilization. Work in geography, geology, land and water management, atmospheric sciences, and other disciplines is tailored to each student's interests. Persons interested in this plan should contact Dr. Jeff Lee in the Department of Geography.

**Fine Arts Management.** Courses relating to management in the fine arts may be taken in a plan leading to the degree in Interdisciplinary Studies. Courses in public administration and business administration as well as in the arts develop management leadership for fine arts institutions and governmental agencies. For details, contact the Associate Dean for Graduate Studies in the College of Visual and Performing Arts.

**Applied Linguistics.** Courses relating to theoretical, descriptive, historical, and applied study of language structure and use may be selected in a plan leading to the degree in Interdisciplinary Studies. Studies in anthropology, bilingual education, psychology, and speech communication as well as in various languages (American Sign Language, Arabic, Chinese, English, French, German, Japanese, Spanish) will provide a comprehensive understanding of the discipline. Interested students may contact Dr. Sharon A. Myers, Department of Classical and Modern Languages and Literatures. See also “Applied Linguistics” in this section of the catalog.

**International Affairs.** This interdisciplinary concentration focuses on problems that are international in scope. Students may focus on problems that are global in nature, such as international business/economics or international security/conflict, or they may focus on problems that are regional in scope. The regions available for emphasis in this program are as follows: Asia, Africa, Latin America, Europe, and Post-Soviet Europe. Students will have the Department of Political Science as their home department but will also take courses in and work with faculty from the Department of History, the Department of Economics and Geography, or any other department that matches their interests. Interested students should contact Dr. Dennis Patterson, Department of Political Science, 806.742.4050.

**Peirce Studies.** Charles Sanders Peirce (1839-1914), a true American genius, made major contributions to logic, mathematics, language studies, history of science, specific areas of science such as chemistry and physics, and philosophy, among others. His ideas are being explored in fields as diverse as semiotic and artificial intelligence. Students enrolled in Peirce studies will normally take 6 to 9 hours of PRAG 5000 and at least 30 additional hours in several defined areas, depending upon each student's future educational or occupational goals. For details, contact Dr. Kenneth Laine Ketner, Director, Institute for Studies in Pragmaticism, 806.742.3128.

**Women's Studies.** The interdisciplinary concentration of graduate work focuses on the changing position of women in society. Selected courses are offered in history, sociology, anthropology, and psychology with related work available in business administration, the humanities, and other areas of the social sciences. An emphasis on women's studies may be pertinent to careers in education, management, and personnel relations as well as in the administration and delivery of social services to families, women, and children. Interested students should contact Dr. Charlotte Dunham, Director, Women's Studies, 213 Administration Building.

**Other Options.** Studies of an interdisciplinary nature offer almost limitless combinations. Students may select from graduate offerings in almost the entire catalog and from the graduate offerings of the School of Law and Health Sciences Center. Those interested in a customized program should contact Associate Deans Clifford Fedler or Wendell Aycock in the Graduate School.

**Interdisciplinary Studies (I S)**

(To interpret course descriptions, see page 8.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>5000.</td>
<td>Graduate Directed Studies (V1-12). Prerequisite: Consent of Coordinator. Advanced studies in developing cultural understanding. Projects to be assessed by faculty committee.</td>
</tr>
<tr>
<td>5001.</td>
<td>Graduate Studies Abroad (V1-12). Prerequisite: Consent of Office of International Affairs. Advanced individual studies in interdisciplinary, international, and /or multicultural experiences.</td>
</tr>
<tr>
<td>5301.</td>
<td>The Nature of Science for Teachers (3:3:0). Interdisciplinary course for teachers providing an overview of science and scientific inquiry. Special emphasis on research methods.</td>
</tr>
<tr>
<td>6000.</td>
<td>Master's Thesis (V1-6).</td>
</tr>
<tr>
<td>7000.</td>
<td>Research (V1-12).</td>
</tr>
</tbody>
</table>

**Legal Studies**

Coordinator: Dr. Marilyn E. Phelan, Horn Professor of Law and Professor of Museum Science

Through arrangement with the School of Law, graduate students may take certain courses in law to supplement their programs or, in some cases, to meet the requirements for a formal minor. Enrollment of graduate students in individual law courses is subject to the availability of space and approval of the professor in charge. Graduate students should consult their advisor before enrolling in such courses to ensure that the courses are applicable to their program. Courses that may be appropriate for a minor in legal studies also are available in such areas as political science, history, business administration, and sociology.

Texas Tech also offers joint programs of study leading not only to a master's degree but also to a Doctor of Jurisprudence (J.D.). They include the following:

- J.D./Master of Business Administration
- J.D./Master of Public Administration
Museum Science
Coordinator: Gary F. Edson, Professor of Museum Science and Executive Director, Museum of Texas Tech University

The Master of Arts in Museum Science emphasizes thorough preparation in the broad spectrum of museum theory and practice. Graduates from the program have a comprehensive background in museum studies, preparing them as generalists. In addition, students may elect to become specialists in a number of subdisciplines, including collection management and care; exhibitions and interpretation; museology; museum management; and curatorship in anthropology, art, ethnology, history, paleontology, and the natural sciences.

Applicants will be considered for admission to the museum science program after the following materials are received: two letters of recommendation from persons knowledgeable of the student’s professional abilities and a career summary statement. Forms will be furnished on request. Prior to admission consideration, students must complete the appropriate application forms and satisfy the requirements of the university, including an official transcript of complete undergraduate coursework and GRE scores. Once that process is concluded, program admission and competitive scholarship awards are based on three general categories of criteria:

- **Academic Record:** All academic records may be considered—60 hours, total, major, post-baccalaureate, etc.
- **Test Scores:** Scores on the General Test of the Graduate Record Examination (GRE) should be no more than five years old. Each score is considered separately, with percentile scores viewed by broad major. No test score will be considered the sole criterion.
- **Individual Profile:** Profiles may include recommendations, research background, motivation, multilingual proficiency, undergraduate institution, presentations, and interviews. Other information that admission and scholarship committees may consider is work commitment, demonstrated commitment to a particular field of work or study, and community involvement.

Interested persons should contact the Museum of Texas Tech University for a comprehensive packet of information about the program.

The Museum Science program uses a variety of existing courses offered by various departments within the university to address individual educational and career goals. All students must develop competency in the core courses taught by selected members of the graduate faculty and the museum staff. (Competency is construed to mean an understanding of professional museum practices.)

A student majoring in the program must take at least 24 hours from the museum science core curriculum, a minimum of 15 hours of elective graduate-level courses, plus 6 hours of thesis or internship and special project. (Internships are normally at approved museums or facilities other than the Museum of Texas Tech University.)

Required core courses for the program include MUSM 5321, 5326, 5327, 5330, 5331, 5332, 5333, and 5340. A total of 45 credit hours of graduate-level work is required for graduation. In addition, each student must pass a qualifying exam prior to beginning either the internship or thesis and must pass comprehensive written and oral exams at the conclusion of his or her studies. Students pursuing the thesis option must write and defend the thesis.

Following the first 9 credit hours of graduate study, each student’s curriculum will be formalized through consultation with a graduate faculty advisory committee, consisting of at least three members, which reflects the student’s area of emphasis. This degree plan will be approved by the program coordinator and the Executive Director of the Museum and will then be submitted to the Graduate School. When approved, it will serve as a tool for advising and review to assure completion of degree requirements.

A minor at the master’s level in museum science consists of 9 approved credit hours in the core curriculum; a minor at the doctoral level consists of 15 hours of museum science courses of which at least 9 must be from the core curriculum.

### Museum Science (MUSM)

*(To interpret course descriptions, see page 8.)*

**Graduate Studies**

5321. *Museology (3:3.0).* Prerequisite: Consent of instructor. Establishes a historical and theoretical framework for museum science, promotes a global perspective of museums, and acquaints students with the broad-based implications of museum work as a science.

5325. **Museum Field Methods (3:1.6).** Prerequisite: Consent of instructor. Problems of collecting museum artifacts, specimens, and samples in the field and methods of handling material before it reaches the museum. Sections will allow work in anthropology, history, paleontology, and vertebrate biology.

5326. *Museum Administration (3:3.0).* Prerequisite: Consent of instructor. Instruction and investigation in aspects of museum management and administration including policies and procedures, personnel management, budget formulation, governance, and interaction with support organizations.

5327. **Museum Collection Management (3:2.3).** Prerequisite: Consent of instructor. Individual instruction course of supervised experiences involving hands-on activities in museum administration, collections, education, and exhibitions. Sections will allow work in all areas of the Museum of Texas Tech.

5329. **Material Culture (3:3.0).** Discussion of major trends in historical, psychological, philosophical, anthropological, and art historical literature in terms of their application to the interpretation of the past through its material culture.

5330. *Museum Law, Ethics, and Standards (3:3.0).* Prerequisite: Consent of instructor. Addresses the ethical considerations and legal obligations of museum collections, administration, and operations. Attention given to international concerns as well as to state and national issues.

5331. *Museum Interpretation and Communication (3:2.3).* Prerequisite: Consent of instructor. Investigates the theories and methods of museum exhibitions and interpretation. Includes planning, developing, and evaluating strategies of exhibitions, publications, and interpretive programs.

5332. **Museum Preventive Conservation (3:1.6).** Prerequisite: Consent of instructor. A course designed to give future museum workers an awareness of the need for specialized care of artifacts. Introduction of current methods and theories pertaining to museum collection care.

5333. **Museum Education (3:3.0).** Prerequisite: Consent of instructor. Examination of the role of education in museums, with emphasis on the theory and practice of program development, teaching strategies, and off-site resources.

5335. **Geology of National Parks (3:3.0).** Prerequisite: Consent of instructor. Course employs a plate tectonic framework to interpret the development of national parks, mountains, and seashores.

* Indicates required course
5340. Museum Data Management (3:1:6). Prerequisite: Consent of instructor. Introduction of traditional and electronic management of museum collection data emphasizing the philosophy of data preservation and retrieval.

6000. Master's Thesis (V1-6). Internship at an approved museum to include a special project approved by the student’s advisory committee. Written documentation of project to provide practical information for the museum profession.

7000. Research (V1-12).

Neural and Behavioral Sciences
Coordinator: Dr. James A. Carr, Professor of Biological Sciences and Chairperson, Neural and Behavioral Sciences Advisory Committee

Neural and Behavioral Sciences is offered as an interdisciplinary minor for graduate students who wish to broaden their knowledge of the neural and behavioral sciences while gaining a sound academic background in basic areas such as the structure and function of the nervous system.

The Neural and Behavioral Sciences Advisory Committee supervises this program and coordinates related activities on campus such as seminars, student research, and consultation for students interested in further training in the neural and behavioral sciences. The committee is composed of faculty from the College of Arts and Sciences, the College of Agricultural Sciences and Natural Resources, and the School of Medicine.

A doctoral minor normally consists of GIDN 5910 (Integrated Neurosciences: 9 semester hours) plus 9 semester hours outside the student’s major field (selected from the list below). A master’s minor normally consists of GIDN 5910. In special cases the committee may substitute other courses for GIDN 5910.

Program Courses
GANM 5313 Selected Topics in Cell and Developmental Biology (3:3:0)
GIDN 5910 Integrated Neurosciences (9:8:1)
GPHM 5326 Pharmacology of the Autonomic Nervous System (3:3:0)
GPHM 5337 Neuropsychopharmacology (3:3:0)
GPHY 6314 Membrane Biophysics (3:3:0)
PHIL 5330 Philosophy of Science (3:3:0)
PHIL 5331 Philosophical Psychology (3:3:0)
PSY 5309 Clinical Neuropsychology (3:3:0)
PSY 5353 Seminar in Physiological Psychology (3:3:0)
PSY 5385 Life Span Development: Psychobiological and Cognitive Processes in Aging (3:3:0)
ZOOL 5304 Comparative Endocrinology (3:3:0)
ZOOL 5312 Advanced Animal Behavior (3:3:0)
ZOOL 6320 Comparative Neuroanatomy (3:2:3)

Risk-Taking Behavior
Coordinator: Dr. Nancy J. Bell, Professor of Human Development and Family Studies (www.hs.ttu.edu/hdfs/risk.htm)

Risk-Taking Behavior is offered as an interdisciplinary minor at the master’s or doctoral level. The 15-hour minor consists of an introductory course (Seminar in Risk Taking), which examines the concept of risk taking from a developmental perspective. Students then choose the additional 12 hours from courses covering substance abuse, codependency, decision processes associated with adolescent sexual behavior, coping and social support, gender issues in risk taking, and developmental processes associated with risk taking.

This minor should be useful for students interested in research on risk-taking behavior or for those planning to work in applied settings with adolescents and young adults or with families. Consult the program coordinator or individual departments for information on course scheduling. In addition to the courses listed below, special topics courses related to risk taking may be included with the approval of the coordinator.

Program Courses
EPCE 5372 Addictions: An Overview for School and Community Counselors (3:3:0)
HDFS 5341 Socialization Processes and Addiction (3:3:0)
HDFS 6320 Seminar in Risk Taking (3:3:0)
HDFS 6330 Family Problems (3:3:0)
HDFS 6371 Practicum in Human Development and Family Studies (3:3:0)
PSY 5382 Psychopharmacology of Psychoactive Drugs (3:3:0)
SOC 5311 Seminar in Criminology (3:3:0)
SOC 5325 Seminar in Deviant Behavior (3:3:0)
School of Law

Walter B. Huffman, J.D., Dean
1802 Hartford Ave. | Lubbock, TX 79409-0004
T 806.742.3791 | F 806.742.1629
www.law.ttu.edu | admissions@law.ttu.edu

About the School of Law

With a consistently high pass rate on the State Bar Exam, the School of Law at Texas Tech University has always been a leader among Texas law schools. A small student body, a diverse faculty, and a low student–faculty ratio (15.3:1) are only a few of the factors that promote learning and encourage interaction between students and professors at the law school.

Because Texas Tech is the only campus in the state that is home to a major university, law school, and medical school, students benefit from this unique combination by not only being able to obtain a Doctor of Jurisprudence (J.D.) but also by being allowed to pursue one of the following joint degree or certificate programs:

- J.D./Master of Business Administration
- J.D./Master of Public Administration
- J.D./Master of Science in Agricultural and Applied Economics
- J.D./Master of Science in Accounting (Taxation)
- J.D./Master of Science in Environmental Toxicology
- J.D./Master of Science in Personal Financial Planning
- J.D./Master of Science in Biotechnology
- J.D./Master of Science in Crop Science/Horticulture/Soil Science/Entomology
- J.D./Law and Science Certificate Program

Applying for Admission

An applicant for admission to the School of Law must have received or completed all requirements for a baccalaureate degree from a college or university of approved standing prior to beginning study at the School of Law (unless enrolled under the “3+3” program described in the Honors College section of this catalog). An applicant’s record must be of sufficiently high quality to demonstrate that the applicant is qualified for the study of law.

An applicant also must take the Law School Admission Test, which is administered four times a year throughout the United States and in many foreign countries by the Law School Admission Council. The School of Law cooperates with the Texas Tech University Honors College, the College of Arts and Sciences, and the College of Visual and Performing Arts to provide special admission programs for exceptional undergraduates. Consult the Honors College section of this catalog or view www.honr.ttu.edu for more information.

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

Applications should be submitted to the School of Law at the earliest opportunity after October 1. The deadline for the Early Decision Program is November 1, and the deadline for the Regular Decision Program is February 1.

Administration and Faculty

Dean: Huffman
Associate Deans: Lewis, Shannon, Torres
Assistant Deans: Cook, Fletcher, Jarmon, Ramos
Director of Clinical Programs: Spain
Director of International Programs: Ramírez
Director of the Legal Practice Program: Soonpaa
Director of Center for Biodefense, Law and Public Policy: Sutton
Director of Center for Water Law and Policy: Eckstein
Director of Center for Military Law and Policy: Rosen
Director of Criminal Justice Clinic: Roque-Jackson
Director of Health Care and Bioethics Mediation Clinic: Fortney
Director of Low-Income Tax Clinic: Phelan
Director of Innocence Project: Blackburn
Deputy Director of Center for Military Law and Policy: Phillips
Deputy Director of Center for Water Law and Policy: Jeffery
Foundation Professor of Commercial Law: Krahmer
Horn Professors: Benson, Casto, Phelan
Charles Thornton Professor: Shannon
George Herman Mahon Professor: Fortney
George R. Killam Jr. Chair of Criminal Law: Loewy
George McCleskey Professor of Water Law: Eckstein
Governor Preston Smith Professor: Beyer
J. Hadley Edgar Professor: Weninger
Maddox Professor: Cochran
Robert H. Bean Professor: Sutton
W. Frank Newton Professor: Huffman
Professors: Bard, Camp, James, Myhra, Pawlowic, Ramírez, Soonpaa, Spain, Torres
Associate Professors: Gonzalez, Graham, Hatfield, Jeffery, Laughlin, Lewis, Roque-Jackson, Rosen, Ross
Assistant Professors: Bruner
Legal Practice Associate Professor: Jones
Legal Practice Assistant Professors: Dillon, Horn, Phillips
Adjunct Faculty: Baker, Benson, Blackburn, Bubany, Conboy, Eissinger, Hensley, Hunt, Mateja, Terrell
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 an undergraduate course and a graduate-level 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: Kenneth L. Ketner, Director, 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.

5000. Independent Research in Peirce Studies (V1-6). Prerequisite: Consent of instructor. Directed interdisciplinary inquiry 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 with sections composed of 20 to 25 students from the freshman class without regard to college or major. It cannot be taken pass–fail.

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. Practical concerns covered in the seminar 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 development of a life of learning.

Interdisciplinary Studies (I S)

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

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-skill components, including personal, athletic, academic, and career development.

4100. Strengths-Based Senior Seminar (1:1:0). Designed for college seniors to help ease their transition from college to the workplace, including understanding job market trends and developing skills in job interviewing, budgeting, and negotiation.

Introduction to Library Research

Introduction to Library Research is a one-hour course designed to introduce students to lifelong information literacy skills and establish tools for effective and efficient research in a university library. Because information comes in many forms, students sometimes find the multitude of printed publications, Internet resources, and microform and audiovisual materials overwhelming. They need
to know how to identify, find, evaluate, and use resources that are most appropriate for their assignments.

Introduction to Library Research has four main objectives: to present the arrangement and services of the Texas Tech University Libraries; to provide an introduction to resources and search strategies; to outline a transferable, systematic plan for critical evaluation and use of these resources in a variety of ways; and to promote the effective use of information to accomplish specific tasks.

Course content (readings, quizzes, and activities) is accessed through WebCT for onsite and distance students. Onsite students will meet for lecture and hands-on sessions. All students will prepare a portfolio throughout the semester that will count as the final project.

Contact information: Jon Hufford, 806.742.2236.

**Library Research (LIBR)**

1100. Introduction to Library Research (1:1:0). Designed to introduce students to life-long information literacy skills and establish the tools for effective and efficient research in a university library.

**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 and the Director of Women’s Studies. A minor consists of 18 hours of women’s studies electives. Three of the courses must 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. Courses without a W S prefix may be used toward the minor at the discretion of the Director or Coordinator of Women’s Studies.

**Women’s Studies (W S)**

### Undergraduate Courses

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. (HITH 1305)


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 development 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 3352)

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. (COMM 3354)

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. Gendered Lives (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. (POLI 3326)

3331. Sociology of the Family (3:3:0). Changing family life styles, mate roles, parent-child relationships, adoption, abortion, population control, and political 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)

3340. Gender and Sexuality in the Classical World (3:3:0). Examination of social and cultural dimensions of gender and sexuality in the ancient Greco-Roman world. Readings in English. (CLAS 3340)

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)

3342. Introduction to Research in Human Geography (3:3:0). Introduction to research methods in geography. (GEOG 3340)

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). 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)

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)

4355. Let’s Talk Women, Let’s Talk War: Women in Conflict in the 20th Century. (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. (HIST 4355)

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.

### Graduate Courses

5000. Practicum in Women’s Studies (V1-6). Practicum experience involving women-centered projects, activities, or artistic expressions that are socially and/or communally relevant.

5300. Directed Studies (3:3:0). Prerequisite: Consent of instructor and the Director of Women’s Studies. Content will vary to meet the needs of students. May be repeated three times for credit, as topic varies.
Preprofessional Programs

Prelaw Studies
The discipline of law is for students who are interested in combining precision in thinking, researching, and writing with a desire to work with people. While many choose to practice law in the courtroom, many law graduates leverage their newly developed skills to excel in other fields. A law education equips students for success in a law practice, public service, teaching, and business.

Through a structured four-year process, the TTU Prelaw Program cultivates the undergraduate to become a confident and articulate law school applicant bearing exceptional qualifications. Participants will focus on the three essential areas identified by law school professionals nationwide:

1. Writing and speaking with comprehension and clarity
2. Understanding social institutions and human nature
3. Thinking creatively and analytically

To excel in these areas, students in the program will:

- Connect one to one with an academic advisor who specializes in preparing students for the challenges of law school
- Establish professional relationships with faculty and mentors
- Determine their best-fit academic major
- Rigorously pursue excellence and academic challenges
- Explore service learning and undergraduate research opportunities
- Develop strong time management practices
- Identify options for financing their law school education
- Prepare for and practice taking the LSAT exam
- Prepare and submit law school applications

Prospective law students need a four-year bachelor’s degree in the academic discipline of their choice prior to applying for admission. Law schools are generally most interested in applicants who exhibit intellectual maturity and have the foundation of a broad-based liberal arts education. They consider exceptional applicants from diverse disciplines and backgrounds, often providing programs for early admission to qualified applicants. The Texas Tech University School of Law offers four such programs:

- **Early Decision Program**
  The Early Decision Program is binding. Applicants admitted under this program commit to attend the Texas Tech School of Law, will withdraw all other applications, and will not apply to other law schools.

- **Summer Entry Program**
  The Summer Entry Program is designed to prepare students with lower academic predictors for the rigors of the first year of law school. Applicants designated for the Summer Entry Program are those whose backgrounds, activities, and accomplishments indicate they are outstanding candidates for admission, but their LSAT scores or grade point averages fall below the mean scores for entrance to law school.

- **Honors College “3+3” Early Admission Program**
  This joint program between the College of Arts and Sciences, the College of Visual and Performing Arts, the Honors College, and the Texas Tech University School of Law allows exceptional, qualified applicants with a minimum of 100 semester hours of baccalaureate study to seek acceptance to the Law School during the fall of their third year of undergraduate study and take the LSAT by December of that year. Students who accept early admission must enroll at the Texas Tech School of Law and may not apply to other law schools. The applicant for an undergraduate degree under this plan must submit an official transcript from the Texas Tech School of Law after completion of the first year of law school. Successfully completed coursework (totaling 29 hours) at the Law School will substitute for the 18 hours required for the undergraduate minor and any electives needed (totaling up to 11 hours) for the baccalaureate degree.

- **Honors College Early Decision Plan**
  Under this plan, exceptional students with a minimum of 90 semester hours of baccalaureate study can seek and receive notification of their acceptance to the Law School during their third year of undergraduate study.

Applicants must meet strict criteria for acceptance under any of the above programs. Visit www.prelaw.ttu.edu/earlyadmit for more information. Students can join the TTU Prelaw Program at any time, but it is best to start as soon as possible. **Contact information:** 79 Holden Hall, 806.742.2189, prelaw@ttu.edu

Preprofessional Health Careers
Professional health schools include dentistry, medicine, nursing, optometry, pharmacy, and allied health sciences. Most professional schools 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 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 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 schools 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 chemis-
try, 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 Web site. 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 or the medical school Web site.

Students should plan to complete a baccalaureate degree in the field of their choice before entering medical school. Premedical and preclinical 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 coursework 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 optometry schools. These courses fulfill requirements in general: 8 semester hours of biology; 4 semester hours of human anatomy; 4 semester hours of physiology; 4 semester hours of microbiology; 8 semester hours of general chemistry; 4 semester hours of organic chemistry; 3 semester hours of biochemistry; 8 semester hours of physics; 6 semester hours minimum of mathematics including algebra and trigonometry, analytical geometry, or precalculus and 3 semester hours of calculus; 3 semester hours of statistical methods in psychology; and 3 semester hours of general psychology. For the admission requirements of a specific optometry school, students should consult the Association of Colleges and Colleges of Optometry or the optometry school Web site. Applicants to optometry school are required to take the Optometry Admission Test and submit all admissions-related documents in a timely manner. Some optometry schools require the completion of a baccalaureate degree prior to matriculation.

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 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 and social sciences. For the admission requirements of pharmacy schools, students should consult the Web sites of the pharmacy schools and take the Pharmacy College Admission Test before applying to the professional schools.

Allied Health

Before being admitted to the professional level within a school of allied health, a student must complete 60 to 90 semester hours of preprofessional coursework in either a preclinical laboratory science; prespeech, language, and hearing sciences; preoccupational therapy; prephysical therapy; or prephysician assistant program. 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. For the admission requirements of allied health programs, students should consult the Web sites of the schools of allied health.

Prenursing

Admission requirements differ among the various nursing schools. These courses fulfill requirements in general: 6 semester hours of English, 3 semester hours of statistics, 8 semester hours of human anatomy and physiology, 4 semester hours of general chemistry, 4 semester hours of microbiology, 3 semester hours of nutritional sciences, 3 semester hours of visual and performing arts, 3 semester hours of humanities, 6 semester hours each of U.S. history, and political science, 3 semester hours of psychology, 3 semester hours of sociology or cultural anthropology, and 3 semester hours of lifespan growth and development. Contact information to obtain admission requirements of a specific school of nursing can be found on the Web sites of the nursing schools.

Applicants to schools of nursing are required to submit all documents related to admission and take the Nurse Entrance Test in a timely manner.

Other Preprofessional Health Careers

Students who plan to apply to other professional programs (e.g., dental hygiene, radiologic technology, and respiratory therapy) should consult an advisor in the Preprofessional Health Careers Office for further information and the Web sites of the professional schools.
Reserve Officer Training Corps

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. No military commitment or obligation is 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 two-, three-, and four-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, the Army ROTC Leader’s Training Course, Armed Forces Basic Training, or be an honorably discharged veteran.

Air Force ROTC offers four- and two-year commissioning programs. 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 an extended 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 the Air Force, students must finish their baccalaureate degree and all other requirements for commissioning by the time they are 29.5 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 department of Army ROTC offers competitive three- and four-year ROTC scholarships to selected high school seniors. Additionally, the Army offers four-, three-, and two-year scholarships to outstanding students selected by faculty in the program. Air Force ROTC offers four-, three-, and two-year scholarships that are based on merit, not need. Though scholarship awards vary, most pay all tuition, books, and approved university fees. High school seniors who are interested in the four-year scholarship must apply at www.armyrotc.com and www.afrotc.com.

Cadets not on scholarship may apply for three- and two-year scholarships during their freshman and sophomore years. Both Army and Air Force ROTC scholarships provide textbook reimbursement, tuition, and fees as well as a monthly allowance of $300 for freshmen, $350 for sophomores, $450 for juniors, and $500 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 non-flying career field, 10 years upon completion of undergraduate pilot training, or 6 years upon completion of undergraduate navigator training. Air Force commissions are for active duty service 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

Faculty

Col. David J. Lewis, Chairperson
Professor: Col. Lewis
Assistant Professors: Maj. Hippel, Capt. Knight, Capt. DeWitt

About the Program

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

ROTC–Air Force

Air Force ROTC Det 820
Texas Tech University
Box 45009
Lubbock, TX 79409-5009
T 806.742.2143
F 806.742.8048
www.depts.ttu.edu/afrotc


**General Military Course.** This course is designed for freshman and sophomore students who wish to explore the opportunity to pursue an Air Force officer’s commission while studying the historic development and use of air power; the role of air power in today’s society; the organizational structure and missions of selected Air Force organizations; and professionalism and officerhood. Each General Military Course has a requisite leadership lab course each semester.

**Professional Officer Course.** The Professional Officer Course (POC), which is normally taken during the cadet’s junior and senior years, is designed to commission highly qualified junior officers for the United States Air Force. This course concentrates on two main themes: (1) concepts of leadership and management and (2) national security forces in contemporary society. Enrollment in the Professional Officer Course is open to all students who have met prerequisite screening, testing, and physical examination; have completed the general military course or the pre-enrollment field training or received credit for prior military service; have four semesters of school remaining (may include graduate studies); and have been competitively selected by HQ AFROTC. Please consult the department for details.

Cadets enrolled in the program are paid a minimum tax-free subsistence allowance of up to $400 per month. Those 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.

**Air Force ROTC Field Training.** 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.

**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.

**Aerospace Studies (AERS)**

(To interpret course descriptions, see page 9.)

### Undergraduate Courses


1106. Foundations of the United States Air Force II (1:1:2). 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.

2103, 2104. The Evolution of USAF Air and Space Power I and II (1:1:2 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.

3305. Air Force Leadership Studies I (3:1:2). 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 Studies II (3:1:2). 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.

4303, 4304. National Security Affairs and Preparation for Active Duty I and II (3:1:2 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, officerhood, 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.
Department of Military Science

Faculty
Lt. Col. Robert Buscher, Chairperson
Professor: Lt. Col. Buscher
Assistant Professors: Lt. Col. Ott
Instructors: Master Sgt. Burt, Sgt. 1st Class Lusk

About the Program
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 Leadership Development and Assessment Course 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 six-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 Marksmanship 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 $1,200 per month.

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 5-week period.
Leadership Development and Assessment Course. 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 Leadership Development and Assessment Course. Students can then be 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. Junior level students also may request assignment to a Cadet Troop Leadership Training (CTLT) position for 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)
(To interpret course descriptions, see page 9.)

<table>
<thead>
<tr>
<th>Undergraduate Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1101. MSI Foundations of Officership I (1:1:1). Introduction to the Army profession, the role of the Army officer, and military leadership. Instruction on time management and physical fitness, as well as general military skills. Survey of pre-commissioning program requiring no military obligation. F.</td>
</tr>
<tr>
<td>1102. MSI Foundations of Officership II (1:1:1). Introduction to the Army profession, the role of the Army officer, and military leadership. Instruction on time management and physical fitness, as well as general military skills. Survey of pre-commissioning program requiring no military obligation. S.</td>
</tr>
<tr>
<td>2201. MSII Individual Leadership Studies – Leadership and Teamwork I (2:2:1). Prerequisite: MILS 1101 and 1102 or consent of instructor. Introduction to decision-making and group processes relating to military leadership. Focus on character development, role of the officer, and Army values. F.</td>
</tr>
<tr>
<td>2202. MSII Individual Leadership Studies – Leadership and Teamwork II (2:2:1). Prerequisite: MILS 1101 and 1102 or consent of instructor. Introduction to decision-making and group processes relating to military leadership. Focus on character development, role of the officer, and Army values. S.</td>
</tr>
<tr>
<td>2203. MSII Independent Studies in Leadership and Teamwork (2). Prerequisite: Consent of department chairman. Individualized studies in military leadership and teamwork. Select lab and/or class participation may be required. This class may be repeated and may substitute for 2201 or 2202 credit. F and S.</td>
</tr>
<tr>
<td>3301. MSIII Leadership and Problem Solving I (3:3:1). Prerequisite: MILS 2201 and 2202, basic training, or consent of the instructor. Prepares student for summer completion of the Leadership Development and Assessment Course. Emphasis on small-unit tactics, troop leading procedures, field training, and basic soldiering skills such as land navigation and rifle marksmanship. F.</td>
</tr>
<tr>
<td>3302. MSIII Leadership and Problem Solving II (3:3:1). Prerequisite: MILS 2201 and 2202, basic training, or consent of the instructor. Prepares student for summer completion of the Leadership Development and Assessment Course. Emphasis on small-unit tactics, troop leading procedures, field training, and basic soldiering skills such as land navigation and rifle marksmanship. S.</td>
</tr>
<tr>
<td>3303. MSIII Independent Studies in Leadership and Problem Solving (3). Prerequisite: Consent of Department Chairman. Individualized studies in military leadership and problem solving. Select lab and/or class participation may be required. This class may be repeated and may substitute for 3301 or 3302 credit. F and S.</td>
</tr>
<tr>
<td>4301. MSIV Officership I (3:3:1). Prerequisite: MILS 3301 and 3302. Focus on transition from cadet to lieutenant with an introduction to military law and ethics, leadership case studies, hands-on practice sessions, and a Senior Leadership Project. F.</td>
</tr>
<tr>
<td>4302. MSIV Officership II (3:3:1). Prerequisite: MILS 3301 and 3302. Focus on transition from cadet to lieutenant with an introduction to military law and ethics, leadership case studies, hands-on practice sessions, and a Senior Leadership Project. S.</td>
</tr>
<tr>
<td>4303. MSIV Independent Studies in Officership (3). Prerequisite: Consent of department chairman. Individualized studies in military officership and professional development. Select lab and/or class participation may be required. This class may be repeated and may substitute for 4301 or 4302 credit. F and S.</td>
</tr>
</tbody>
</table>
College of Agricultural Sciences and Natural Resources

Marvin J. Cepica, Ed.D., Dean
108 Goddard | Box 42123 | Lubbock, TX 79409-2123
T 806.742.2808 | F 806.742.2836 | www.casnr.ttu.edu

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About the College
The College of Agricultural Sciences and Natural Resources is dedicated to providing programs of excellence in teaching, research, and outreach. These educational programs are designed to prepare 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, feed, fiber, and natural resource complex.

As the size and complexity of farms and ranches continue to increase, students who plan careers as producers of agricultural products need more technology and management information. Through proper selection of courses, students have the opportunity to train 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, various facets of environmental quality, and issues involving food safety and quality. Microcomputer laboratories allow students to use the latest information-processing technology for class exercises and research projects.

Teaching and Research Facilities
The college provides excellent teaching, research, and outreach 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, a campus greenhouse-experimental garden complex, and an equestrian center are used as teaching laboratories as well as for research in plant and soil science, animal science, plant biotechnology, horticulture, and range management. The agricultural field laboratories in northeast Lubbock County include the Burnett Cen-
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 catalog sections entitled Undergraduate Admissions and Registration. Entering freshmen should give special attention to course credit that can be obtained by the College Level Examination Program (CLEP) examinations usually given prior to the beginning of the fall semester. Transfer students should read the paragraphs dealing with admission of transfer students and transfer of credits from other colleges and universities in the Undergraduate Admissions section of this catalog.

Undergraduate Research Program. The undergraduate research program consists of a two-course series. AGSC 4300 (Research Methodology) is offered during the fall semester, and the second course is offered during the spring semester as a Special Problems course under the guidance of a faculty mentor. This course provides opportunities to gain an understanding of analytical experience in applied research. Both courses are designated as honors courses and, with Honors College approval, the two-course series (6 semester hours) may be the basis for Honors College students to earn the “Highest Honors” designation from the Honors College. In addition, any undergraduate student who completes the course series and has a CASNR major may apply for competitive research grants, as well as participate in undergraduate research presentations and awards. Coursework completed will apply to individual degree programs. For more information contact a CASNR faculty advisor or the dean’s office.

Distance Degree Program. One program is available at the undergraduate level as a Bachelor of Science degree in horticulture and is detailed in the catalog under the Department of Plant and Soil Science.

Agricultural Science (AGSC)

(To interpret course descriptions, see page 8.)

Undergraduate Courses

2300. [AGRI 1309] Computers in Agriculture (3:2:2). Introduction to information technology in agricultural applications. Includes applications in spreadsheet data analysis, word processing, and database management. F, S.

2301. Computers in Agriculture II (3:2:2). 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.

Graduate Courses


Graduate Program / Agricultural Sciences and Natural Resources

Programs in the College of Agricultural Sciences and Natural Resources lead to the following graduate degrees:

• Master of Science with majors in agricultural and applied economics, agricultural education, animal science, crop science, entomology, fisheries science, food science, horticulture, range science, soil science, and wildlife science.

• Master of Agriculture with a major in agriculture with concentrations available through the various departments. The Master of Agriculture degree program is designed to prepare students and professionals as leaders, managers, and executives in the agricultural sciences and natural resources areas. Because the program is multidisciplinary and includes a wide choice of professional courses, it prepares graduates for diverse careers. A student may select an emphasis in the following departments: Agricultural and Applied Economics, Agricultural Education and Communications, Animal and Food Sciences, and Plant and Soil Science.

Courses for the Master of Agriculture degree program may be taken from offerings in the College of Agricultural Sciences and Natural Resources and from other colleges within the university. A minimum of 36 semester hours of graduate coursework is required for this nonthesis degree. For a specific option a student would normally take 18 hours in the department concerned with the emphasis area and the balance in at least two other areas. An oral or written comprehensive exam as specified by the emphasis department is required.

• Master of Landscape Architecture is a terminal professional degree for students with a Bachelor of Landscape Architecture degree or equivalent and a first professional degree for students with any other professional degree.

• Doctor of Education with a major in agricultural education.

• Doctor of Philosophy with majors in agricultural and applied economics, agronomy, animal science, fisheries science, range science, and wildlife science.

The graduate program also offers a university-wide interdisciplinary program leading to the Ph.D. degree in land-use planning, management, and design. A Doctor of Education degree is available from the College of Education for students who wish to have agricultural education as a support area.

Applicants who meet the admission standards of the Graduate School also must receive formal approval from a departmental committee. Admission standards of some departments exceed those of the Graduate School.

Advisory committees for the M.S., M.Ag., and M.L.A. degrees consist of at least three faculty members. Advisory committees for the Ph.D. degree in agricultural and applied economics consist of four or five faculty members. Advisory committees for Ph.D. degrees in the Departments of Natural Resources Management; Plant and Soil Science; and Animal and Food Sciences consist of five faculty members.

A preliminary examination is required of all doctoral students before the end of the second semester of work. The student’s progress will be evaluated and recommendations will be made concerning continuation of graduate studies and leveling work necessary to remove any deficiencies revealed by the examination.

No specific language or tool requirements exist for the graduate programs. However, such requirements may be incorporated when deemed appropriate. Other requirements for the degree programs are specified in other sections of this catalog.

Distance degree programs are offered at the graduate level in agriculture, agricultural education, horticulture, and crop science. The Master of Agriculture program is discussed in this section of the catalog. The Master of Science degrees in horticulture and crop science are detailed in the catalog under the Department of Plant and Soil Science. The Department of Agricultural Education and Communications offers two distance degree programs: Master of Science in Agricultural Education and Doctor of Education in Agricultural Education. The Doctor of Education is delivered as a joint program with Texas A&M University. Both degree programs are referenced in the catalog under the department.
The opportunity to participate in the Honors College is available to agricultural and applied economics students who demonstrate high academic achievement and are accepted into the Honors College. AEAC students wishing to earn an Honors College designation must take AGSC 4300 for honors credit. In addition, honors students may contract for honors credit with AAEC 4301. Admission criteria and other information about the Honors College can be found in the “Honors College” section of this catalog.

The department offers a minor in agribusiness management for non-departmental majors. The agribusiness minor consists of 18 hours of coursework, 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 Agribusiness

The Bachelor of Science Degree in Agribusiness is a joint program administered by the College of Agricultural Sciences and Natural Resources and the Rawls College of Business.

Undergraduate Program

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 general business and personal financial planning. 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. 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 prepare graduates to manage business and financial firms, farms, ranches, and related organizations and direct land and property development and real estate activities.

The department also participates in the interdepartmental program leading to the Master of Agriculture degree and cooperates with the College of Business Administration in a Master of Business Administration degree with a concentration in agricultural business management. This M.B.A. program is administered by the College of Business Administration.

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 distributing 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 provides graduates to manage business and financial firms, farms, ranches, and related organizations and direct land and property development and real estate activities.

Minimum hours required for graduation—121

Laboratory Science—at least 4 of the 8 hours of natural laboratory science must be taken AGSC 4300 and 4301; the remaining hours must be selected from university Core Curriculum requirements.

Choose from university Core Curriculum requirements.

Electives must be selected from PSS 1321, NRM 2301, 2302, or ANSC 1401.

Sophomore English—Choose one course from ENGL 2302, 2306, 2307, or 2351.

# AGBS Curriculum Groups: Select 1 course from Group 1—AAEC 4305, 4306, 4307, or 4313; select 1 course from Group 2—AAEC 4300, 4303, or 4317.

Departmental CORE Policy: Includes AAEC 3315 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 coursework. Students failing to do so may delay their graduation date.

All courses in AAEC, MATH, ECO, ENGL, and AGS must be completed with a grade of C or better.

Minimum hours required for graduation—121. Students fulfill the university multicultural requirement by completing FIN 4328, MGT 4373, 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 2.75 GPA at Texas Tech are required.

2.75 GPA required for ACCT 2300 and 2301.
### Bachelor of Science in Agricultural and Applied Economics

#### FIRST YEAR

<table>
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<tr>
<th>Fall</th>
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<td>Lab. Science*</td>
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<td>ECO 3311, Int. Macroeconomics</td>
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#### SECOND YEAR

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<tr>
<td>ECO 2302, Prin. of Economics II</td>
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#### THIRD YEAR

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#### FOURTH YEAR

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<td>AAEC Group 1**</td>
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<td>Electives</td>
<td>TOTAL</td>
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</table>

Minimum hours required for graduation—121

* Laboratory Science—8 hours must be from PSS 1411, 2401, ATMO 1300-1100, BIOL 1401, 1402, CHEM, PHYS, or any other 4-hour natural science course from the university Core Curriculum.

† 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.

Departmental CORE Policy: Includes AAEC 3315 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 coursework. Students failing to do so may delay their graduation date.

Minimum hours required for graduation—121.

Agriculture electives must be selected from PSS 1321, NRM 2301, 2302, or ANSC 1401.

All courses in AAEC (except required electives) and MATH must be completed with a grade of C or better.

Electives: The degree program consists of 24 elective hours including 9 hours of required electives chosen from upper-level B.A., B.O., or AAEC courses not required elsewhere (this may include AGSC 4300 and AAEC 4301 for students wanting undergraduate research experience), and 15 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 B.A. or ECO, such as B.A. 2301, 3303, 3304, or 3305, ECO 3320. (To take B.A. courses, students may need to declare a business minor.)

** Agricultural Production (Farm or Ranch) Management:** Select electives from AAEC 4317 and appropriate courses in PSS, ANSC, NRM, and BLAW.

2.75 GPA required for ACCT 2300 and 2301.

Students may earn a minor by using electives carefully.

### 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. Students must complete lower division BA courses before taking upper division BA courses and must have a 2.75 GPA.

#### FIRST YEAR

<table>
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<tbody>
<tr>
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#### SECOND YEAR

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#### THIRD YEAR

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Minimum hours required for graduation—144

* 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.

*** AGGB Curriculum Group: Select 5 courses from AAEC 4303, 4305, 4306, 4312, 4313, 4315, and 4317.

† Choose from university Core Curriculum requirements.

†† Electives must be selected from PSS 1321, NRM 2301, 2302, or ANSC 1401.

Departmental CORE Policy: Includes AAEC 3315 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 coursework. Students failing to do so may delay their graduation date.

Both degrees may be granted on completion of all 144 hours.

All courses in AAEC, MATH, ECO, ENGL, B.A., and AGSC 2301 must be completed with a grade of C or better.

See the College of Business Administration section of the catalog for information on lower division requirements. Students interested in pursuing a B.B.A. degree in majors other than general business should visit with a COBA advisor about additional course requirements.

Satisfactory completion of the first and second year courses and a cumulative 2.75 GPA at Texas Tech are required to advance to the upper division of the business administration program.

2.75 GPA required for ACCT 2300 and 2301.
Graduate Program

Master's Programs

Master's programs in agricultural and applied economics require a minimum of 30 hours of graduate credit for the M.S. thesis option or 36 hours for the M.S. nonthesis option, the Master of Agribusiness degree, and the Master of Agriculture degree. A student seeking a M.S. degree in agricultural and applied economics may choose courses to emphasize agribusiness and trade or resource policy and development.

Doctoral Programs

The doctoral program in agricultural and applied economics is designed to develop a broad-based competence in advanced economic theory, techniques of quantitative analysis, and public administration of agricultural and economic issues. Two options are offered for the Doctor of Philosophy degree in the agricultural and applied economics program. The first option allows graduate students to select a minor of their choice in business administration, finance, mathematics, public administration, statistics, sociology, or other possible areas of study. The program has been designed to take advantage of the strengths of the department and areas of interest to students. The second option allows graduate students to select a minor in personal financial planning, a joint Ph.D. program between the department and the College of Human Sciences. Completion of the doctoral program in agricultural and applied economics with a minor in personal financial planning qualifies graduates to take a test administered by the Certified Financial Planning Board of Standards to become Certified Financial Planners.

Each Ph.D. candidate is expected to demonstrate competency by satisfactorily completing (1) a comprehensive written examination in each specialty field chosen, (2) a dissertation research project that demonstrates original independent scholarly research, and (3) a final oral exam.

Before being recommended for admission to a degree program with a major in agricultural and applied economics, the student may be required to take (without graduate credit) undergraduate leveling courses as specified by the department.

Joint M.S.–J.D. Degree Program

The School of Law and the Graduate School of Texas Tech University offer a joint degree program that allows students to complete the requirements for the Master of Science degree in Agricultural and Applied Economics and the Doctor of Jurisprudence degree. This joint program can be completed one year sooner than when each is pursued separately. The M.S. component is administered by the Department of Agricultural and Applied Economics on behalf of the Graduate School, while the J.D. component is administered by the School of Law.

The joint degree program is of particular benefit to students who are interested in practicing law in a rural setting or who want to pursue certain types of careers in agribusiness finance or natural resource law. Students must be admitted to both programs separately but the LSAT test will suffice for both applications.

Undergraduate Courses

Agricultural and Applied Economics (AAEC)

(To interpret course descriptions, see page 8.)


3100. Seminar (1:1:0). Prerequisite: Junior standing. Assigned readings, informal discussion, outside speakers, and written and oral reports on subjects relating to agricultural and applied economics. F, S.


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: Sophomore standing. Principles and methods used in professional selling for the business environment. Includes concepts of human behavior and professional selling techniques. F, S.

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 allocation. 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.

4101. Current Problems in Agricultural and Applied Economics (1). Prerequisite: Senior standing. Topics may vary. May be repeated twice for credit. F, S, SS.

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 and sophomore English or ENGL 2311. Principles and techniques of appraising property for use, sale, and other purposes. F, S. (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, S, SS. (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, SS. (Writing Intensive)

4309. Sustaining Global Ecology, Natural Resources and Economy (3:3:0). Prerequisite: MATH 1330 or equivalent; recommend one BIOL or ECO course. Challenges to global markets and environment across diverse systems and histories. F, S, SS. (Writing Intensive)

4312. Applied Optimization Methods (3:3:0). Prerequisite: AAEC 3315 or equivalent. Study of techniques applicable to economic optimization problems, including mathematical optimization and linear programming. Emphasis on problem solving. F, S, SS. (Writing Intensive)

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 (3:3:0). Prerequisite: AAEC 3315 and 3401. Case studies emphasizing managerial techniques applied to decision-making problems of business firms. F, S. (Writing Intensive)

Graduate Courses

5000. Professional Internship (V1-6). Supervised study providing in-service training and practice in a professional setting, including businesses and non-profits.

5301. Special Study in Agricultural and Applied Economics (3). Individual and group study in advanced topics not covered in other graduate courses. May be repeated for credit. F, S, SS.

5302. Food and Agriculture Sector Public Policy (3:3:0). Prerequisite: AAEC 4305. Analysis of public policies affecting the food and fiber sector, commodity programs, environmental laws, and trade policy. F

5303. Advanced Production Economics (3:3:0). Prerequisite: AAEC 3315. Criteria for resource use optimality under price and yield certainty and uncertainty. F

5304. Applied Econometrics I (3:3:0). Prerequisite: AAEC 4302. Advanced statistical methods, including multiple regression analysis, for applied economic problems; constructing econometric models; multicollinearity, autocorrelation, heteroscedasticity, and related problems. F

5308. Natural Resource Economics (3:3:0). Prerequisite: ECO 5312 or consent of instructor. Economic theory and empirical investigations of resource utilization with special emphasis on arid and semi-arid land areas and environmental issues. F

5309. International Economic Development in Food and Fiber Sectors (3:3:0). Prerequisite: AAEC 3315. World food and development issues; economic development of the food and fiber sector in industrialized and developing economies. F

5310. Advanced Market Analysis (3:3:0). Prerequisite: ECO 5312 and AAEC 5307. Theoretical and empirical approaches to market structures and market price behavior. S

5312. Agribusiness Analysis (3:3:0). Prerequisite: AAEC 3315. Application of economic theory and methods to management problems of the business firms in the food and fiber sector. F

5313. Microcomputer Applications in Agribusiness and Research (3:2:2). Use of microcomputers, software, and design of software for agricultural business and research purposes. Not open to majors. F, S

5314. Environmental Economics and Policy Analysis (3:3:0). Familiarize students with economic techniques and their use in analyzing natural resources and environmental policy issues. For non-majors only.
Department of Agricultural Education and Communications

Faculty

Mathew T. Baker, Ph.D., Chairperson

Professors: Baker, Briers, Cepica, Dooley, Fraze, Larke, Lawver, Lindner, Shinn
Associate Professors: Akers, Boyd, Doerfert, Elbert, Murphy, Smith, Vestal, Wingenbach
Assistant Professors: Brashears, Burris, Cummings, Davis, Harlin, Murphrey, Roberts, Stedman

About the Program

This department supervises the following degree programs:

- Bachelor of Science in Interdisciplinary Agriculture
- Bachelor of Science in Agricultural Communications
- Master of Science in Agricultural Education
- Master of Science in Agricultural Communications
- Doctor of Education in Agricultural Education
- Doctor of Education in Agricultural Education

The department participates in the interdepartmental program leading to the Master of Agriculture degree with an option in agricultural communications, agricultural extension education, or agricultural education.

Undergraduate Program

Students majoring in interdisciplinary agriculture for the B.S. degree may choose from two tracks: teacher certification or agricultural leadership. The teacher certification track involves courses from many departments in the college. Elective courses can be selected in areas of special interest. Job placement in high schools, cooperative extension, and community colleges offers a life-long career for many graduates and alternative employment opportunities for others. Students seeking teacher certification also may receive a degree in another agricultural area and, with proper planning, receive certification in agricultural education. Students seeking teacher certification also should refer to the College of Education section of this catalog. The agricultural leadership track prepares students to enter a broad array of careers either in the public sector (legislature assistants, agricultural agencies) or private sector (training and development, management, or sales in agricultural, food, and natural resource industries). This degree is also recommended for students interested in continued studies in professional schools such as law or business.

The department has two new partnerships related to teacher certification. The first partnership is a dual B.S. degree program with Angelo State University (ASU). Students in the program complete three years in ASU’s Animal Science program and spend an additional three semesters in the Department of Agricultural Education and Communications at Texas Tech completing certification. At the conclusion of the program, students will receive both a B.S. in Agriculture Business, Animal Science or Plant Science from LCU and a B.S. in Interdisciplinary Agriculture from Texas Tech. For additional information on either the ASU or LCU program, contact the department chair.

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. Students must select one of three areas for concentration: electronic media, print media, or public relations/marketing. Selection of technical agriculture courses allows students to focus in areas of interest and to reinforce their general knowledge in agriculture.

This department offers an 18-hour minor in agricultural leadership for students majoring outside the department. Required courses include AGSC 3301, AGED 3315, AGED 3314 or AGED 4308, and nine hours from the following courses: ACOM 2301, ACOM 2302, ACOM 3300, AGED 2300, AGED 3330, AGED 4000 (3 hours only), AGED 4303, or AGED 4309.

Graduate Program

Master’s Program

The department offers two Master of Science programs, one in agricultural education and one in agricultural communications. These programs may be completed with 30 hours of graduate courses plus a thesis or 36 hours of graduate courses. The Master of Agriculture degree is a 36-hour program. Public school teachers may have a particular interest in the Master of Agriculture degree with an agricultural education concentration and an educational leadership emphasis. Courses in this unique program count toward the 42-hour Texas Tech Principalship Professional Certification Program. Students in this program must have at least two years of Texas Education Agency-approved experience and apply for admission into the certification program during the first semester of enrollment in this program.

Doctoral Program

The Doctor of Education program is available as an on-campus program. This 64-hour program (beyond a master's degree) requires a 25-hour disciplinary core, 9 hours in research and evaluation, 6 hours in statistics, 12 hours in an area of specialization, and 12 hours of dissertation. The department also participates in a unique distance-delivered doctoral degree in agricultural education that is awarded by both Texas Tech University and Texas A&M University. Students in this program must apply for admission at both universities. Most coursework associated with this joint doctoral degree is delivered via the ITV and the World Wide Web. Students in this program take a 40-hour disciplinary core, 12 hours in an area of specialization, and 12 hours of dissertation or record of study. Each doctoral candidate (whether on-campus or distance) is expected to demonstrate competency by satisfactorily completing (1) a comprehensive written examination, (2) a dissertation or record of study research project that demonstrates original, independent scholarship, and (3) a final oral examination.
Agricultural Education (AGED)
(To interpret course descriptions, see page 8.)

Undergraduate Courses

2300. Introduction to Agricultural Education (3:3:0). History and principles of vocational education, community assessment of agricultural programs planning, and development of agricultural youth organization. (Writing Intensive)

2302. Principles of Effective Technology Use in Teaching Agricultural Science (3:3:0). Computer hardware and software used in the modern teaching environment. Teaching and learning theory in relation to multimedia presentations and their effective construction. (Writing Intensive)

3313. Management and Supervision of Agricultural Experience Programs (3:3:0). Provides student 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. (Writing Intensive)

3314. Team Leadership Development in Agricultural and Natural Resources (3:3:0). Prerequisite: AGSC 3301. Exploration of strategies and techniques for successful teams, including conflict management, facilitation, and negotiation, skill building, and experimental activities in agriculture and natural resources. (Writing Intensive)

3315. Personal Leadership Development in Agriculture Sciences and Natural Resources (3:3:0). Prerequisite: AGSC 3301. Principles, theories and application of interpersonal skills required to develop strong leadership in the agricultural and natural resource context. (Writing Intensive)

3330. Interrelationships of Agricultural Agency Information Systems (3:2:2). Utilization of agricultural service systems to disseminate information to traditional and nontraditional agricultural clientele. Emphasis on USDA organizations. (Writing Intensive)

3331. Agricultural Youth Leadership Organizations (3:3:0). Prerequisite: AGSC 3301. Principles, theories and application of leadership skills commonly taught in youth agricultural organizations. Emphasis on youth leadership development events and seamlessly integrating activities and curriculum. (Writing Intensive)

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, SSII.

4302. Transfer of Agricultural Technology (3:3:0). Examination of processes by which professional agriculturalists influence the introduction, adoption, and diffusion of technological change. F. (Writing Intensive)


4306. Student Teaching (3). Prerequisite: Senior standing in agricultural education.

4308. Organizational Leadership Development in Agriculture and Natural Resources (3:3:0). Prerequisite: AGSC 2301. Human behavior in organizations, the role of leadership in organizational performance, and the process of organizational change and improvement. (Writing Intensive)

4309. Contemporary Issues in Agricultural Leadership (3:3:0). Prerequisite: AGSC 3301. An evaluation of current issues pertaining to leadership in agriculture and natural resources including a historical look at leadership and its impact on producers and consumers. (Writing Intensive)

Graduate Courses

5001. Contemporary Issues in Agricultural and Extension Education (V1-6). Study current issues and trends in agricultural and extension education and develop plans to improve the disciplines. May be repeated for up to 6 hours credit. F, S, SSII, SSII.

5301. Special Problems (3:3:0). Investigation of problems in agricultural education or extension education of special interest to the student. May be repeated for credit. F, S, SSII, SSII.

5302. Research Methods and Analysis in Agricultural Education and Communications (3:3:0). Application of research techniques in the education and communications aspects of agriculture, including proposal preparation, literature review, research design, data analysis, and reporting of results.

5304. Advanced Methods in Agricultural Leadership (3:3:0). Theory of motivation and behavior, leadership and management styles, change agents, and the adoption process. Practical application regarding agricultural occupations. SSII, SSII.

Interdisciplinary Agriculture Curriculum

Agricultural Leadership Track

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<td>AGSC 3301, Prin. of Agr. Leadership</td>
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<td>POLS 1301, Amer. Govt., Org.</td>
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<td>ACOM 4300, Web Design in Ag.</td>
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<td>AGED 4000, Internship</td>
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Minimum hours required for graduation—120
† Choose from Core Curriculum requirements.

Interdisciplinary Agriculture (Agricultural Education) Curriculum—Teacher Certification

**FIRST YEAR**

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<td>AGED 2302, Tech. Use in Teaching</td>
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<td>HIST 2301, History of U.S. Since 1877</td>
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**THIRD YEAR**

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**FOURTH YEAR**

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<td>AGED 4306, Student Teaching</td>
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<td>AGED 3311, Agr. Youth Leadership</td>
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<td>AGSM 4302, Ag. Bldgs.</td>
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Minimum hours required for graduation—120
† Choose from Core Curriculum requirements.
Agricultural Communications Curriculum

FIRST YEAR
Fall
BIOL 1401 or 1402 4 Basic Ag. Elective 3
MATH 1320, College Algebra 3 HIST 2300, History of U.S. History to 1877 3
ACOM 2301, Intro. Ag. Comm. 3 AEC 2305, Fund. Ag. & Appl. Econ. 3
ACOM 2305, Digital Comm. in Ag. 3 MATH 2300, Statistics 3
TOTAL 16 TOTAL 15

Spring
Basic Ag. Elective 3 JOUR 2310, News Writing** 3
CHEM 1301, Chem. & Society 3 POLS 1301, Amer. Govt. Org. 3
ACOM 2302, Sci. Communications 3 AGED 2300, Intro to Ag. 3
HIST 2301, History of U.S. Since 1877 3 Basic Ag. Elective 3
Humanities Elective* 3 TOTAL 15
TOTAL 16

SECOND YEAR
Fall
POLS 2302, Am. Public Pol. 3 ACOM 3300, Comm. Ag. to Public 3
COMS 2300, Public Speaking 3 AGSC 3301, Ag. Leadership Prin. 3
P R 3310, Prin. of Public Relations 3 Specialized Elective 6
Advanced Ag. Elective 3 PHOT 2310, Basic Photography 3
EMC 3300, Elec. Media & Society 3 TOTAL 15
TOTAL 15

Spring
ACOM 3301, Video Prod. in Ag. 3 Specialized Elective 3
Specialized Elective 3 Advanced Ag. Elective 6
Visual & Performing Arts Elective* 3 ACOM 4310, Dev. of Ag. Pub. 3
ACOM 4100, Sem. in Comm. Elect. 1 TOTAL 15
TOTAL 13

Minimum hours required for graduation—120
* Choose from Core Curriculum requirements, one from Category E and one from Category F.
** Must pass GSP before enrolling in JOUR 2310

Specialization Areas: (12 Hours)
Electronic Media – JOUR 3314, EM&C 3380, 3370 or 3360, 4320
Print Media – JOUR 3312, 3316, 3380, 4370
Public Relations/Marketing – PR 3312, MCOM 3380, AEC 3301, 3305

THIRD YEAR
Fall
ACOM 3301, Video Prod. in Ag. 3 Specialized Elective 3
ACOM 4100, Sem. in Comm. Elect. 1 Specialized Elective 6
TOTAL 13

FOURTH YEAR
Fall
ACOM 3301, Video Prod. in Ag. 3 Specialized Elective 3
ACOM 4100, Sem. in Comm. Elect. 1 Specialized Elective 6
TOTAL 13

Graduate Courses

AGSM 5391. School and Community (3:3:0). Explores the development of collaborative culture at school and how to enlist community support to form partnerships with stakeholders. (EDLD 5391)

6000. Master’s Thesis (V1-6).

7000. Research (V1-12).

7100. Graduate Seminar (1). Group study and discussion of current developments in agricultural behavioral sciences. May be repeated for credit.

7200. Professional Internship (2). An on-the-job supervised experience program conducted in the area of the student’s specialization. May be repeated for credit.

8000. Doctor’s Dissertation (V1-12). Initiation and completion of research for advanced degree.

Agricultural Communications (ACOM)
(To interpret course descriptions, see page 8.)

Undergraduate Courses

2301. Introduction to Agricultural Communications (3:3:0). An overview of information systems and media associated with the agricultural industry. (Writing Intensive)

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. (Writing Intensive)

2305. Digital Communications in Agriculture (3:2:1). Examination of the use of computers in agricultural communications with emphasis on graphic art production, photo manipulation, and elements of design.

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. (Writing Intensive)


4000. Internship in Agricultural Communications (V1-12).

4001. Agricultural Communications Problems (V1-3). Individual study of advanced application of principles of agricultural communications.

4100. Seminar in Agricultural Communications (1:1:0). Overview and analysis of development, development, issues, and trends of traditional agricultural and related information outlets. May be repeated once for credit. F. (Writing Intensive)

4300. Web Design in Agricultural Sciences and Natural Resources (3:2:1). Basic understanding of web design principles. Promote experimental learning through a project requiring students to develop a web site for a client in the agriculture industry.

4310. Development of Agricultural Publications (3:2:2). Prerequisite: JOUR 2310. Students integrate various skills including writing, editing, and layout in producing agricultural publications. Emphasis upon computer software applications in agricultural publishing. (Writing Intensive)

Graduate Courses

5001. Contemporary Issues in Agricultural Communication (V1-3). Group study and discussion of current developments, trends, and issues in agricultural communications. May be repeated for credit.

5303. Advanced Computer Applications in Agricultural Communications (3:3:0). Study of computer software for document production and photo manipulation (bitmap and vector) and desktop publishing in the context of agriculture issues and needs.

5307. Methods of Technological Change (3:3:0). Dynamics of cultural change as theoretical framework for planned technological change; methods of planning and implementing change, its effect, and how it can be predicted. SSI, SSI.

Agricultural Systems Management (AGSM)
(To interpret course descriptions, see page 8.)

Undergraduate Courses

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.


College of Agricultural Sciences and Natural Resources

Department of Animal and Food Sciences

Faculty

Kevin R. Pond, Ph.D., Chairperson

Horn Professor and Thornton Chair: Galwaye
San Antonio Livestock Exposition Chair: M.E. Miller
Professors: Albin, McGlone, Pond, Prien, Thompson
Associate Professors: Brady, Brashears, Jackson, Kim, R. Miller
Assistant Professors: Alvarado, C. Brooks, Johnson, Takhar, Vizcarra, Wilson
Instructors: Brock, T. Brooks, C. Guay, K. Guay, Speer

About the Program

This department supervises the following degree programs:

- Bachelor of Science in Animal Science
- Bachelor of Science in Food Science
- Master of Science in Animal Science
- Master of Science in Food Science
- Doctor of Philosophy in Animal Science

Two areas of concentration in food science are offered: science and industry. The department also participates in the interdepartmental program leading to the Master of Agriculture degree.

This department offers minors in animal science or food science 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.

Undergraduate Program

Animal Science Program

Students majoring in animal science for the B.S. degree may choose from four emphases: animal business, production, science, or meat 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 meat science option prepares students in meat processing, science, and safety. The department also directs the preprofessional course preparation for veterinary medicine.

All students are required to take a 3-hour internship or a 3-hour research experience to fulfill graduation requirements.

Students must earn a grade of C or better in all animal science courses required for graduation. All electives are subject to departmental approval. Degree requirements are listed here.

Graduate Program

The Department of Animal and Food Sciences offers flexible degree programs preparing graduates for a wide array of positions in agriculture and allied fields. Students with bachelor’s degrees in a variety of fields are welcome to study in the department.

Master’s Programs

The nonthesis, 36-hour Master of Agriculture or Master of Science degrees are offered with concentrations in agricultural product processing (meats or feeds), feedlot management, formula feed production, livestock production, and ranch management. An internship is required for the Master of Agriculture.

Master of Science degree students may pursue studies in animal breeding (physiology or genetics), animal nutrition (ruminant or monogastric), animal science, food science, or meat science. A thesis, along with at least 24 semester hours of coursework, is required.

The master’s degree in food science emphasizes the scientific and technological aspects of food handling. Knowledge of the physical and biological sciences, economics, marketing, and engineering is applied to and coordinated with food development, processing, packaging, quality control, and distribution. Research programs involve food safety and microbiology, chemistry, and commodity products.

Consumer demands for a variety of highly nutritious and convenient foods of uniformly high quality create many and varied career opportunities in the food and allied industries. These careers include management, research and development, process supervision, quality control, procurement, distribution, sales, and merchandising.

Doctoral Program

Candidates for the Doctor of Philosophy degree in Animal Science may specialize in one of several areas of interest such as animal genetics, animal nutrition, reproductive or environmental physiology, or meat science. No foreign language requirement exists, but such a requirement may be instituted at the discretion of the student’s advisory committee.

Interested persons should contact the department graduate advisor. Additional general degree requirements may be found in other sections of the catalog.

Students who receive stipends have special responsibilities in research and teaching. These awards include waiver of nonresident tuition.
### Animal Science Curriculum

#### Bachelor of Science in Animal Science Curriculum

**Fall**
- ANSC 1401, Gen. Anim. Sci. 4
- CHEM 1305, Chem. and Society I 3
- ENGL 1301, Gen. Exp. Chem. (Lab.) 3
- MATH 1301, Ess. Coll. Rhetoric 3
- MATH 1330, Intro. Math Ana. 3
- TOTAL 14

**Spring**
- AECC 2305, Fund. Ag. Appl. Eco. 3
- CHEM 1306, Chem. and Society II 3
- ENGL 3303, Animal Sci. Seminar 1
- MATH 2300, Statistical Methods 3
- TOTAL 16

#### Animal Production Curriculum

**Fall**
- ANSC 1401, Gen. Anim. Sci. 4
- CHEM 1305, Chem. and Society I 3
- ENGL 1301, Ess. Coll. Rhetoric 3
- MATH 1302, Algebra 3
- MATH 1320, College Algebra 3
- TOTAL 14

**Spring**
- AECC 2305, Fund. Ag. Appl. Eco. 3
- CHEM 1306, Chem. and Soc. II 3
- MATH 1321, Trigonometry 3
- TOTAL 16

#### Animal Business Curriculum

**Fall**
- ANSC 1401, Gen. Anim. Sci. 4
- CHEM 1305, Gen. Chem. (Lab.) 3
- ENGL 1301, Gen. Exp. Chem. (Lab.) 3
- MATH 1301, Ess. Coll. Rhetoric 3
- MATH 1330, Intro. Math Ana. 3
- TOTAL 14

**Spring**
- AECC 2305, Fund. Ag. Appl. Eco. 3
- CHEM 1306, Chem. and Society II 3
- ENGL 3303, Animal Sci. Seminar 1
- MATH 2300, Statistical Methods 3
- TOTAL 16

### Meat Science Curriculum

#### Bachelor of Science in Meat Science Curriculum

**Fall**
- ANSC 1401, Gen. Anim. Sci. 4
- CHEM 1305, Chem. and Society I 3
- ENGL 1301, Ess. Coll. Rhetoric 3
- MATH 1302, Algebra 3
- MATH 1320, College Algebra 3
- TOTAL 14

**Spring**
- AECC 2305, Fund. Ag. Appl. Eco. 3
- CHEM 1306, Chem. and Soc. II 3
- MATH 1321, Trigonometry 3
- TOTAL 16
**Food Science Program**

Food science provides the basic coursework for a comprehensive background in the processing and preservation of foods. Food science graduates may be employed in areas concerned with food systems management, design and development of new food products, strategies for quality control/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 science students. Positions in private industry, educational institutions, and governmental agencies offer excellent potential for rapid advancement. The food science section provides coursework suggested by the Institute of Food Technologists and emphasizes processing and quality control aspects. A pilot plant and associated chemical and microbiological laboratories allow students practical experience in development, manufacture, and analysis of food products. Degree requirements appear on the following pages. All students are required to take a 3-hour internship or 3-hour research experience to fulfill graduation requirements.

**Bachelor of Science in Food Science Curriculum**

<table>
<thead>
<tr>
<th>Fall</th>
<th>FIRST YEAR</th>
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</thead>
<tbody>
<tr>
<td>BIOL 1402, Biol. of Animals</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1330 or 1351</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1307, Prin. Chem. I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1107, Prin. Chem. I (Lab.)</td>
<td>1</td>
</tr>
<tr>
<td>MATH 1331 or 1352</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1321 or 1331 (Math 1320 or 1330 req. for Ind.)</td>
<td>3</td>
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<td>TOTAL</td>
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<table>
<thead>
<tr>
<th>Spring</th>
<th>FIRST YEAR</th>
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<tbody>
<tr>
<td>AA 2305, Fund. Ag. &amp; Appl. Econ.</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1308, Prin. Chem. II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1108, Prin. Chem. II (Lab.)</td>
<td>1</td>
</tr>
<tr>
<td>ENGL 1302, Adv. Coll. Rhetoric</td>
<td>3</td>
</tr>
<tr>
<td>Approved Electives**</td>
<td>3</td>
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<tr>
<td>Approved Electives**</td>
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<tr>
<th>SECOND YEAR</th>
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<tbody>
<tr>
<td>CHEM 3305, Org. Chem.</td>
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<tr>
<td>CHEM 3105, Org. Chem.</td>
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<tr>
<td>CHEM 3105, Org. Chem. (Lab.)</td>
</tr>
<tr>
<td>CHEM 3007, Org. Chem. (Lab.)</td>
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<tr>
<td>MATH 1331 or 1352</td>
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<tr>
<td>MATH 1331 or 1352 (Math 1321 or 1331 req. for Ind.)</td>
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<tr>
<td>FDSC 2300, Prin. Food Tech.</td>
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<tr>
<td>COMS 2300, Public Speaking</td>
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<tr>
<td>HIST 2300, History of U.S. to 1877</td>
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<td>TOTAL</td>
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<tr>
<th>THIRD YEAR</th>
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<tbody>
<tr>
<td>POLS 1301, Amer. Govt. &amp; Org.</td>
</tr>
<tr>
<td>NS 3340, Nutrition in Life Cycle</td>
</tr>
<tr>
<td>FDSC 3100, Food Tech. Seminar</td>
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<tr>
<td>FDSC 3302, Adv. Food Anal. or FDSC 4303, Food Chemistry</td>
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<tr>
<td>MBO 3400, Microbiology</td>
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<td>MBO 3400, Microbiology</td>
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<th>FOURTH YEAR</th>
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<tbody>
<tr>
<td>FDSC 4303 or FDSC 3302</td>
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<tr>
<td>FDSC 4303, Field Studies</td>
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<tr>
<td>AEC 3401, Ag. Statistics</td>
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<tr>
<td>Visual &amp; Performing Arts*</td>
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<tr>
<td>Elective</td>
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</table>

**Total Hours:** 134

Minimum hours required for graduation—134

* Choose from Core Curriculum requirements.

** Students will select an emphasis listed below according to their area of interest:

- **Science:** 26 hours of the 36 hours of electives must be selected from Adv. CHEM, PHYS 1403, CHEM 3341 and 3141, 9 hours of approved science electives, 3 hours of approved departmental electives, and 3 hours of basic agriculture courses.

- **Industry:** 24 hours of the 36 hours of electives must be selected from ACCT 2300 or Adv. CHEM, FDSC 3304; ANSC 3403, 6 hours of basic agriculture courses; and 8 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 58 credit hours. The following courses are included in the minimum admission requirement:

- ANSC 3301; BIOL 1402; CHEM 1307, 1107, 1308, 1108, 3305, 3105, 3306, 3106, 3310, 3312 or 3314; COMS 2300; ENGL 1301, 2311 or ACOM 2302, a 2000- or 3000-level English literature course; MATH 2300 or 1351; MBO 3401; PHYS 1403, 1404; PSS 3421 or BIOL 3416; and at least 11 credit hours of electives. A preveterinary medicine advisor is available to assist students in selecting courses and degree programs.

**Preveterinary Medicine Curriculum**

The curriculum is designed to qualify students for entrance into schools of veterinary medicine. Students who complete this curriculum may either apply for admission to a school of veterinary medicine or change to one of the four-year curricula in the university. The minimum course requirements for enrollment in a professional veterinary medicine curriculum will normally be 77 semester hours of acceptable credit. The following is a suggested sequence of courses to complete these requirements.

**First Year**

<table>
<thead>
<tr>
<th>Fall</th>
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<tbody>
<tr>
<td>BIOL 1402, Biology of Animals</td>
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<tr>
<td>CHEM 1307, Prin. Chem. I</td>
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<tr>
<td>MATH 1107, Prin. Chem. I (Lab.)</td>
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<tr>
<td>ENGL 1308, Prin. Chem. II</td>
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<tr>
<td>COMS 2300, Public Speaking</td>
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<tr>
<th>Spring</th>
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<tbody>
<tr>
<td>CHEM 3305, Org. Chemistry</td>
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<td>CHEM 3105, Org. Chem.</td>
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<tr>
<td>ENGL 1308, Prin. Chem. II</td>
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<tr>
<td>ENGL 1308, Adv. Coll. Rhetoric</td>
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**Second Year**

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<th>Fall</th>
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<tbody>
<tr>
<td>CHEM 3305, Org. Chemistry</td>
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<tr>
<td>CHEM 3105, Org. Chem.</td>
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<tr>
<td>ENGL 1308, Prin. Chem. II</td>
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<tr>
<td>MATH 1351 or 2300</td>
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<tr>
<td>PHYS 1403, Gen. Physics</td>
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<tr>
<td>PSS 3421 or BIOL 3416</td>
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<tbody>
<tr>
<td>CHEM 3305, Organic Chemistry</td>
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<tr>
<td>CHEM 3105, Organic Chemistry</td>
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<tr>
<td>MATH 1351 or 2300</td>
</tr>
<tr>
<td>PHYS 1403, Gen. Physics</td>
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**Third Year**

<table>
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<tr>
<th>Fall</th>
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<tbody>
<tr>
<td>ANSC 3301, Fundamentals of Agronomy</td>
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<tr>
<td>MBO 3401, Prin. Microbiology</td>
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<tr>
<td>PSS 3421 or BIOL 3416</td>
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<th>Spring</th>
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<tbody>
<tr>
<td>MBO 3401, Prin. Microbiology</td>
</tr>
<tr>
<td>English Literature</td>
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<tr>
<td>MBO 3401, Prin. Microbiology</td>
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**Animal Science (ANSC)**

*(To interpret course descriptions, see page 8.)*

**Undergraduate Courses**

1401. [AGRI 1419] 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.


2202. Principles of Anatomy of Domestic Animals (2:1:2). Introduction to anatomy of domesticated animals with emphasis on bones, muscles, organs, vascular and nervous systems. 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.
Animal and Food Sciences

- **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.

- **Livestock and Meat Evaluation II (3:1:6)**: Advanced training in evaluation, grading, and marketing of breeding and market livestock, carcasses, and wholesale cuts. Field trips to ranches and meat packing plants. S.

- **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.

- **Selection and Evaluation of Horses (3:2:3)**: 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.

- **Introductory Horse Nutrition (3:3:0)**: Introduction to basic nutrition and feeding of horses. Emphasis on practical applications and feeding management guidelines. F.

- **Principles of Physiology of Domestic Animals (3:3:0)**: Prerequisite: ANSC 3303. Introduction to physiological principles of domesticated animals, including major systems. S.

- **Animal Science Seminar (1:1:0)**: Information to prepare students to function in a competitive work environment or professional/graduate school. F, S.

- **Livestock and Meat Judging (2:0:6)**: In-depth special training in livestock and meat judging, grading, and evaluating for students who wish to become members of the livestock or meat judging teams. May be repeated for credit. S. (Writing Intensive)

- **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)

- **Principles of Nutrition (3:3:0)**: Prerequisite: ANSC 1401, CHEM 2303, 2301, or 3305, 3105. Nutritional roles of carbohydrates, proteins, lipids, minerals, vitamins, and water. Digestion, absorption, and use of nutrients and their metabolites. F.

- **Livestock Nutrition (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.

- **Introductory Horse Management (3:3:0)**: An introduction to all aspects of equine management including selection, herd health, reproduction, nutrition, and marketing. F.

- **Management and Training of Horses (3:0:6)**: Prerequisite: 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. S.

- **Applied Animal Nutrition (3:3:0)**: Prerequisite: ANSC 1401, CHEM 1304, or 1305. Fundamental 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.

- **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.

- **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.

- **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 government regulations, analysis, food safety, and sanitation. F, S.

- **Principles of Hippotherapy (3:2:2)**: An interdisciplinary overview of hippotherapy with primary emphasis on the use of the horse in therapy for children with physical, cognitive, and other disabilities. F, S, SS.

- **Principles of Equine Sales Preparation and Marketing (3:2:2)**: Prerequisite: ANSC 3301. Principles of equine management as related to fitting, presentation, and marketing of horses. S.

- **Domestic Animal Behavior (3:2:2)**: Prerequisite: ANSC 1401 or BIOL 1402. Behavioral principles and applications of behavioral concepts in domesticated animals. Course will focus on companion animals and farm animals. S, odd years.

- **Introduction to Equine-Assisted Psychotherapy (3:2:2)**: A comprehensive course in the basic principles and concepts of livestock growth and development. F.

- **Animal Growth and Development (3:3:0)**: An introduction to therapeutic intervention using horses to address behavioral, relational, and emotional issues for clients. S.

- **Reproductive Physiology (4:3:3)**: Prerequisite: ANSC 2202 and 2306 or 3405. Physiological approach to reproductive processes in farm animals. Study includes anatomy, endocrinology, and spermatology, fertilization, gestation, parturition, and artificial insemination. F.

- **Animal Breeding and Genetics (4:3:2)**: Prerequisite: ANSC 1401, MATH 1320 or higher, and junior or senior standing. Fundamental principles of cellular, population, and quantitative genetics applied in selection and mating systems to make genetic improvements in farm animals. F. (Writing Intensive)

- **Selection, Care, Processing, and Cooking of Meats (4:3:3)**: A general course in selecting, preserving, inspecting, grading, and cooking meats. S.

- **Consumer Selection and Utilization of Meat Products (4:3:3)**: A course for nonmajors who desire general knowledge of meat purchasing, selection, and cooking. Application of nutritional and safety concepts to fresh, prepared, and processed foods. S.

- **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, estrus detection, synchronization of estrus and ovulation, and pregnancy determination. S.

- **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.

- **Advanced Therapeutic Riding (3:2:2)**: Prerequisite: ANSC 3309. Skills and theories of therapeutic riding, including lesson plan development, knowledge of disabilities, and ground work for instructor certification. F, S, SSI.

- **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.

- **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. F.

- **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)

- **Horse Production (4:3:2)**: Prerequisite: ANSC 3401. An advanced study of equine anatomy, reproductive physiology, nutrition, disease, and management. S. (Writing Intensive)

- **Beef Production (4:3:3)**: Prerequisite: ANSC 3307, 3401, 3402 (majors only) or consent of instructor, and junior or senior standing; may take only one of the above concurrently. The breeding, feeding, and management of beef herds for profitable production of slaughter cattle. Emphasis on commercial cow-calf herds. Field trips to ranches. S.

- **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.

- **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.

4407. Poultry Production (4:3:3). Prerequisite: ANSC 3307, 3401, 3402 or consent of instructor. Poultry production including layers, broiler and turkey management. F.

5000. Professional Internship (V1-6). Prerequisite: Consent of instructor. Supervised study providing advanced training for Master’s of Agriculture and Master’s of Science (nonthesis) students. Emphasis is on creative and unique abilities. S, SS.

5001. Problems in Animal Science (V1-6). Prerequisite: Consent of instructor. Selected problems based on the student’s needs and interests not included in other courses. May be repeated for credit with approval of department.

5100. Seminar (1:1:0). Analysis of significant research. Oral presentations and discussions; enrollment required each semester of student’s residence. F, S.

5201. Ethical Behavior and Integrity in Scientific Research (2:2:0). Combination of lecture presentations and student analysis of behavior in science to explore aspects of scientific integrity and conduct. SS.

5301. Advanced Contemporary Issues in Animal Agriculture (3:3:0). Lecture, discussion, and seminar on current society issues facing animal and meat science. F.

5302. Advanced Beef Production (3:3:0). Advanced study of beef production and management. Emphasis on the application of current research to improve the efficiency of beef production. SS, even years.

5303. Advanced Beef Cattle Feedyard Management (3:3:0). Emphasis on the application of recent research to improve the management of cattle feedyard operations. Special emphasis will be placed on risk and resource management within the feedyard. F.

5304. Growth and Development (3:3:0). A study of differentiation, development, growth, and fattening of domestic animals and hereditary and environmental influences and interactions. SS.

5305. Advanced Livestock Production (3:3:0). Prerequisite: ANSC 3302. Advanced study of current research and on-farm practices of livestock production. Not open to animal science majors. S, SS.

5306. Advanced Animal Breeding (3:3:0). Prerequisite: ANSC 3402 or equivalent. Advanced topics in selecting and mating farm animals with the objective of making genetic improvement. Emphasis on breeding value estimation and crossbreeding. S, odd years.

5307. Research Methods in Agricultural Sciences (3:2:3). Prerequisite: ANSC 5403 or equivalent. Computer programming, data inputs, and interpretation. Covers examples that relate to experimental designs in agricultural research. SSI.


5309. Advanced Topics in Reproduction (3:3:0). A review of current literature and demonstrated techniques of the current procedures being used in assisted reproduction. S.

5310. Advanced Quality Control and Management in Feed Manufacturing (3:3:0). Scientific principles and practices of quality control and management of feed manufacturing with respect to their effects on animal performance. F.


5312. Advanced Sheep and Goat Production (3:3:0). Advanced study of sheep and goat production and management. Application of research in genetics, reproduction, nutrition, health, management, wool, mohair, and marketing. S.

5313. Nutritional Biochemistry in Animals (3:3:0). Prerequisite: ANSC 3301, CHEM 3305. Integrate metabolic pathways with nutrition and physiology of animals and understand intermediary metabolism of nutrients and its regulation in animals. S.


5315. Animal Endocrinology (3:2:3). Prerequisite: Consent of instructor. Course will address current research on hypothalamic-pituitary regulation of physiological systems including reproduction, growth, immune function, digestion, and behavior. S.


5317. Agricultural Systems Modeling (3:3:0). An introductory modeling course for biological and agricultural systems. No special mathematical or programming skills needed. SS.

5318. Topics in Animal Stress, Welfare, and Behavior (3:3:0). Students will write and discuss each topic online. Topics include animal rights philosophy and applications, stress mechanisms, measuring behavior and welfare, and other current topics.

5319. Chromatographic Analysis in Animal and Food Research (3:2:3). This class teaches the principles and methods of chromatographic analysis using HPLC and GC in animal and food research.

5400. Advanced Meat Science and Muscle Biology (4:3:3). Advanced study of meat components, their development, and effect on meat characteristics and processing properties. Emphasis on industry issues and the current scientific literature. Not for students who have taken ANSC 4400. SSI.

5401. Experimental Techniques in Meat Chemistry and Muscle Biology (4:3:3). Histological, chemical, and biological properties of meat. Experimental techniques in meat science and muscle biology will be studied in lecture and individual lab study.


5403. Physiology of Reproduction (4:3:3). Anatomy of reproductive systems, physiological regulations of reproductive processes, estrous cycle, gonadal functions, semen evaluation, fertilization, embryology, pregnancy, parturition, lactation, reproductive efficiency, and research techniques. SSI, odd years.


6000. Master's Thesis (V1-12). SSI, odd years.

7000. Supervised Teaching (V1-3). Supervised teaching experience at the university level. SSI, even years.

8000. Doctor's Dissertation (V1-12). SSI, even years.
exposure in using food-engineering principles for improving the commonly used unit operations in the food processing industry.  

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

4001. **Food Technology Problems (V1-6).** Taught on an individual basis. May be repeated for credit with permission. F, S, SS.

4301. **Poultry Processing and Products (3:2:3).** Poultry meat and egg processing including functional properties, meat quality and value-added products. S.

### Graduate Courses

5210. **Grant Writing (2:2:0).** Prerequisite: Ph.D. program or consent of instructor. Development of grant proposals for submission to funding agencies. Agency identification, proposal development, budgets, project management and agency relations. F

5301. **Study in Food Microbiology (3:2:3).** Isolation and identification of organisms surviving process treatment of food products. Techniques in maintaining culture and shelf-life quality for fermented foods. Organized lecture and individualized laboratories. S, even years.

5302. **Chemical and Instrumental Analyses of Agricultural Products (3:2:3).** Application of chemical, chromatographic, and spectroscopic methods in analysis of agricultural products. F, even years.

5303. **Study in Food Chemistry (3:2:3).** Analysis of food components and changes in their characteristics due to processing treatments. Laboratory techniques in instrumental analysis. Organized lectures and individualized laboratory study. F, odd years.

5304. **Rheological Properties of Food Materials (3:3:0).** Students will learn rheological properties of food and biomaterials as well as their applications in the food industry. Rheological characterizations of both solid and liquid foods will be covered. S, odd years.

5305. **Research and Study Related to Cereal and Oilseed Products (3:2:3).** Advanced practice in processing cereals and oilseeds. Particular emphasis on processing techniques involving new product development. S, odd years.

5307. **Topicals in Food Technology (3:3:0).** Students work on subjects of individual interest but opportunity is given for interaction with fellow students in the course. May be repeated for credit. F, S, SS.

5309. **Current Topics in Food Microbiology (3:3:0).** Understand and discuss current topics in food microbiology. Focus on current scientific literature, current methodologies and data evaluation and interpretation. May be repeated for credit. F

5310. **Food Sanitation Management (3:3:0).** Food-borne pathogens and their control in a foodservice and retail setting. Topics include sanitation, food hygiene, FDA Model Food Code, and HACCP. Provides certification in applied food service sanitation management. F, S, SS.

6000. **Master’s Thesis (V1-12).**

6001. **Supervised Teaching (V1-3).** Supervised teaching experience at the university level.

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### Department of Landscape Architecture

**Faculty**

- **Alon Kvashny, Ed.D., Chairperson**

**Professor:** A. Kvashny  
**Associate Professors:** Billing, Hamed, Kavanagh, Mills  
**Assistant Professors:** Klein, Sherrod  
**Instructor:** S. Kvashny (Visiting)

### About the Program

This department offers the following accredited degree programs:

- Bachelor of Landscape Architecture  
- Master of Landscape Architecture

The department also participates in the interdisciplinary Land Use Planning, Management, and Design program leading to the Doctor of Philosophy degree (See College of Architecture section).

The landscape architecture program instills in students the basic skills and knowledge required to enter the profession in the public or the private sector. The program emphasizes physical design and planning in both the natural and urban environments. Students are required to intern in the offices of registered landscape architects, planners, or allied professionals during at least one summer prior to the student’s senior year. Offices and classroom facilities are located in the Plant Science Building and studios are in the Agriculture Pavilion and the old Animal Science Building.

### Landscape Architecture (LARC)

*(To interpret course descriptions, see page 8.)*

### Undergraduate Courses

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 examining its contemporary leaders. F

1401. **Landscape Architecture Drawing and Drafting (4:1:6).** Prerequisite: LARC 1402. 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

2100. **Landscape Architecture Portfolio Preparation (1:1:0).** Prerequisite: LARC 2401. Introduction to professional portfolio development for landscape architecture and preparation of individual portfolio for faculty review. S

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 three dimensional 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 1402, 2401 and PSS 2330. A continuation of basic design with emphasis on site inventory, analysis, and programming in relationship to the design process. F

2404. **Landscape Architecture Grading and Drainage (4:2:4).** Prerequisite: CTEC 2301 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
College of Agricultural Sciences and Natural Resources

Landscape Architecture Curriculum

<table>
<thead>
<tr>
<th>FIRST YEAR</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>MATH 1320, Coll. Algebra</td>
<td>3</td>
<td>MATH 1321, Trig.</td>
</tr>
<tr>
<td>HIST 2300, History of U.S. to 1877</td>
<td>3</td>
<td>BIOL 1305, Eco. &amp; Environ. Prob.</td>
</tr>
<tr>
<td>LARC 1401, L.A. Drawing</td>
<td>4</td>
<td>BIOL 1113, Environ.Prob. Lab.</td>
</tr>
<tr>
<td>LARC 1302, Intro. to Land. Arch.</td>
<td>3</td>
<td>LARC 1402, LA Graphics</td>
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<tr>
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<tr>
<th>SECOND YEAR</th>
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<tbody>
<tr>
<td>HIST 2301, U.S. History Since 1877</td>
<td>3</td>
<td>PSS 1411, Prin. of Horticulture</td>
</tr>
<tr>
<td>CTEC 2301, Surveying &amp; Surveys</td>
<td>3</td>
<td>LARC 2402, LA Design Process</td>
</tr>
<tr>
<td>PSS 2303, Urban Soils</td>
<td>3</td>
<td>LARC 2100, LA Portfolio Prep.</td>
</tr>
<tr>
<td>LARC 2401, Basic Design Land. Arch.</td>
<td>4</td>
<td>AARC 2205, Fund. Ag. &amp; Appl. Eco. or LARC 2306, Comp. Adj. Des. in LA</td>
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<tr>
<td>TOTAL</td>
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<td>LARC 2309, Adv. CAD in LA</td>
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<tr>
<th>THIRD YEAR</th>
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<tbody>
<tr>
<td>LARC 3302, Dev. of Landscape Arch.</td>
<td>3</td>
<td>ENGL 2311, Technical Writing</td>
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<tr>
<td>PSS 3318, Woody Plants</td>
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<td>LARC 3402, Master Planning</td>
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<td>LARC 3401, LA Site Design</td>
<td>4</td>
<td>LARC 3403, Planting Design</td>
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<tr>
<td>LARC 2404, LA, Grading &amp; Drainage</td>
<td>4</td>
<td>LARC 3404, LA Site Cons. &amp; Dev.</td>
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<th>FOURTH YEAR</th>
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<tbody>
<tr>
<td>GEOG 3300, Geo. Info. Systems</td>
<td>3</td>
<td>COMS 2300, Public Speaking</td>
</tr>
<tr>
<td>LARC 4401, Urban Design</td>
<td>4</td>
<td>LARC 4402, Reg. Plan &amp; Design</td>
</tr>
<tr>
<td>LARC 4404, LA Materials &amp; Details</td>
<td>4</td>
<td>Directed Electives</td>
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<tr>
<td>LARC 4302, Env. Planning</td>
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<td>LARC 4100, Seminar</td>
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<tbody>
<tr>
<td>NRM 4403, Aerial Photo, Interp.</td>
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<td>LARC 4507, Lan. Arch. Sen. Project</td>
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<tr>
<td>LARC 4506, Collaboration Studio</td>
<td>5</td>
<td>Directed Electives</td>
</tr>
<tr>
<td>LARC 4311, Professional Practice</td>
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<td>TOTAL</td>
</tr>
<tr>
<td>LARC 4101, Proposal Writing in LA</td>
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</table>

Minimum hours required for graduation—148

- Students will fulfill the university multicultural requirement by completing LARC 3302.
- An internship, approved in the previous semester, must be completed prior to graduation.
- No LARC or required prerequisite may be taken pass-fail.
- Directed electives are subject to approval of the academic advisor and department chairperson.
- Overall academic GPA of 2.50 is required after the third year or faculty approval.

- Relationship to nature. Geographical, historical, and cultural context of major movements in landscape architecture. F
- Students will fulfill the university multicultural requirement by completing LARC 3302.
- An internship, approved in the previous semester, must be completed prior to graduation.
- No LARC or required prerequisite may be taken pass-fail.
- Directed electives are subject to approval of the academic advisor and department chairperson.
- Overall academic GPA of 2.50 is required after the third year or faculty approval.

Graduate Program

The Master of Landscape Architecture degree is designed as a first professional degree for students with a baccalaureate degree in a discipline other than landscape architecture. It is an advanced professional degree for students with the Bachelor of Landscape Architecture degree or its equivalent. The advanced professional degree requires a minimum of 36 credit hours. The first professional degree requires 36 hours and up to 37 additional hours of leveling courses.

This is a flexible program designed to meet a variety of professional interests as well as individual needs and career objectives. Universal design, therapeutic landscape design, land use and regional planning, geographic information systems, and cultural landscape design are a few of the program offerings.

Multidisciplinary research in environmental design and management and outdoor recreation in the department has had support from federal, state, and local agencies. The National Park Service, U. S. Army Corps of Engineers, the Forest Service, the Bureau of Land Management, Texas Parks and Wildlife Department, the Office of the Governor, and southwestern cities and counties have all supported these research efforts.

All of the admission requirements established by the Graduate School must be met to enter this program. Also, the department requests a letter of intent, which should address how the program fits the applicant’s career goal, and transcripts of all previous coursework. A portfolio of graphic work, if available, is desirable. Nonresident tuition is waived with half-time assistantships. Students with this support have special responsibilities in research projects.

Graduate Courses

4302. Environmental Planning for Sustainable Development (3:3:0). Prerequisite: BIOL 1305 and 1113. An introduction to environmental planning issues with emphasis on the integration of related disciplines to attain environmentally and socially sustainable development. F


4311. Professional Practice (3:3:0). Prerequisite: Fifth-year standing. Methods, procedures, and ethics of professional practice of landscape architecture. F.


4402. Regional Planning and Design (4:1:6). Prerequisite: LARC 2309, 4401, and GEOG 3300. Regional landscape planning and design in landscape architecture based on natural and cultural resource factors. (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.

4506. Collaboration Studio (5:1:9). Prerequisite: LARC 2309 and 4402. An interdisciplinary studio for the design professions which address the process and skills necessary for collaboration and teamwork. Field trip required. F.

4507. Landscape Architecture Senior Project (5:1:6). Prerequisite: LARC 4506 and 4101. Individual design demonstration project representing comprehensive skills of synthesis of knowledge and professional skills developed in study of landscape architecture. (Writing Intensive)

Graduate Courses

5001. Special Problems in Landscape Architecture (V1:4). Selected problems based on student’s needs and interests not included in other courses. May be repeated for credit with approval of department.
Department of Plant and Soil Science

Faculty

Thomas L. Thompson, Ph.D., Chairperson
Bayer CropScience Regents’ Endowed Professor: Wilkins
B.L. Allen Endowed Professor: Hudnall
Leigh Professor: Zartman
Piper Professor: Hopper
Rockwell Professor: Auld
Thorton Chair and Horn Professor: V Allen

Professors: R.D. Allen, Bronson, Green, Dotray, Maas, Peffley, Thompson, Thorvilson

Associate Professors: Bednarz, Hellman, McKenney, Montague, Parajulee, Xu

Instructor: Light


About the Program

This department supervises the following degree programs:

• Bachelor of Science in Agronomy
• Bachelor of Science in Horticulture
• Bachelor of Science in Plant Biotechnology
• Master of Science in Crop Science
• Master of Science in Entomology
• Master of Science in Horticulture
• Master of Science in Soil Science
• Doctor of Philosophy in Agronomy

A minimum of 120 hours is required for a B.S. degree. The department also participates in the interdepartmental program leading to the Master of Agriculture degree. Students seeking a master's or doctor's degree in the department should consult the chairperson about their programs before enrolling for any courses.

Undergraduate Program

Students in the departmental areas of agronomy, horticulture, and plant biotechnology 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. A resident program and a distance program are offered requiring 120 semester hours. For the distance program, students will need to complete some of their general
coursework at another institution and the last 30 semester credit hours at Texas Tech University.

Plant biotechnology students learn how insects, weeds, and pathogens impact plant growth 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 plant biotechnology 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.

**Plant and Soil Science (PSS)**

*(To interpret course descriptions, see page 8.)*

**Undergraduate Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1321.</td>
<td>[AGRI 1307, 1407] Agronomic Plant Science (3:3:0). Importance, distribution, and use of major world agronomic crops. Fundamentals of growth, structure, and improvements are also stressed.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>1411.</td>
<td>[AGRI 1415, HORT 1401] 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. Fulfills laboratory science requirement.</td>
<td>4</td>
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</tr>
<tr>
<td>2130.</td>
<td>Urban Soils Laboratory (1:0:2). Prerequisite: PSS 2330 or concurrent. Discussion and practical experience with soils in the urban environment.</td>
<td>1</td>
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<tr>
<td>2210.</td>
<td>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.</td>
<td>2</td>
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<tr>
<td>2311.</td>
<td>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.</td>
<td>3</td>
<td></td>
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<tr>
<td>2312.</td>
<td>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)</td>
<td>3</td>
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<tr>
<td>2313.</td>
<td>Herbaceous Plant Materials (3:2:2). Prerequisite: PSS 1411. Study of the principal herbaceous plants and plant families, palms, roses, and subtropic landscape plants.</td>
<td>3</td>
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<tr>
<td>2330.</td>
<td>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)</td>
<td>3</td>
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<tr>
<td>2401</td>
<td>[AGRI 1413] 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 will be discussed.</td>
<td>4</td>
<td></td>
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<tr>
<td>3309.</td>
<td>Turf Culture and Management (3:3:0). Prerequisite: PSS 1411. Study of the principal turfgrass species and their cultural management. Field trips required.</td>
<td>3</td>
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<tr>
<td>3317.</td>
<td>Interior Plants (3:2:3). Selection and maintenance of interior plants and planting facilities.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>3318.</td>
<td>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.</td>
<td>3</td>
<td></td>
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<tr>
<td>3321.</td>
<td>Forage and Pasture Crops (3:3:0). The production and use of forage and pasture crops.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>3322.</td>
<td>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.</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Graduate Program**

The department offers Master of Science degrees in crop science, entomology, horticulture and soil science and the Doctor of Philosophy degree in agronomy. Before being recommended for admission to a master’s degree program with a major in this department, the student may be requested to provide evidence of proficiency in background for graduate work or may be required to take (without graduate credit) such undergraduate leveling courses as may be designated by the department.

Master of Science degree students may pursue either the thesis or nonthesis option. The thesis option (24 hours of graduate coursework plus six hours of thesis research) is designed for students who intend to pursue a Ph.D. An oral exam over the research is required for the thesis option. The nonthesis option (36 hours of graduate coursework) is considered a terminal degree. An oral exam is required during the graduating semester for the nonthesis option. A Master of Science degree at a distance is available in both horticulture and crop science; each requires a minimum of 36 hours of graduate coursework without a thesis. Students must take the last 6 semester credit hours from Texas Tech and an oral exam is required during the graduating semester. The department also participates in the 36-hour Master of Agriculture program. Additionally, the department participates in joint degree programs with the Law School. These unique combinations of programs allow not only for students to pursue a Doctor of Jurisprudence (J.D.) degree but also a Master of Science degree in crop science, entomology, horticulture or soil science.

If the preliminary examination for admission to doctoral studies reveals weaknesses in the student’s subject matter background, the student may be required to take remedial courses designated by the graduate faculty of the department. The student’s advisory committee will make recommendations concerning language requirements and basic work in other sciences. A Ph.D. candidate in the department is required to take written and oral comprehensive qualifying examinations prepared and conducted by the graduate committee. The purpose of these examinations is to determine whether or not a candidate possesses a depth of knowledge in their area of specialization, a breadth of knowledge in supporting areas, understanding of the scientific method, and the ability to communicate knowledge in an organized and scholarly manner.

Research, teaching, and scholarship stipends are often awarded to qualified applicants. Nonresident tuition is often waived with the award. Students having this support have special responsibilities in research and/or teaching.
5000. Professional Internship (V1-6). Prerequisite: Consent of department chairperson. Supervised study providing advanced training for master’s students. Emphasis is on scientific and technical training.

5001. Problems in Plant and Soil Science (V1-3). Prerequisite: Consent of instructor. Selected problems based on the student’s needs and interests, not included in other courses. May be repeated for credit with approval of department.

5100. Seminar (1:1:0). Current research in all aspects of plant and soil science including presentations by internationally recognized scientists. May be repeated for credit.


5232. International Agronomic Development (2:2:0). Overview of world food situation. Role of assistance programs and international and national research centers in the development of agronomic research and outreach for developing countries.

5304. Economic Entomology (3-3:0). Prerequisite: PSS 2401 or consent of instructor. A synthesis of the theory and practice of insect control including prediction and implementations of control strategies in agricultural systems.

5306. Advanced Insect Anatomy and Physiology (3:3:2). Prerequisite: PSS 2401. The structure and function of insect organ systems.


Agricultural Sciences and Natural Resources

College of Agricultural Sciences and Natural Resources

Agronomy Curriculum

Fall

<table>
<thead>
<tr>
<th>Course</th>
<th>FIRST YEAR</th>
<th>Spring</th>
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<tr>
<td>ENGL 1301, Ess. College Rhetoric</td>
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<td>ENGL 1302, Adv. College Rhetoric</td>
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<tr>
<td>CHEM 1307, Prin. of Chem. I</td>
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<td>CHEM 1308, Prin. Chem. II</td>
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<tr>
<td>CHEM 1107, Prin. of Chem. I (Lab.)</td>
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SECOND YEAR

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<tr>
<td>CHEM 2303, Intro. Organ. Chem. or CHEM 3305, Organic Chem.</td>
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<td>HIST 2301, History of U.S. Since 1877</td>
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<td>HIST 2300, History of U.S. to 1877</td>
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<td>PSS 2432, Prin. &amp; Prac. Soils</td>
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<td>BIOL 1401, Biol. of Plants</td>
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THIRD YEAR

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<td>MBIO 3400, Microbiology</td>
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<td>PSS 4301, Ag. Compounds</td>
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FOURTH YEAR

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<td>PSS 4100, Seminar</td>
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<td>COMS 2300, Public Speaking</td>
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<tr>
<td>PSS 4415, Ag. Biotech.</td>
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<td>VISUAL &amp; PERFORMING ARTS</td>
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</table>

Minimum hours required for graduation—120 (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: Group I Electives — PSS 3421 plus 25 hours from the following: PSS 3221, 3222, 3233, 3234, 4321, 4325, 4332, 4335, 4336, or 4421. Required Electives — 4 hours from the following: atmospheric science, chemistry, geology, mathematics, or physics.

Environmental Soil Science: Group I Electives — PSS 3432, 4335, 4336, 4337, and 9 hours from any other PSS courses. Directed Electives — 9 hours from the following: BIOL 2313, ENV 1301, 3203, GEOG 3323, or NRM 4314.

Horticulture Curriculum

Fall

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<td>BIOL 1401, Biol. of Plants</td>
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<td>CHEM 1301, Ess. Coll. Rhetoric</td>
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<td>CHEM 1308, Prin. Chem. II</td>
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SECOND YEAR

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<td>HIST 2300, History of U.S. to 1877</td>
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<td>HIST 2301, History of U.S. Since 1877</td>
</tr>
<tr>
<td>ENGL 2311, Pat. &amp; Rep. Cor.</td>
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<td>POLS 2401, Intro. Ento.</td>
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<td>PSS 2313, Herb. Plants</td>
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<td>CHEM 1320, Coll. Alg.</td>
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THIRD YEAR

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FOURTH YEAR

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<td>PSS 4425, Ag. Plant Path.</td>
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<td>PSS 3318, Woody Plants</td>
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<td>PSS 4100, Seminar</td>
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Minimum hours required for graduation—120 (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 Group I electives are subject to approval.

Horticultural Science: Group I 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 Electives — 12 hours from the following areas of study: B A, AAEC, BIOL, CHEM, FS, LARC, MBIO, PSS PSY, NRM, SOC. Free Electives — 5-6 hours.

Turfgrass Management: Group I Electives — 13 hours from the following: PSS 3309, 3365, 4421, plus 3-4 hours from PSS 4313, 4314, 4411, 4415. Directed Electives — 11 hours from PSS 3317, 4000, 4001, 4305, 4306, 4325, or B A, CHEM, AAEC, BIOL, PSS, SOC, PSY, NRM, LARC. Free Electives — 4-6 hours.


5317. Advanced Nursery Management (3:3:0). Principles of nursery production, cultural management, and marketing of both wholesale and retail commodities.

5318. Advanced Turfgrass Science (3:3:0). An advanced course in turfgrass science including turf physiology, nutrition, insects, diseases, and weed control.

5319. Advanced Interiorscaping (3:2:2). A tropical foliage plant course for graduate students with no previous training in interiorscaping. Emphasis is placed on plant identification, selection, design, lighting and maintenance.

5321. Plant Breeding Theory (3:3:0). Breeding and plant improvement presented at an advanced level.

5322. Organic Plant Metabolism (3:3:0). Considerations of cellular organization and its relation to cellular metabolism. Bioenergetics and biochemistry of the organic constituents of living systems including their synthesis and metabolism are considered.


5326. Advanced Seed Science (3:3:0). In-depth study of seed and seedling anatomy, the sequence of events and factors affecting germination and emergence, and the characteristics of dormancy and vigor.

5327. Soil-Plant Animal Interrelationships in Grazing Lands (3:3:0). Ecological and nutritional principles of livestock grazing are considered. Mineral cycling, antiquality factors, limitations to intake, and research methodology in forage-livestock systems are presented.

5328. Forages and Livestock in Pasture Ecosystems (3:3:0). Systems of grazing management are presented from the perspective of ecosystems in pasture lands and other grazing lands with intensified management.

5329. Precision Agriculture (3:3:0). Introduction to site-specific management of agricultural crops emphasizing collection and use of geospatial information in performing variable-rate farming practices.
5330. Advanced Environmental Soil Chemistry (3:3:0). Chemistry of inorganic and organic soil components with emphasis on environmental significance of soil solution-solid phase equilibria, sorption phenomena, ion exchange processes, reaction kinetics, redox reactions, and acidity processes.

5331. Soil Fertility and Fertilizers (3:3:0). Not open to students having had PSS 4335. Evaluation and application of theory to soil fertility and fertilizers; a study of nutrient needs and nutrient reactions in soil; and predicting nutrient need and response.


5335. Soil Physics (3:3:0). Physical characteristics of soils and porous media and principles underlying flow and distribution of water, air, and heat in soils.

5336. Soil Mineralogy (3:3:0). The mineralogical makeup of sand, silt, and clay. The relation of physical and chemical soil properties to mineralogy.

5337. Advanced Soil Classification (3:2:3). A study of the taxonomic System of Soil Classification as used in the United States.

5351. Environmental Instrumentation and Measurements (3:1:4). Setting up and programming a data logger to collect environmental measurements related to soil, atmosphere, and plant conditions using a variety of sensors.


5376. Advanced Studies in Cotton Fibers (3:3:0). Examination of the structure of cotton fibers, meaning and measurement of fiber properties, and issues related to increasing cotton's use-value as an industrial raw material.

5377. Cotton Fiber: Genotype to Phenotype Characterization (3:3:0). An integrated approach that relates cotton fiber morphogenesis to fiber macro- and microstructures to fiber physical and mechanical properties.

5401. Advanced Insect Taxonomy (4:3:3). Taxonomy, keys, descriptions, biology, and literature for all insect orders will be discussed. Sight identification of over 200 families is stressed in laboratories. A specific taxon will be assigned for detailed study, and a collection is required.

5415. Advanced Floriculture (4:3:3). Prerequisite: Consent of the instructor. Principles of floricultural crop production and greenhouse construction presented at an advanced level.

5425. Advanced Agricultural Plant Pathology (4:3:2). Prerequisite: Approval of instructor. Identification of causal agents of plant diseases (fungi, bacteria, nematodes, and viruses). Emphasis will be placed on diagnostic methods, isolation, and inoculation.

5429. Advanced Principles of Weed Science (4:3:2). Prerequisite: Consent of the instructor. Weeds, weed control, plant identification, and equipment presented at an advanced level.

6000. Master's Thesis (V1-6). Prerequisite: Consent of instructor. Individual study of advanced topics in plant and soil science. May be repeated in different areas for credit.

6001. Selected Topics in Plant and Soil Science (V1-3). Prerequisite: Consent of instructor. Individual study of advanced topics in plant and soil science. May be repeated in different areas for credit.


6301. Quantitative Agricultural Remote Sensing (3:3:0). A general course in the theory and application of remote sensing to quantifying soil and vegetation characteristics relevant to agriculture and natural biosystems.

6322. Advanced Plant Breeding (3:3:0). Qualitative and quantitative inheritance, heterosis, selection theory and breeding methodology for crop plant improvement, genotype by environment interaction, and application of cellular and molecular techniques to plant breeding.


6331. Advanced Environmental Soil Science (3:3:0). Prerequisite: PSS 2432 or equivalent. Applications of soil chemical, physical, and biological principles to environmental issues.

6424. Structural Genetics and Plant Genomics (4:3:2). Gene structure and cloning, molecular markers, population structure, QTL and association mapping, physical mapping and position cloning, genome sequencing and structure, SNP identification and analysis. S, even years.

7000. Research (V1-12).

8000. Doctor’s Dissertation (V1-12).

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**Department of Natural Resources Management**

**Faculty**

**Ernest B. Fish, Ph.D., Chairperson**

**Bricker Chair:** Ballard

**Caesar Kleberg Professor:** Smith

**Professors:** Britton, Fish, Patino, Sosebee, Wester, Wilde

**Associate Professors:** Boal, Dabbert, Taylor, Villalobos, Wallace

**Assistant Professors:** Perry, Rideout-Hanzak

**Adjunct Faculty:** Arsuffi, Cronin, DeMaso, Drawe, Gipson, Haukos, Krausman, LeVering, Pence, Peterson, Rhodes, Vermeire

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**About the Program**

This department supervises the following degree programs:

- Bachelor of Science in Range Management
- Bachelor of Science in Wildlife and Fisheries Management
- Bachelor of Science in Environmental Conservation of Natural Resources
- Master of Science in Fisheries Science
- Master of Science in Range Science
- Master of Science in Wildlife Science
- Doctor of Philosophy in Fisheries Science
- Doctor of Philosophy in Range Science
- Doctor of Philosophy in Wildlife Science

**Undergraduate Program**

This department is primarily concerned with the application of basic ecological principles to the management and use of natural resources. The range management curriculum 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 the wildlife management option of the wildlife management track meets the minimum requirements recommended by the Wildlife Society for wildlife biologist certification whereas the fisheries management track meets the minimum certification requirements recommended by the American Fisheries Society for a fisheries professional. The wildlife and fisheries management curriculum, wildlife management track, also includes an option for those interested in conservation science.
Students may simultaneously fulfill the requirements for a second B.S. degree in the department by completing a minimum of 24 hours of coursework. 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 Natural Resources 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. 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.

**Natural Resources Management (NRM)**
*(To interpret course descriptions, see page 8.)*

### Undergraduate Courses


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, SSII.

2305. *Introduction to 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. F.

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. F.

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.


3308. *Quantitative Methods in Natural Resources* (3:3:0). Prerequisite: MATH 1331 or 1351. Survey of quantitative and statistical methods used in natural resource management, conservation biology, and in assessing biodiversity. S.


### Graduate Program

Those interested in pursuing a master’s or doctoral degree in the Department of Natural Resources Management should consult with the chairperson prior to enrolling for any course.

**Master’s Program**

The M.S. degree requires a minimum of 24 hours of graduate coursework plus 6 hours of thesis. Before being recommended for candidacy to a master’s degree program, the student may be requested to take a preliminary examination to determine proficiency and background for graduate work. The student may be required to take (without graduate credit) such undergraduate leveling courses as may be designated by the graduate advisory committee.

**Doctoral Program**

Doctoral candidates may specialize in grazing management, range improvement, range animal nutrition, fire ecology, plant ecology, plant physiology, wildlife habitat management, big game ecology, waterfowl ecology, upland game ecology, fisheries, aquaculture or wetland ecology and management.

An oral and/or written preliminary examination is required of all students seeking a Ph.D. degree. If the preliminary examination reveals weaknesses in the student’s background, remedial courses may be designated by the graduate advisory committee. The student’s graduate advisory committee will also recommend courses to be taken in supporting disciplines. A Qualifying Examination for admission to candidacy for the Ph.D. degree will also be conducted in accordance with the requirements of the Graduate School. This Qualifying Examination is prepared and administered by the candidate’s graduate advisory committee and any other professors the committee may consider necessary.

The doctorate normally requires completion of 60 to 80, or more, semester credit hours of graduate coursework beyond the bachelor's degree, exclusive of credit for the dissertation. In addition to the courses required for the major, an applicant for the doctorate must have taken at least 15 semester hours of graduate coursework outside the department. These hours may be taken in supporting fields without concern for a minor specialization, depending on recommendation of the student’s graduate advisory committee. However, if they are taken in a block of related courses, they may be declared as a minor.

There is no foreign language requirement for the Ph.D. degree, but such a requirement may be incorporated into individual programs at the discretion of the student’s graduate advisory committee. All doctoral candidates must successfully complete or have completed one semester of experimental design (NRM 5403) and one semester of teaching practicum (NRM 7210). Additionally, range science doctoral candidates must successfully complete or have completed two semesters of calculus and either College Teaching in Agriculture (AGED 5310) or College Teaching (EDHE 5342).

4000. *Internship* (V1-12).

4001. *Undergraduate Research* (V1-12). Selected research problems according to the needs of the student. May be repeated.


### Wildlife and Fisheries Management Curriculum

#### FISHERIES MANAGEMENT TRACK

**FIRST YEAR**

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<tbody>
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<td>ENGL 1301, Ess. Coll. Rhet.</td>
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<td>CHEM 1307, Prin. Chem. I</td>
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**SECOND YEAR**

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<tr>
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<td>NRM 2406, Anim. Game Animals or PSS 2401, Intro. Entomology</td>
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**THIRD YEAR**

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**FOURTH YEAR**

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<tbody>
<tr>
<td>NRM 4407, Wildlife Inv. Tech.</td>
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<tr>
<td>Visual &amp; Performing Arts*</td>
<td>3</td>
</tr>
<tr>
<td>Elective**</td>
<td>3</td>
</tr>
<tr>
<td>NRM 4100, Seminar</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>13-14</td>
</tr>
</tbody>
</table>

Minimum hours required for graduation—122 (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 and POLS 3350. Suggested electives to enhance fisheries track are C E 3371, 3171, ZOOL 3406, GEOL 3322.
- An introductory botany course is suggested (NRM 3501, BOT 3403, 3404, 4302).

### Wildlife and Fisheries Management Curriculum

#### WILDLIFE MANAGEMENT TRACK

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 1301, Ess. Coll. Rhet.</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1308, Prin. Chem. I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1108, Prin. Chem. I (Lab.)</td>
<td>1</td>
</tr>
<tr>
<td>NRM 2302, Eco. &amp; Con. or</td>
<td>1</td>
</tr>
<tr>
<td>NRM 2307, Diversity of Life</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>13-14</td>
</tr>
<tr>
<td>HIST 2300, History of U.S. to 1877</td>
<td>16</td>
</tr>
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</table>

**SECOND YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>BIOL 1403, Biol. I</td>
<td>4</td>
</tr>
<tr>
<td>NRM 2406, Com. Ana. Game Anim. or ZOOL 3405, Vet. Vert. &amp; Dev.</td>
<td>3-4</td>
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<tr>
<td>NRM 3501, Range, For., Wet.</td>
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<tr>
<td>CHEM 2303, Intro. Org. Chem.</td>
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<tr>
<td>CHEM 2103, Chem. (Lab.)</td>
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<td>14-15</td>
</tr>
<tr>
<td>AAEC 2305, Fund. AAEC</td>
<td>3</td>
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<td>TOTAL</td>
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**THIRD YEAR**

<table>
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<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>NRM 3304, Prin. Range Mgt.</td>
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<tr>
<td>AEC 2305, Fund. AEC</td>
<td>3-4</td>
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<tr>
<td>Required Elective**</td>
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<tr>
<td>PSS 2432, Prin. &amp; Pract. Soils</td>
<td>4</td>
</tr>
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<td>16</td>
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<tr>
<td>PSS 2302, Amer. Pub. Pol.</td>
<td>1</td>
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<tr>
<td>TOTAL</td>
<td>13-14</td>
</tr>
</tbody>
</table>

Minimum hours required for graduation—122 (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. Required electives are subject to approval of the academic advisor.

**Wildlife Management** — Choose at least two courses from ZOOL 4306, 4308, 4310, or BIOL 4301; choose at least two courses from NRM 4305, 4306, 4310, 4322, or 4309.

**Conservation Science** — NRM 3307; choose at least two courses from BIOL 3309, 4303, 4310 or NRM 4322; choose at least one course from NRM 4315, 4403, or GEOG 3300.

Suggested electives for students interested in becoming a game warden are SOC 4325 and POLS 3350. Suggested electives to enhance the wildlife management option are NRM 3201, 3304, 3307, 3323, 4304, 4335, 4401, 4403; LARC 4302, and 4303. Suggested electives to enhance the natural resources option are NRM 3201, 3304, 3323, 4304, 4335, 4401, LARC 4302, and 4303.

### Upland Game Ecology (3:2:3)

**Prerequisite:** NRM 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. E. Odd years.

### Range-Wildlife Habitat Management (3:3:0)

**Prerequisite:** NRM 2301, 3301, 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. E. (Writing Intensive)

### Principles of Waterfowl Management (3:2:3)

**Prerequisite:** NRM 2301. Ecology and management of continental waterfowl resources. Life histories, population management, and habitat manipulation are stressed. Field trips required. E. Even years.
Environmental Conservation of Natural Resources

**Fall**  |  **Spring**
---|---
or MATH 1355, Anal. Geo.  |  
CHEM 1306, Princ. Chem. II  | CHEM 1308, Princ. Chem. II  
CHEM 1307, Prin. Chem. I  | CHEM 1108, Prin. Chem. II (Lab.)  
NRM 4100, Seminar  | TOTAL 14

**TOTAL** 14

**SECOND YEAR**

**Fall**  |  **Spring**
---|---
BIOL 1403, Biol. I  | BIOL 1404, Biol. II  
AAEC 2305, Fund. Ag. & Appl. Eco.  | NRM 2307, Diversity of Life  
NRM 3501, Ring., For., Wet.  | COMS 2300, Public Speaking  
POLS 2302, American Publ. Pol.  | Specialized Elective††  
TOTAL 15  | TOTAL 17

**THIRD YEAR**

**Fall**  |  **Spring**
---|---
NRM 3302, Range Plant Ecol.  | NRM 3303, Range Mgt.  
BIOL 3309, Pop., Comm., & Eco.  | HI 3327, Sur. Amer. Env. Hist.  
NRM 4314, Watershed Planning  | TOTAL 12

**TOTAL** 15-16

**FOURTH YEAR**

**Fall**  |  **Spring**
---|---
Specialized Elective††  |  
NRM 3201, Veg. Inven. & Anal.  | NRM 4315, Spatial Anal. OR  
Humilities-Multicultural  |  
Visual & Performing Arts  |  
TOTAL 14  | TOTAL 13-14

Minimum hours required for graduation—124

* Students will select one of the following courses to satisfy the physical science elective: PSS 2432, GEOL 1303, and 1101, GEOG 1301 and 1101, 1102 and 1102, CHEM 2303 and 2103, ATMO 1300 and 1100.

**Technical Path** — Category 1 (ENGL 3365 or 3366, ACOM 2302 or 4308); Category 2 (NRM 3323, 4403 or GEOG 3301, GEOL 4302, BIOL 4330); Category 3 (CHEM 3341 and 3141 or 3351 and 3251, second course from physical science elective group); Category 4 (AAEC 4302).

**Conservation Path** — Category 1 (NRM 3323, 4303, 4304, 4305, 4306, 4310, or 4408; BIOL 3307, 4310, or 4330; or POLS 3301, or 4322); Category 2 (NRM 3323 or 4322); Category 3 (PSS 2401 or BOT 3404 or ZOOL 3406, 4306, 4308, 4310, 4321, 4407, or 4301 herpetology); Category 4 (NRM 4342 or Summer Field Studies); Category 5 (NRM 4340, BIOL 4305 or ZOOL 4312 or PSS 4337 or PHIL 3325).


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.


4324. Tropical Ecology and Conservation (3:3:0). An introductory survey of tropical ecology and conservation covering both theory and practice. Previous ecology course, consent of instructor, and field trips are required.

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.


4401. Fisheries Management (4:3:3). Prerequisite: AAEC 3401, MATH 2300, or NRM 3308. 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)
Graduate Courses

4408. Wildlife Population Dynamics and Analysis (3:3:3). Prerequisite: AAEC 3401 or MATH 2300 or NRM 3308 and NRM 2301 and 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)

5100. Seminar (1:1:0). An organized discussion of current problems in natural resources management. May be repeated.

5302. Range Research Methods (3:2:3). Prerequisite: ISQS 5346. Study plan preparation; methods of studying vegetation; sampling techniques; increasing sampling efficiency; methods of reducing experimental error; grazing studies; utilization studies; wildlife techniques; criteria for tests of goodness of fit for binomial, poison, negative binomials, and normal distributions. F, odd years.

5303. Synecology (3:3:0). Prerequisite: NRM 3302. An advanced study of terrestrial plant community ecology; mechanisms and consequences of species coexistence; diversity relations; causes and patterns of community development; community dynamics. Statistical and numerical analyses applicable to community ecology are discussed. F, odd years.

5304. Fire Behavior and Ecology (3:2:3). Prerequisite: NRM 3302 and 3501. Advanced discussion of fire's ecological role in North American ecosystems including soils, flora, fauna, adaptations, and fire exclusion. Field trips required. F.

5305. Plant Ecophysiology (3:3:0). Prerequisite: NRM 3302. Advanced study of the influences of the environmental complex on the processes, structure, and physiological functioning of individual plants or species. S, even years.

5306. The Physiological Basis for Grazing Management (3:2:3). A study of the physiological processes, morphological development, nutritional qualities, and palatability of range plants as a basis for grazing management strategies for domestic and wild animals. Field trips required. F, even years.

5307. Wetland Ecology (3:3:0). Prerequisite: NRM 3307. Advanced study in the structure and functioning of wetland ecosystems. Course will also examine wetland classification. F, odd years.


5310. Advanced Range Ecology (3:3:0). An examination of the basic ecological principles affecting plant growth and development, distribution of plants, community structure and dynamics, and nutrient cycling. Field trips required. F.


5312. Ecology of Renewable Natural Resources (3:3:0). An introduction to the ecology of renewable natural resources such as vegetation, wildlife, soil, and water. Not open to biological science majors.

5313. Advanced Big Game Ecology and Management (3:3:0). Prerequisite: NRM 4305 or equivalent or consent of instructor. An advanced study of the ecology and management of big game resources. Field trips required. S, even years.


5316. Waterfowl Ecology (3:2:3). Prerequisite: NRM 4310. An ecological examination of waterfowl behavior, breeding biology, and habitat requirements. Field trips required. F, even years.

5317. Watershed Management (3:3:0). Management concepts of watersheds as a holistic unit. Inventory techniques, information sources, analysis procedures, and economic and financial effects applicable to watershed management planning. F, S.

5318. Range Animal Nutrition (3:3:0). Prerequisite: ANSC 3301 or equivalent. Study of the nutritional relationship between the range resource and grazing herbivores, including domestic livestock and wild ungulates, and techniques for range animal nutrition research. F, odd years.

5320. Natural Resource Biopolitics (3:3:0). Policy, planning, and conflict resolution from a natural resource management perspective. Historical, agency, and private organization roles in natural resource management are evaluated. F.

5322. Advanced Nongame Ecology and Management (3:2:2). Prerequisite: NRM 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. S, even years.


5330. Advanced Aquaculture (3:3:0). A global overview of aquaculture including fish, aquatic invertebrates, plants, and design and operation of production facilities. F, odd years.

5335. Advanced Fisheries Science (3:3:0). Scientific study of the use of aquatic organisms. Includes resources, sampling, ecology and analysis of populations, resource conflicts, and management. May not be taken for credit by students who have taken NRM 4335. S, even years.


5401. Advanced Fisheries Management (4:3:3). Theory and methodology used in managing aquatic renewable resources: applied field problems, equipment use. May not be taken for credit by students who have taken NRM 4401. F, even years.


5403. Experimental Design and Analysis (4:3:2). Prerequisite: ISQS 5346, ANSC 5403, or BIOL 6502. Principles and applications of experimental design and analysis (completely randomized designs, randomized blocks, covariance analysis, factorials, split plots, repeated measures, regression). F, even years, and S.

5404. Aerial Terrain Analysis (4:2:4). Exploration of methods, the utilization of techniques, and evaluation of landscape using aerial photographs. An introduction to the theories, technical and practical aspects, and considerations of computer based geographic information systems in landscape planning, design, and management. F.

6000. Master’s Thesis (V1-6).

6001. Selected Topics in Range Science (V1-6). Advanced topics selected by departmental recommendation. May be repeated for credit in different subject areas.

6002. Selected Topics in Wildlife Science (V1-6). Advanced topics selected by departmental recommendation. May be repeated for credit in different subject areas.

6003. Selected Topics in Fisheries Science (V1-6). Advanced topics selected by departmental recommendation. May be repeated for credit in different subject areas.

6301. Research Methods (3:3:0). A review of the philosophy of science, scientific methods, research activities, and the planning and execution of research programs. F, even years.

6303. Imagery Interpretation for Natural Resource Management (3:2:2). Prerequisite: NRM 4403 or 5404. An advanced course in the applications of imagery producing systems for use in the inventory, analysis, planning, and management of natural resources. Involves the use of satellite imagery, infrared and radar scanning systems, as well as advanced work in interpreting standard aerial photography. S.

6305. Geospatial Technologies in Natural Resource Management (3:2:2). Principles of geographic information systems and global positioning systems. Applications for natural resource inventory, planning, and management are emphasized.


7000. Research (V1-12).

7210. Teaching Practicum (2:0:4). Prerequisite: Doctoral student in range, wildlife, or fisheries science program and AGED 5310. Supervised teaching experience at the university level.

8000. Doctor’s Dissertation (V1-12).
College of Architecture

Andrew Vernooij, M.D.S., Dean
1005 Architecture | Box 42091 | Lubbock, TX 79409-2091
T 806.742.3136 | F 806.742.2855
architecture.programs@ttu.edu | www.arch.ttu.edu

Faculty

Horn Professor: Watkins
Professors: Louden, Peters, Vernooij, J.E. White, J.P White
Associate Professors: Arana, Buelinckx, Davis, Driskill, Flueckiger, Haq, Hill, Markovich, Neiman, Perl, Pongratz, Shacklette, Smith, Torres-McDonald
Assistant Professors: Ellis, Jaddo, Park, Rex, Robertson, Tsubaki
Instructors: Anderson, Campbell, Chinn, Fairbetter, Faulk, Harris, Martin, Powell, Schellhase, Vogler

About the College

Architecture bridges the sciences with the arts. Students who succeed in architecture are balanced individuals who can manage the rigor of the rational and the ambiguity of the intuitive. In addition to the degree program in architecture, the College of Architecture offers dual programs with the College of Engineering and the College of Business Administration. Students can pursue career paths in design, construction, real estate development, and construction product development and sales. The general architecture curriculum also provides an excellent portal into the university with coursework that is not only specific to the field but also in line with the core curriculum of the university. Students who elect to study other disciplines after the first year of the architecture curriculum can pursue an academic major in a field other than architecture, such as art, business, computer science, or engineering.

Core Curriculum Requirements. The university has established Core Curriculum requirements for all students. A listing of these requirements appears in the Undergraduate Academics section of this catalog.

Writing Intensive Courses. Students may fulfill this course requirement with any university course identified in the catalog as “writing intensive” or with another course specifically preapproved by the P'ARC as “writing intensive.”

Diversity Course. Students may fulfill this requirement with courses as listed with the P'ARC. Other courses may be approved prior to enrollment for credit.

Electives. All electives taken to satisfy the architecture degree plan must be at the 2000 and above level. All undergraduate architecture courses numbered 2000 and above may only be taken by architecture students or with the permission of the Chair.

Computer Requirement. Students in the general and preprofessional program are required to have their own computer in the classroom or studio. Computer equipment and software must be compatible with college standards. Computer equipment and software requirements are posted on the college Web site.

Requirements for Licensure as an Architect. Becoming a licensed architect is a three-step process. Students must receive an accredited degree in architecture that has been approved by the National Architectural Accreditation Board (NAAB) (www.naab.org), successfully complete an internship with a licensed architect, and pass the Architect Registration Examination (ARE) (www.ncarb.org). The accredited program at Texas Tech University includes three components: general architecture, preprofessional, and professional. The general and preprofessional programs are undergraduate programs, while the accredited professional degree is the Master of Architecture.

Degree Programs

The College of Architecture offers programs leading to the following degrees:

• Bachelor of Science in Architecture
• Master of Architecture (professional degree)
• Master of Science in Architecture (postprofessional degree)
• Doctor of Philosophy in Land-Use Planning, Management, and Design

Dual-Degree/Joint Programs

• Bachelor of Science in Architecture/Bachelor of Business Administration (General Business)
• Bachelor of Science in Architecture/Bachelor of Science in Civil Engineering
• Master of Architecture/Master of Business Administration

Undergraduate Program

Program Descriptions. The Bachelor of Science in Architecture consists of 131 credit hours of undergraduate courses. This program has two components: general architecture and preprofessional. The B.S. in Architecture degree will give students knowledge of and career opportunities in architecture, the building industry, and related fields.

Transfer Courses. All transfer coursework to be taken at any other institution must receive evaluation and approval from the Placement, Programs, Advisement, and Recruiting Center (P'ARC) within the College of Architecture. The student must provide sufficient evidence of equivalency. No course with a grade less than a C will be accepted. All architecture courses must be completed with a grade of B or higher.

Core Curriculum Requirements. The university has established Core Curriculum requirements for all students. A listing of these requirements appears in the Undergraduate Academics section of this catalog.

Writing Intensive Courses. Students may fulfill this course requirement with any university course identified in the catalog as “writing intensive” or with another course specifically preapproved by the P'ARC as “writing intensive.”

Diversity Course. Students may fulfill this requirement with courses as listed with the P'ARC. Other courses may be approved prior to enrollment for credit.

Electives. All electives taken to satisfy the architecture degree plan must be at the 2000 and above level. All undergraduate architecture courses numbered 2000 and above may only be taken by architecture students or with the permission of the Chair.

Computer Requirement. Students in the general and preprofessional program are required to have their own computer in the classroom or studio. Computer equipment and software must be compatible with college standards. Computer equipment and software requirements are posted on the college Web site.
Graduate Program

The College of Architecture awards three graduate degrees: The Master of Architecture (M.Arch.); Master of Science in Architecture (M.S.); and Doctor of Philosophy (Ph.D.) in Land-Use Planning, Management, and Design (LPMD). The Master of Architecture is a professional degree accredited by the NAAB. The college has an agreement with the College of Business Administration allowing students to seek a joint M.Arch. degree in architecture and a Master of Business Administration (M.B.A.). The Master of Science in Architecture is considered a post-professional research-based academic degree. The Ph.D. in LPMD is an interdisciplinary degree program that accepts students from diverse educational backgrounds.

Students applying to any of the three degrees programs must have an appropriate bachelor’s degree from any undergraduate program. All students must make application to and meet the requirements of the Texas Tech University Graduate School and the College of Architecture. The following criteria will be considered in the admission process: GRE scores, GPA, academic transcripts, portfolio of work, letters of recommendation, statement of interest, exceptional extracurricular activities, and professional work.

Students applying to the Master of Architecture program with an undergraduate degree other than the B.S. in Architecture from Texas Tech University must request an audit of their transcripts. All applicants must submit a portfolio of work to the college to determine the amount of leveling courses required to comply with the entry into the professional degree program. Students accepted into the Master of Architecture program may automatically be accepted into the Master of Business Administration program.

Transfer courses applicable to a student’s degree plan at the graduate level are determined by the college administration and the Graduate School. Refer to “Transfer Courses” section on the previous page.

Off-Campus Programs. Off-campus programs are offered to enrich student experience. The college offers regional, continental, and European summer programs. The Architour Spring Break program provides opportunities for travel and study of American architecture and architects.

Attendance. Students in the college will attend all scheduled class meeting times and activities. Absences in excess of those stipulated in each individual course syllabus may result in an F in the course.

Computer Requirement. Students entering the graduate programs in architecture are required to have their own computer in the classroom and studio. Computer equipment and software must be compatible with college standards. The computer equipment and software requirement is posted on the college Web site or can be requested from the Placement, Programs, Advisement, and Recruiting Center (PARC).

Ownership of Student Work. The college 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 such until it is returned to the student.

Research and Design Center. The RDC is the clearinghouse for scholarly work, research, and creative activity in the college. The RDC provides lab and studio space for faculty scholarship and often provides financial assistantship for students through research and graduate assistantship. Contact the college for information on these positions.

Internships. 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. With advance approval students participating in an internship may take courses offered via distance learning when those courses apply to their degree program.

Certificates. Certificates in the college are offered to graduate students who are pursuing the Master of Science or Master of Architecture degrees as well as environmental design professionals. There are three certificates: Community Development, Historic Preservation, and Visualization. A certificate requires that the student take 15 hours of specified coursework in one of these four programs. Upon completion of the coursework, students will receive a “certificate of completion” and notification on their transcript of program completion. Students who wish to apply for acceptance into a certificate program should talk to an academic advisor within the college.

Master of Architecture (Accredited Professional Degree)

Mandatory Accreditation Statement. The NAAB 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 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 pre-professional degree is not by itself recognized as an accredited degree.”

The Master of Architecture accredited professional program consists of an undergraduate curriculum of 131 hours and a graduate curriculum of 42 hours. The dual Master of Architecture/Master of Business Administration includes an additional 30 credit hours in the graduate program. A comprehensive master’s degree design project is required.

The highly motivated student may desire to concentrate in one of the three certificate programs. A certificate of concentration may be achieved by completing 15 hours of coursework in one of these certificate programs: Community Development, Historic Preservation, and Visualization. Upon completion of the coursework, students will receive a “certificate of completion” and notification on their transcript of program completion.

Master of Science in Architecture (Postprofessional Degree)

The Master of Science in Architecture degree is a research-based academic degree for students interested in a focused area of study. This degree does not prepare students to receive an architecture licensure. The degree is for students with an accredited professional B.Arch., M.Arch., or an approved bachelor’s degree in another discipline (e.g., art, interior design, engineering, archaeology). Students who have non-architecture degrees and wish to enter the program may be required to complete leveling work that will not accrue graduate credit toward their degree. Students will be required to complete a minimum of 32 credit hours of graduate study, write and defend a thesis (6 hours), and take an oral comprehensive examination. All students will be required to complete a written thesis.

Students requesting admission into the Master of Science in Architecture must meet the entrance standards of the Graduate School and the College of Architecture. The admission application includes a portfolio of creative work (writing, design, drawing, photography, etc.) that reflects the student’s level of design interest, intellectual inquiry, and communication skills. Students must also show a basic understanding and accomplishment of computing and computer-assisted design skills. Candidates with deficiencies in these skills are required to take graduate or undergraduate leveling courses to acquire basic competence, enabling them to perform well in their coursework. Any leveling course requirements will be in addition to the 38 hours required for the degree.

Continued on next page
Graduate Program / Architecture continued

All students entering the degree program will be required to own, purchase, or lease computing hardware and software that will meet the requirements of the college. The student is required to have this equipment available in the building for coursework or homework. The college will provide a studio workspace in which to keep the equipment in the architecture building. Some software is provided by the college. See the college Web site at www.arch.itu.edu for more details. The college does not take responsibility for loss or damage to the equipment in the building.

Each candidate for the Master of Science in Architecture degree must obtain a certificate in one of three areas: Community Design and Development, Historic Preservation, or Visualization. Students applying for the Master of Science in Architecture degree must file for admission into one of these certificate programs. After the first semester, students will be matched with a faculty member who will serve as their academic advisor and the chair of their thesis committee. The advisor will be responsible for guiding the student concerning electives, developing a thesis proposal, and selecting thesis advisors. All students seeking a degree must complete the program in residency, including the thesis.

Financial assistance may be available for students applying by January 15 for admission into the program the next fall semester. There are scholarships, teaching assistantships, research assistantships, and graduate part-time instructor positions available for graduate students.

Certificates

**Community Design and Development Certificate.** Increasing globalization and the decline of traditional human environments has produced a critical need for sustainable community development. The Certificate in Community Design and Development emphasizes inclusive community-based design and research through civic engagement to assist regional communities, local governments, non-profit organizations, and development professionals in the design of quality communities. The curriculum integrates heritage management, conservation policies, development strategies, and applied participatory design to prepare students for professional challenges in architectural practice, planning and management, and community service. The program is a regional leader in providing community assistance for courthouse renovations, historic town squares, housing, adaptive reuse, and new planning and building projects. The Community Design and Development Certificate underscores the role of the architect as an active participant in community life based on a triad formed between client, teacher/professional, and student.

**Historic Preservation Certificate.** The Historic Preservation Certificate prepares graduate students to play leadership roles in the historic preservation of architecture. This specialization provides students with the knowledge and practical skills needed to be thoughtful stewards of the world’s architectural heritage and provides a comprehensive understanding of historic preservation that includes the built, cultural, and natural environments. To satisfy these objectives, this graduate certificate presents a balanced curriculum of history, theory, documentation, and preservation technology courses.

The program is an international leader in historic architectural documentation and provides opportunities for regional, national, and international research. Students and faculty participate in documentation and preservation research through collaborative efforts with public, private, and non-profit organizations.

**Visualization Certificate.** The Certificate in Visualization (VIZ) focuses on digital visualization of art, design, engineering, and science. This specialization places the student at the leading edge of inquiry into visualization. The student is encouraged to explore the use of visualization in environmental design, design communication, science, product production, fabrication, simulation, and modeling/simulation, and entertainment. The VIZ coursework prepares the student to apply concepts, principles, and techniques of internet media, animation, and virtual reality into a visualization tool set to bring form to ideas.

The faculty’s research and teaching experience produces a stimulating environment for students to develop into technical designers capable of the design and implementation of 3-D digital environments. This combination of the theoretical and practical provides the student a balanced combination of real world experience and academic inquiry.

**Doctor of Philosophy in Land-Use Planning, Management, and Design (LPMD)**

The interdisciplinary Ph.D. program in Land-Use Planning, Management, and Design (LPMD) accepts students from diverse educational backgrounds. The program is administered by the dean of the College of Architecture with faculty and courses drawn from participating units across the university. It is designed to provide education in several facets of physical design, with special emphasis on non-urban lands and those in arid and semi-arid environments. Included in the program are studies of the complex factors influencing human use of resources, training in the research and evaluative methods that can be applied to interdisciplinary studies, and education in the institutional structures that shape policy and action. The four tracks of study are environmental/natural resource management and planning, community planning and design, public policy administration, and historic preservation. Students with an interest in these fields as well as in architecture and many other aspects of land and land use may find the LPMD program suitable to their needs.

Students are required to complete a minimum of 66 hours beyond the bachelor’s degree. This includes 24 hours of multidisciplinary core courses, 36 credit hours of track courses, and 6 hours of tool courses. In addition, the program requires 12 hours of dissertation. Track courses, research projects, and ultimately the student’s dissertation will focus on the track selected. A student also is required to present evidence of competency in an appropriate tool subject (e.g., computer science, statistics).

Requirements considered for admission to the program include GRE, grade-point average, statement of research interests and goals, writing samples/portfolio, and letters of recommendation on official letterheads.

Because students come from a variety of backgrounds with different interests and career goals, one standard course of study is not required. Initial advisement and program development is conducted by the program coordinator. A degree plan is formulated by an advisory committee drawn from three or more departments and two or more colleges. This committee will arrange a student’s course of study in the track specialization. The student will therefore follow a “custom-designed” program of study. The advisory committee will be responsible for administering comprehensive exams and for directing both the dissertation and the student’s program.

**Core Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 5605</td>
<td>Advanced Architectural Design Studio (6:0:12)</td>
</tr>
<tr>
<td>LARC 5302</td>
<td>Advanced Environmental Planning for Sustainable Development (3:3:0)</td>
</tr>
<tr>
<td>PUAD 5333</td>
<td>Environmental Policy and Administration (3:3:0)</td>
</tr>
<tr>
<td>LAW 6025</td>
<td>Land-Use Planning (V2-3)</td>
</tr>
<tr>
<td>HMGT 5323</td>
<td>Principles of Heritage Management (3:3:0)</td>
</tr>
<tr>
<td>GEOG 5306</td>
<td>Seminar in Geography of Arid Lands (3:3:0) or ARCH 5324, History and Theory of Historic Preservation (3:3:0)</td>
</tr>
<tr>
<td></td>
<td>One 3-hour research method course approved by coordinator</td>
</tr>
</tbody>
</table>

**Other Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPMD 7000</td>
<td>Research (V1-12)</td>
</tr>
<tr>
<td>LPMD 8000</td>
<td>Doctor’s Dissertation (V1-12)</td>
</tr>
</tbody>
</table>
Prerequisite: AutoCAD. AutoCAD experience is required to enroll in ARCH 1353. Students must provide proof of experience prior to enrollment in the course.

Distance Education Courses. All correspondence and distance education courses require approval from the P\ARC 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. Students may repeat architecture courses only one time for grade replacement.

Student Projects. The college 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 information regarding academic status. Students on academic probation or academic suspension should familiarize themselves with these regulations. At the graduate level only one semester of probation 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 P\ARC staff.

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.

Course Load. Approval from the P\ARC 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.

Class Attendance. Students in the college are expected to attend all scheduled class meeting times and activities. Absence in excess of those stipulated in each individual course syllabus will result in a F in the course. Refer to the university's policy procedures, and dates on dropping a course. See your academic advisor for additional information.

Application for Degree. The Bachelor of Science degree candidate must file an "Application for Degree" with the P\ARC 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. Students must have a 2.5 GPA to graduate. Because students are expected to follow the graduation requirements set forth in the catalog of the year they entered the College of Architecture, students filing an "Application for Degree" must indicate the catalog year under which they will graduate. This must be the year in which they were accepted and registered in the College of Architecture. See also "Uniform Undergraduate Degree Requirements" in the Undergraduate Academics section of this catalog.

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.

Practicum Program. Each student is encouraged to participate in the professional practicum program. The program provides opportunities for professional experience in some of the nation's leading architectural firms.

Minor. The students should consult with an architecture advisor and have a Minor Approval Form signed. A list of recommended courses is available from the advisor. A minor consists of 18 hours, which must include 6 hours of junior and senior level courses. At least 9 of the 18 hours must be taken in residence. Grades of C or better are required in each course.

Bachelor of Science in Architecture

General Architecture Program. Admission to the university. Only courses with a minimum grade of C or better will be accepted for the preprofessional program.

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
</tr>
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<tbody>
<tr>
<td>Fall: SEEING</td>
<td>Spring: FOUNDATION</td>
</tr>
<tr>
<td>ARCH 1311, Design Environ. &amp; Society</td>
<td>ARCH 1412, Arch. Design Studio I</td>
</tr>
<tr>
<td>ARCH 1341, Arch. Freehand Drawing</td>
<td>ARCH 1353, Digital Media I</td>
</tr>
<tr>
<td>Core Curriculum (see below)</td>
<td>Core Curriculum (see below)</td>
</tr>
<tr>
<td>Core Curriculum (see below)</td>
<td>Core Curriculum (see below)</td>
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<tr>
<td>TOTAL</td>
<td>TOTAL</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
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</tbody>
</table>

Preprofessional Program. Competitive placement based on comprehensive review, including student's portfolio, essay, statement of intent, and grade point average.

**SUMMER**

<table>
<thead>
<tr>
<th>Courses</th>
</tr>
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<tbody>
<tr>
<td>Core Curriculum–Nat'l or Phys. (below)</td>
</tr>
<tr>
<td>Core Curriculum (see below)</td>
</tr>
<tr>
<td>TOTAL</td>
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**SECOND YEAR**

<table>
<thead>
<tr>
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<th>Courses</th>
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</thead>
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<tr>
<td>Fall: BASIC–INTERNAL</td>
<td>Spring: BASIC–EXTERNAL</td>
</tr>
<tr>
<td>ARCH 2501, Arch. Design Studio II</td>
<td>ARCH 2502, Arch. Design Studio III</td>
</tr>
<tr>
<td>ARCH 2311, History of World Arch.</td>
<td>ARCH 2315, Hist. 18/19/20 Cent. Arch.</td>
</tr>
<tr>
<td>ARCH 2351, Arch. Construction I</td>
<td>ARCH 2342, Arch. Design Drawing</td>
</tr>
<tr>
<td>Core Curriculum (see below)</td>
<td>ARCH 2355, Arch. Environ. Systems</td>
</tr>
<tr>
<td>Diversity Elective+</td>
<td>Elective</td>
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<td>TOTAL</td>
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<tr>
<td>17</td>
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**THIRD YEAR**

<table>
<thead>
<tr>
<th>Courses</th>
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<tbody>
<tr>
<td>ARCH 3501, Arch. Design Studio IV</td>
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<tr>
<td>ARCH 3341, Digital Media II</td>
</tr>
<tr>
<td>ARCH 3350, Arch. Construction II</td>
</tr>
<tr>
<td>ARCH 3373, Environ. Analysis/Site Plan.</td>
</tr>
<tr>
<td>Elective (Writing Intensive)**</td>
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<tr>
<td>Elective</td>
</tr>
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**SUMMER I and II**

<table>
<thead>
<tr>
<th>Courses</th>
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</thead>
<tbody>
<tr>
<td>ARCH 4601, Arch. Design Studio VI++</td>
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<tr>
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**FOURTH YEAR**

<table>
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<tr>
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<th>Courses</th>
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<tbody>
<tr>
<td>Fall: COLLABORATION</td>
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</tr>
<tr>
<td>ARCH 4000, Research in Arch.</td>
<td></td>
</tr>
<tr>
<td>ARCH 4354, Integrative Systems</td>
<td></td>
</tr>
<tr>
<td>ARCH 4363, Arch. Theory</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
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Minimum hours required for graduation—131

Core Curriculum

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
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<tr>
<td>ENGL 1301 Essentials of College Rhetoric</td>
<td></td>
</tr>
<tr>
<td>ENGL 1302 Advanced College Rhetoric</td>
<td></td>
</tr>
<tr>
<td>MATH 1321 Trigonometry</td>
<td></td>
</tr>
<tr>
<td>MATH 1350 Analytical Geometry</td>
<td></td>
</tr>
<tr>
<td>PHYS 1403 General Physics I w/lab (4 hrs.)</td>
<td></td>
</tr>
<tr>
<td>Natural Lab Science † (4 hrs.)</td>
<td></td>
</tr>
<tr>
<td>POLS 1301 American Government Organ.</td>
<td></td>
</tr>
<tr>
<td>POLS †† 2302 American Public Policy</td>
<td></td>
</tr>
<tr>
<td>HIST 2300 History U.S. to 1877</td>
<td></td>
</tr>
<tr>
<td>HIST 2301 History U.S. Since 1877</td>
<td></td>
</tr>
<tr>
<td>COMS* Elective</td>
<td></td>
</tr>
</tbody>
</table>

† Choose from Core Curriculum requirements.
‡ Or approved substitution
+ Diversity elective course offerings are available on the architecture website (www.arch.ttu.edu).
* Or approved oral communication course
** Select any course designated as "writing intensive" in TTU catalog.
++ Or approved Collaboration Studio in fall of fourth year. Optional courses are ARCH 4365/4366 for those who choose not to pursue the professional degree.
Dual-Degree Curriculum: Bachelor of Science in Architecture and Bachelor of Science in Civil Engineering

General Architecture Program. Admission to the university. Only courses with a minimum grade of C or better will be accepted for the preprofessional program.

FIRST YEAR
Fall: SEEING
ARCH 1311, Design Environ. & Society 3
ARCH 1341, Arch. Freehand Drawing 3
C E 1130, Civil Engr. Seminar I 1
MATH 1535, Calculus I 3
HIST 2300, History of U.S. from 1877 3
ENGL 1301, Ess. College Rhetoric 3
TOTAL 16

SUMMER
MATH 2350, Calculus III 3
PHYS 1408, Prin. Physics I 4
PHYS 2401, Prin. Physics II w/lab 3
TOTAL 7

or E E 3301, General E E 3
TOTAL 10

Preprofessional Program. Competitive placement based on comprehensive review, including student’s portfolio, essay, statement of intent, and grade point average.

SECOND YEAR
Fall: BASIC–INTERNAL
ARCH 2501, Arch. Design Studio II 3
ARCH 2331, History of World Arch. 3
ARCH 2351, Arch. Construction I 3
C E 2301, Statics 3
C E 2101, Const. Materials Lab 1
POLS 1301, American Govt. Org. 3
TOTAL 15

SUMMER
CHEM 1307, Prin. of Chem. I 3
CHEM 1107, Prin. of Chem. I Lab 1
POLS 2302, Amer. Public Policy†† 3
TOTAL 7

or C E 2301, Mechanics of Solids 3
TOTAL 18

Preprofessional Program. Competitive placement based on comprehensive review, including student’s portfolio, essay, statement of intent, and grade point average.

THIRD YEAR
Fall: BUILDING ENCLOSURE
ARCH 3501, Arch. Design Studio IV 5
ARCH 2533, Arch. Construction II 3
C E 3321, Intro. Geotech. Engr. 3
C E 3121, Geotech. Eng. Lab 1
CTEC 2301, Surveying 3
TOTAL 15

TOTAL 17

FOURTH YEAR
Fall: Spring
C E 3440, Struct. Analysis I 4
C E 3309, Engr. Engr. 3
C E 3171, Engr. Engr. Lab. I 1
C E 3354, Engr. Hydrology 3
Writing-Intensive Elective†† 3
TOTAL 14

TOTAL 15

SUMMER I and II
URBANISM
ARCH 4601, Arch. Design Studio VI** 6

FIFTH YEAR
Fall: COLLABORATION
ARCH 4363, Arch. Theory 3
C E 4330, Design Engr. Systems 3
C E 4342, Design Steel Struct. 3
C E 4361, Transport. Engr. 3
TOTAL 12

Total Hours — 177 (178)
++Course offerings available on the architecture Web site (www.arch.ttu.edu)
* COMS elective choices for civil engineering students only are I E 2331 or PETR 3308.
† C E 4340 is offered every third semester only.
†† Or approved substitution.
+ Select any TTU course designated as “writing intensive” in current catalog.
** Or approved Collaboration Studio in fall of fifth year. Optional courses are ARCH 4365/4366 for those who choose not to pursue the professional degree.

Dual-Degree Curriculum: Bachelor of Science in Architecture and Bachelor of Business Administration (General Business)

General Architecture Program. Admission to the university. Only courses with a minimum grade of C or better will be accepted for the preprofessional program. All business administration students must complete lower-division business core requirements and maintain a 2.75 cumulative GPA to take upper-level business courses.

FIRST YEAR
Fall: SEEING
ARCH 1311, Design Environ. & Society 3
ARCH 1341, Arch. Freehand Drawing 3
ARCH 2331, History of World Arch. 3
ARCH 2351, Arch. Construction I 3
MATH 1535, Calculus I 3
HIST 2300, History of U.S. from 1877 3
ENGL 1301, Ess. College Rhetoric 3
TOTAL 16

SUMMER
HIST 2300, History of U.S. to 1877 3
ACCT 2301, Managerial Acct. 3
TOTAL 6

Preprofessional Program. Competitive placement based on comprehensive review, including student’s portfolio, essay, statement of intent, and grade point average.

SECOND YEAR
Fall: BASIC–INTERNAL
ARCH 2501, Arch. Design Studio II 3
ARCH 2331, History of World Arch. 3
ARCH 2351, Arch. Construction I 3
C E 2301, Statics 3
C E 2101, Const. Materials Lab 1
POLS 1301, American Govt. Org. 3
TOTAL 15

SUMMER
PHYS 1403, Gen. Physics I w/lab 4
MGT 3370, Org. and Mgt. 3
TOTAL 7

or E E 3301, General E E 3
TOTAL 10

Preprofessional Program. Competitive placement based on comprehensive review, including student’s portfolio, essay, statement of intent, and grade point average.

THIRD YEAR
Fall: BUILDING ENCLOSURE
ARCH 3501, Arch. Design Studio IV 5
ARCH 2533, Arch. Construction II 3
C E 3321, Intro. Geotech. Engr. 3
C E 3121, Geotech. Eng. Lab 1
CTEC 2301, Surveying 3
TOTAL 15

TOTAL 17

FOURTH YEAR
Fall: Spring
C E 3440, Struct. Analysis I 4
C E 3309, Engr. Engr. 3
C E 3440, Structural Analysis II † 3
C E 3171, Engr. Engr. Lab. I 1
C E 3354, Engr. Hydrology 3
Writing-Intensive Elective†† 3
TOTAL 14

TOTAL 15

SUMMER
ISQS 3344, Intro. Prod./Oper. Mgt. 3
BLAW 3391, Business Law I 3
TOTAL 6

or ECO 3323, Princ. Economics II 3
TOTAL 17

See the Rawls College of Business section of the catalog for information on lower-division requirements.
† Choose from Core Curriculum requirements.
* These courses must be selected from the areas of accounting, economics, ISQS, management, and marketing. There must be at least one course chosen from at least two of the five areas.
** Students continuing to the M.Arch. program may require additional leveling, including ARCH 4601/4602 and a diversity elective.
***Must be a junior or senior level economics course except for ECO 3323 or 4332.
Master of Architecture

**General Architecture Program.** Admission to the university. Only courses with a minimum grade of C or better will be accepted for the preprofessional program.

**Preprofessional Program.** Competitive placement based on comprehensive review, including student’s portfolio, essay, statement of intent, and grade point average.

**SUMMER**
- Core Curriculum–Nat l or Phys.† 4
- Core Curriculum‡ 3
- TOTAL 7

**SECOND YEAR**
- ARCH 1311, Design Environ. & Society 3
- ARCH 1412, Arch. Design Studio I 4
- ARCH 1341, Arch. Freehand Drawing 3
- ARCH 3335, Digital Media I 3
- Core Curriculum† 3
- Core Curriculum‡ 3
- Core Curriculum‡ 3
- TOTAL 15

**THIRD YEAR**
- ARCH 1341, Digital Media II 3
- ARCH 3314, Contemporary Issues 3
- ARCH 3350, Arch. Construction II 3
- Core Curriculum‡ 3
- Diversity Elective+ 3
- Elective 3
- TOTAL 17

**FOURTH YEAR**
- ARCH 4000, Research in Arch. 3
- ARCH 4363, Arch. Theory 3
- ARCH 4354, Integrative Systems 3
- Elective 3
- TOTAL 12

**FIFTH YEAR**
- ARCH 5605, Adv. Arch. Design Studio 6

**SUMMER**
- Diversity elective offerings available on the architecture Web site.
- † Choose from Core Curriculum list on page 121 (B.S. Table).
- ‡ Or approved Collaboration Studio in fall of fourth year.
- + Select any course designated as “writing intensive” in TTU catalog.
- ∆ Course to be announced prior to fall 2007.

Dual-Degree Curriculum: Master of Architecture and Master of Business Administration

**General Architecture Program.** Only courses with a minimum grade of C or better will be accepted for the preprofessional program.

**Preprofessional Program.** Competitive placement based on comprehensive review, including student’s portfolio, essay, statement of intent, and grade point average.

**SUMMER**
- Core Curriculum–Nat l or Phys.† 4
- Core Curriculum‡ 3
- TOTAL 7

**SECOND YEAR**
- ARCH 2351, Arch. Construction I 3
- ARCH 2342, Arch. Design Drawing 3
- Core Curriculum‡ 3
- Diversity Elective+ 3
- Elective 3
- TOTAL 17

**THIRD YEAR**
- ARCH 3373, Environ. Analysis/Site Plan. 3
- Core Curriculum‡ 3
- Elective (Writing Intensive)** 3
- TOTAL 17

**FOURTH YEAR**
- ARCH 4601, Arch. Design Studio VI 6

**FIFTH YEAR**
- ARCH 5605, Adv. Arch. Design Studio II 3
- ARCH 5692, Master Design Studio I 6
- ARCH 5392, Professional Practice 3
- ARCH Elective 3
- TOTAL 12

**SUMMER**
- Elective 3
- TOTAL 6

**FALL**
- ARCH 1311, Design Environ. & Society 3
- ARCH 1412, Arch. Design Studio I 4
- ARCH 1341, Arch. Freehand Drawing 3
- Core Curriculum† 3
- Core Curriculum† 3
- Core Curriculum† 3
- TOTAL 15

**SPRING**
- ARCH 1412, Arch. Design Studio I 4
- ARCH 1353, Digital Media I 3
- Core Curriculum† 3
- Core Curriculum† 3
- Core Curriculum† 3
- TOTAL 15

**SUMMER**
- ISQS 5231, Info. Tech. for Managers 2
- TOTAL 4

**FALL**
- MGMT 5476, Executive Skills 4
- ISQS 5345, Statistical Concepts 3
- TOTAL 7

**SPRING**
- ISQS 5345, Statistical Concepts 3
- ISQS 5230, Managerial Dec. Theory 2
- TOTAL 5

**SUMMER**
- MGT 5401, Fin. and Mgt. Acct. 4
- ISQS 5345, Statistical Concepts 3
- TOTAL 7

**FALL**
- MGT 5476, Executive Skills 4
- ISQS 5230, Managerial Dec. Theory 2
- TOTAL 6

**SPRING**
- ISQS 5345, Statistical Concepts 3
- TOTAL 3

**SUMMER**
- MGT 5391, Strategy & Global Mgmt. 3
- TOTAL 6

Total Hours—203
- † Choose from Core Curriculum list on page 121 (B.S. Table).
- ‡ Select any course designated as “writing intensive” in TTU catalog.
- + Diversity elective offerings available on the architecture Web site.
- ∆ Course to be announced prior to fall 2007.
Master of Science in Architecture
Certification in Historic Preservation

FIRST YEAR

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 5324, History and Theory</td>
<td>3 ARCH 5325, Conservation Policies</td>
</tr>
<tr>
<td>ARCH 5102, Grad. Colloquium</td>
<td>1 ARCH 5102, Graduate Colloquium</td>
</tr>
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<td>TOTAL</td>
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SUMMER

Internship or off-campus program

Highly Recommended

SUMMER I and II

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>ARCH 5301, Arch. Design Studio IV</td>
<td>5 ARCH 3502, Arch. Design Studio V</td>
</tr>
<tr>
<td>ARCH 2355, Arch. Environ. Systems</td>
<td>3 ARCH 4355, Construction Documents</td>
</tr>
<tr>
<td>ARCH 3350, Arch. Construction II</td>
<td>3 ARCH 3355, Arch. Construction III</td>
</tr>
<tr>
<td>ARCH 4311, Arch. in Northwestern Soc.</td>
<td>3 ARCH 3341, Digital Media II</td>
</tr>
<tr>
<td>ARCH 3353, 3-D Computer Design Drwg.</td>
<td>3 PULS 2302, Amer. Public Policy or approved substitution</td>
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<td>TOTAL</td>
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SECOND YEAR

<table>
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<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>ARCH 5622, Preservation Studio</td>
<td>6 Elective*</td>
</tr>
<tr>
<td>ARCH 6000, Master’s Thesis</td>
<td>3 ARCH 6000, Master’s Thesis</td>
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<td>9 TOTAL</td>
</tr>
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</table>

Total Program Hours—38

Most degree plans will require at least 6 hours of research. Minor in historic preservation may be conferred upon completion of the first 18 hours of the curriculum.

* Must complete 6 hours of elective courses. See College of Architecture for an approved list.

El Paso Program: Bachelor of Science in Architecture

The College of Architecture has established a partnership with El Paso Community College (EPCC) to expand the pathway for El Paso students to attend Texas Tech and obtain a degree in architecture. The program will begin in fall 2007 and offer the first degrees in 2008. Students who enter the program will complete 131 credit hours, including 66 hours at EPCC and 65 at Texas Tech in El Paso. After admission to the university as a transfer student, students in will be expected to complete the curriculum outlined below.

THIRD YEAR

<table>
<thead>
<tr>
<th>Fall</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ARCH 4602, Collaboration Studio</td>
<td>6 ARCH 4354, Integrative Systems</td>
</tr>
<tr>
<td>ARCH 4000, Research</td>
<td>1 ARCH 3356, Spec. Studies Con. Tech.</td>
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<tr>
<td>ARCH 3373, Environ. Analy.; Site Plan.</td>
<td>3 ARCH 4363, Theory in Arch.</td>
</tr>
<tr>
<td>Elective (Writing intensive)</td>
<td>3 COMS Elective or approved substitution</td>
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SUMMER I and II

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>ARCH 4601, Arch. Design Studio VI</td>
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FOURTH YEAR

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
</table>

Total Program Hours—66 (EPCC) + 65 (TTU) = 131

Architecture (ARCH)

(To interpret course descriptions, see page 8.)

Undergraduate Courses

1311. [ARCH 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.

1341. Architectural Freehand Drawing (3:0:6). Basic skills and techniques in representational drawing. Subjects include the human figure, architectural interiors and exteriors, landscapes and cityscapes. Black and white media.

1353. Digital Media I (3:2:2). Prerequisite: AutoCAD. An introduction to the use of the computer as a design drawing tool with an emphasis on conceptual knowledge and computing skills for design communication.


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.


Master of Science in Architecture
Certification in Community Design, Development

FIRST YEAR

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 5315, Systems of Inquiry</td>
<td>3 ARCH 5325, Conservation Policies</td>
</tr>
<tr>
<td>GEOG 5300, Geographic Info. Systems</td>
<td>3 HMG T 5327, Heritage Planning</td>
</tr>
<tr>
<td>ARCH 5384, Comm. Design and Dev.</td>
<td>3 ARCH 5102, Graduate Colloquium</td>
</tr>
<tr>
<td>ARCH 5102, Grad. Colloquium</td>
<td>1 Elective</td>
</tr>
<tr>
<td>TOTAL</td>
<td>10 TOTAL</td>
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</tbody>
</table>

SECOND YEAR

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>ARCH 5605, Advanced Design Studio</td>
<td>6 ARCH 6000, Master’s Thesis</td>
</tr>
<tr>
<td>ARCH 7000, Research</td>
<td>3 Elective</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9 TOTAL</td>
</tr>
</tbody>
</table>

Total Program Hours—38

Master of Science in Architecture
Certification in Visualization

FIRST YEAR

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 5315, Systems of Inquiry</td>
<td>3 ARCH 5344, Virtual Reality Tech.</td>
</tr>
<tr>
<td>ARCH 5341, Internet Media, Vis. Des.</td>
<td>3 ARCH 5345, Design Vis. Studio</td>
</tr>
<tr>
<td>ARCH 5347, 3-D Digital Visualization</td>
<td>3 ARCH 5343, 3-D Anim./Imaging</td>
</tr>
<tr>
<td>ARCH 5102, Grad. Colloquium</td>
<td>1 ARCH 5102, Graduate Colloquium</td>
</tr>
<tr>
<td>TOTAL</td>
<td>10 TOTAL</td>
</tr>
</tbody>
</table>

SECOND YEAR

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 6000, Master’s Thesis</td>
<td>3 ARCH 5345, Design Vis. Studio</td>
</tr>
<tr>
<td>ARCH 7000, Research</td>
<td>3 ARCH 6000, Master’s Thesis</td>
</tr>
<tr>
<td>Elective</td>
<td>3 Elective</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9 TOTAL</td>
</tr>
</tbody>
</table>

2353. 3-D Computer Design Drawing (3:2:2). An introduction to the use of the computer as a design drawing tool with an emphasis on conceptual knowledge and computing skills for design communication.


2355. Architectural Environmental Systems (3:3:0). Introduction to thermal design; daylighting; analysis of mechanical, electrical, and plumbing systems; and acoustical design. F

2394. 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.

2501. [ARCH 1403] Architectural Design Studio II (5:2:8). Prerequisite: ARCH 2353. Admission to the professional program. Basic-Internal. Introducing design skills that are core and internal to architecture. Practical-drawing as inquiries/form/transformation/composition/spatial modulation. F

2502. [ARCH 1404] Architectural Design Studio III (5:2:8). Prerequisite: ARCH 2501. Basic-External. Introduces design skills that are core and internal to architectural practice-drawing as inquiries and analysis, integration of building elements, site, and program.

3312. Architectural Theory Seminar (3:3:0). Prerequisite: ARCH 2315. Topical theory seminar involving analysis of a body of scholarly literature, frequent writing and focused research. (Writing Intensive)

3313. Architectural History Seminar (3:3:0). Prerequisite: ARCH 2315. Focused studies in western/non-western architectural history involving written and oral analysis of scholarly sources. Topic varies and may include preservation, race, class, and/or gender issues. (Writing Intensive)


3324. Architectural Conservation (3:3:0). Prerequisite: Junior standing or consent of instructor. In-depth examination of history, theory, and practice of historic preservation, restoration, and federal legislation supporting preservation.

3341. Digital Media II (3:2:2). Prerequisite: ARCH 1353. The use of 3-D computer graphics and modeling or design development with an emphasis on multimedia design presentations.

3350. Architectural Construction II (3:2:2). Prerequisite: ARCH 2351. Study of statics, member analysis, material science, and advanced construction systems with emphasis on the systems module and introduction to system integration code and cost.


3356. Special Studies in Construction Technology (3:3:0). Prerequisite: ARCH 3355. Approved technology elective dealing with the advanced study of technical building concerns.

3361. Design Workshop (3:3:3). Special projects and project development in architectural design. May be repeated for credit.

3362. Product Design Workshop (3:3:6). Introduction to the design and execution of an architectural 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.


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 (3). Prerequisite: ARCH 3502. Individual study based on an approved internship position consisting of a minimum of 300 hours per semester or summer.

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.


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.

4363. Architectural Theory (3:3:0). Prerequisite: ARCH 2311 and 2315. Examination of the theoretical issues in architecture through critical reading of texts selected from Vitruvius to the most contemporary thinkers in relation to the emerging design challenges.

4364. Issues of Differences in the Built Environment (3:3:0). Issues of race, ethnicity, culture, gender, and political-economic contexts influencing process of design of architecture, the built environment and international and cross-cultural architectural practices.

4365. Architectural Project Management (3:3:0). Project organization and management documentation of project information, budget analysis, and coordination of consultants and building systems.

4366. Design and Building Methodology (3:3:0). Design and construction under one contract as a delivery system, including scheduling, bidding, job site safety, and management.

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. (Writing Intensive)

4601. Architectural Design Studio VI (6:3:8). Prerequisite: ARCH 3502. Urbanism: design of urban aggregates of buildings, infrastructure, and land use. Explores the interface between culture and architecture at the scale of the city. Must be taken off campus in study abroad programs or practicums.

4602. Collaboration Studio (6:3:8). An interdisciplinary studio for the design professions which addresses the process and skills necessary for collaboration as well as team-developed products. (Field Trip Required)

5102. Graduate Colloquium (1:1:0). An academic seminar on a broad field of study, each meeting is usually led by a different lecturer and will be followed by a question and answer session.

5301. Special Problems in Architecture (3). Prerequisite: College approval. Individual study projects in architecture of special interest to students. May be repeated for credit. Particularly useful for Interdisciplinary Studies master's program.
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>5302</td>
<td>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. E.</td>
</tr>
<tr>
<td>5311</td>
<td>Special Problems in Architectural History (3). Individual advanced studies in architectural history of special interest to the student. May be repeated for credit.</td>
</tr>
<tr>
<td>5313</td>
<td>Special Studies in the History of Architecture (3:3:0). Prerequisite: ARCH 2311 and 2315. Studies in architectural history involving written and oral analysis of scholarly sources. Topics vary and may include preservation, class, race, and/or gender issues.</td>
</tr>
<tr>
<td>5315</td>
<td>Systems of Architectural Inquiry (3:3:0). An investigation into the schools of thought and methods of inquiry, including the craft of research with a focus on writing, reading, and critical thinking.</td>
</tr>
<tr>
<td>5319</td>
<td>History of American Architecture: Pre-Contact to 1865 (3:3:0). Prerequisite: ARCH 2311 or approval of instructor. History of American Cultural expression, using buildings as a vehicle for exploring diverse issues including race, class and gender. Time period covers Pre-Contact to 1865. (Writing Intensive)</td>
</tr>
<tr>
<td>5320</td>
<td>History of American Architecture: 1865 to the Present (3:3:0). Prerequisite: ARCH 2311 or approval of instructor. History of American Cultural expression, using buildings as a vehicle for exploring diverse issues including race, class and gender. Time period 1865 to present. (Writing Intensive)</td>
</tr>
<tr>
<td>5324</td>
<td>History and Theory of Historic Preservation (3:3:0). Survey of theory and practice of historic preservation and restoration; overview of the history of the preservation movement in the U.S.</td>
</tr>
<tr>
<td>5325</td>
<td>Conservation Policies (3:3:0). Survey of federal and state enabling legislation; federal, state, and local policies on historic preservation and urban design, development of preservation strategies.</td>
</tr>
<tr>
<td>5326</td>
<td>History of American Architecture: Pre-Columbian-1900 (3:3:0). A survey of American architecture from the Pre-Columbian period to the year 1900. Architecture will be studied in a broad context that will include American art, literature, city planning, politics, and professional practice.</td>
</tr>
<tr>
<td>5331</td>
<td>Graduate Seminar (3:3:0). Prerequisite: College approval. Critical readings, discussions, and writing assignments on a range of interdisciplinary issues and theoretical positions. May be repeated for credit. (Writing Intensive)</td>
</tr>
<tr>
<td>5333</td>
<td>Special Studies in the History of Architecture (3:3:0). Prerequisite: ARCH 2311 and 2315. Studies in western and nonwestern Architectural history involving written and oral analysis of scholarly sources. Topic varies and may include preservation, class, race and/or gender issues. (Writing Intensive)</td>
</tr>
<tr>
<td>5334</td>
<td>Design Visualization Seminar (3:3:0). Prerequisite: Approval of the instructor. Critical readings, discussions and writing assignments on issues pertaining to design visualization. Topics may vary per semester. May be repeated for credit.</td>
</tr>
<tr>
<td>5335</td>
<td>Internet Media for Visualization Design (3:3:0). Prerequisite: Fundamental understanding of Windows and graphic computer applications or approval of instructor. This course focuses on the design implications and application of interactive Internet visualization media for the communication of virtual environments.</td>
</tr>
<tr>
<td>5336</td>
<td>Architecture Drawing (3:0:9). Skills and techniques of drawing. Translation of perceptions of three-dimensional objects and spaces into graphic expression. Outside assignments required. May be repeated for credit.</td>
</tr>
<tr>
<td>5337</td>
<td>3-D Computer Animation and Imaging (3:3:0). Prerequisite: ARCH 2354, equivalent, or instructor approval. This course covers the theory, design, and application three-dimensional computer animation and imaging.</td>
</tr>
<tr>
<td>5338</td>
<td>Virtual Reality Software and Technology (3:3:0). Prerequisite: 3D model / animation experience, permission of instructor. Focus on the theory, design, implementation and application of creating 3D stereoscopic real-time virtual environments.</td>
</tr>
<tr>
<td>5339</td>
<td>Design Visualization Studio (3:0:6). Prerequisite: ARCH 5343 and 5344 or permission of instructor. Students shall pursue the design and visualization of digital environments for design exploration, communication, research simulation, entertainment or gaming. May be repeated for credit.</td>
</tr>
<tr>
<td>5345</td>
<td>Architectural Technology (3:3:0). Examination of traditional and innovative uses of building materials, the application of industrial and scientific technology, and the integration of the building systems derived from these considerations. May be repeated for credit.</td>
</tr>
<tr>
<td>5346</td>
<td>Architecture Theory Seminar (3:3:0). Architecture as art, science, and a contemporary philosophical concept. Exploration of context and goals. Illustrated lectures. May be repeated for credit. (Writing Intensive)</td>
</tr>
<tr>
<td>5347</td>
<td>Theory in Architecture (3:3:0). 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. (Writing Intensive)</td>
</tr>
<tr>
<td>5348</td>
<td>Architectural Design Programming (3:3:0). Contextual and case studies; analyses of site, activities, space and spatial relationships. Systems and costs criteria. Determination of significant issues, goals, and emerging concepts.</td>
</tr>
<tr>
<td>5355</td>
<td>Architecture Research Methods (3:3:0). Comprehensive survey of qualitative and quantitative research methods and their method-specific hypothesis formulation, data acquisition, verification, and analysis. (Writing Intensive)</td>
</tr>
<tr>
<td>5358</td>
<td>Urban Theory (3:3:0). An extensive writing course proffering a comprehensive exploration of the relationship between culture, the city, planning, and urban design.</td>
</tr>
<tr>
<td>5359</td>
<td>Urban Land Development (3:3:0). 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.</td>
</tr>
<tr>
<td>5365</td>
<td>Community Design and Development Resources (3:3:0). Investigation of development resources available to community and designers emphasizing partnerships and collaboration.</td>
</tr>
<tr>
<td>5361</td>
<td>Architectural Graduate Design I (3:0:6). Prerequisite: ARCH 5365; corequisite or prerequisite ARCH 5362. Guided individual research and documentation in a studio, leading to a seminar architectural project in ARCH 5692. (Writing Intensive)</td>
</tr>
<tr>
<td>5362</td>
<td>Architectural Graduate Design II (6:0:12). Prerequisite: ARCH 5601. Integration of fundamental building systems, functional requirements, spatial composition and interior-exterior relationships. Course broadens the design process and communication skills.</td>
</tr>
<tr>
<td>5363</td>
<td>Urban Design Studio (6:0:12). Explores the interface of culture and architecture in relation to its social and physical environment.</td>
</tr>
<tr>
<td>5692</td>
<td>Master Design Studio II (6:0:12). Prerequisite: ARCH 5395, 5604, and 5605. Design and documentation of a seminal architectural project articulated in ARCH 5395.</td>
</tr>
<tr>
<td>6000</td>
<td>Master’s Thesis (V1-6).</td>
</tr>
<tr>
<td>7000</td>
<td>Research (V1-12).</td>
</tr>
</tbody>
</table>

* Open only to architecture majors or to students with the dean's permission.
College of Arts and Sciences

Jane L. Winer, Ph.D., Dean
202 Holden Hall | Box 41034 | Lubbock, TX 79409-1034
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Arts-Sciences@ttu.edu | www.as.ttu.edu

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About the College

The College of Arts and Sciences offers a broad spectrum of programs and courses in the liberal arts; humanities; mathematics; social, behavioral, and natural sciences. The primary function of the college is to impart to students the knowledge, skills of thinking and communicating, and values and attitudes that constitute a liberal education. The college seeks to instill in them a humanistic spirit, an appreciation of creativity, a commitment to excellence and truth, an ability to think critically and communicate effectively, and a desire for lifelong learning.

The courses and programs in the college also provide a base of knowledge and skills from which students may enter such professional fields of study as law and medicine.

General Undergraduate Degree Requirements

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满-time course load is 15 hours or more 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. To receive full-time financial aid, students must be enrolled for a minimum of 12 hours. Some financial aid programs allow enrollment in less than full-time 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 in one term.

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. 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. Students who 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 in Admissions section of catalog). Approval from the dean is required to take an examination a second time before six months has elapsed, if more advanced material in the same subject has already been completed, or if an examination is in the semester of graduation (generally not allowed).

Grading Practices. The College of Arts and Sciences conforms to university grading practices as set forth in the major section entitled Undergraduate Academics in this catalog. Credits for a course in which a grade of D is earned may not be applied toward fulfill-
ment of the major, adjunct, minor, concentration area, 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 associate dean in the Student Division of the College of Arts and Sciences.

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. 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.

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 offers a broad area of education that includes the social sciences, liberal 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 Advising Center for Texas Tech (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. Credit for courses (other than TTU) taken without prior approval from the associate dean in the Student Division 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 coursework. In addition, the Intention to Graduate form must be submitted upon completion of 80 hours of coursework. Students who have completed 80 or more hours will have a hold placed on their records until they file the Intention to Graduate form.

Teacher Education. The curricula of most of the Bachelor of Arts degree programs and some of the Bachelor of Science programs are 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 College of Education section of this catalog as well as consult the College of Education and the chairperson or undergraduate advisor of the department in which they wish to major.

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 30 semester hours in the major in residence. These hours are in addition to the courses counted toward the first bachelor's degree. Credit by examination and correspondence courses will not satisfy the 30-hour residence requirement. A second bachelor's degree sought by a student who did not graduate from a public Texas university must include the required Core Curriculum.

Undergraduate Degree Programs

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, mass communications, 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). In addition, students will be allowed 3 to 6 hours in visual and performing arts to fulfill the general degree requirement.

Major, Minor, and Electives

Students must take major, minor, and elective courses sufficient to total 120 semester hours, although some majors may require more total 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. Courses used to fulfill the writing intensive requirement are to be taken in residence.

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 to 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 to 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; not more than 8 hours of personal fitness and wellness as 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 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, 2371, 3360, 3365, 3366, 3367, 3368, 3369, 3371, 3372, 3373, 4300, 4360, 4355, 4363, 4366, 4367, 4369, 4378, and 4380 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 1300, 2300 or 3358, CH E 2306, MGT 3373 (MGT 3373 may not be taken by correspondence), PETR 3308.

Foreign Language .................................................................. 11-16

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 1300 and above (except 3430) may be used. Only one of MATH 1300, 1320, and 1420 may be used. Only one of MATH 1330 and 1430 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, 116, 118, 119, 2341, MUTH 3303, PSY 3490, 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, GEOG 3335, 4301, 4321, or HONS 3302.

Technology and Applied Science ......................................... 3

Courses must be selected from the list of Core Curriculum options.

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.

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

ADM 3312, ANTH 3323, 3325, 3346, 3351; ARCH 2311, 2315; CLAS 3302, 3303, 3320, 3330, 3350; Classical and Modern Languages (except those used to fulfill the foreign language requirement); C LT 4305; COMS 3311, 3318; English (except ENGL 2311, 3365, 3366, 3367, 3368, 3369, 3371, 3372, 3373, 4300, 4360, 4355, 4363, 4366, 4367, 4369, 4378, and 4380 as they are not literature courses). History (except those used to fulfill U.S. history requirement); HONS 2301, 2302; JOUR 3350; LAS 2300, 3300, 4300; LARC 3302; NH 1301; PHIL (except 1310, 2310, 3321, 3330, 3331, 4310); POLS 3330, 3331, 3332, 3333; SLAV 3301; VPA 3301; W S 2300, 3341, 4327, 4374.

Visual and Performing Arts .................................................. 6

Art (except ART 3311, 3362, 4315), ARCH 1412, 1441, 1442, DAN 3313, 4301, HONS 1304, 3304, LARC 1401, MUAP 1001, 1002, 1123, 1124, 2001, 2002, 2123, 2124, 2133, 2134, 3001, 3002, 3205, 4001, 4002, MUCP 1201, 1202, any MUEN course except 1103, MHUL 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, 3308, 3309, 4303, SPAN 4392.

Multicultural Requirement .................................................. 3

3 hours of coursework 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 1105, 1206, 2202, MILS 1101, 1102, 3301, 3302, 4301, 4302, and 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 the personal fitness and wellness requirement. 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.

Bachelor of General Studies

The B.G.S. is a unique program for students who wish to study multiple fields in equivalent depth. As an interdisciplinary liberal arts degree, it requires the same general requirements as the Bachelor of Arts degree. Instead of a major and minor, the student selects three concentration areas, each of which meets the minimum requirements of an existing departmental or interdisciplinary minor. Together, the three concentration areas (minor fields) formulate a coherent specialization of interest to the student that is unavailable elsewhere in the university as an organized program of study. The student chooses the three concentrations in consultation with the B.G.S advisor. Each concentration area consists of a minimum of 18 hours in the chosen discipline, for a total of 54 hours across the three areas. Through these self-selected concentration areas, forming an integrated specialization, and with a liberal arts foundation, the B.G.S degree can prepare a student to pursue an intellectual interest, a career goal, or graduate or professional study. For example, a student might focus on a specialization in "science journalism" with concentrations made of minors in biology, chemistry, and journalism. Or one might specialize in "His-
Arts and Sciences

panic studies” using concentrations made of minors in Spanish, history, and Latin American and Iberian studies. Likewise, a student might fulfill coursework in preparation for medical school by forming concentration areas after minors in biology, biochemistry, and psychology; or for law school by basing the concentrations on minors in political science, history, and English. Students who wish to earn teacher certification at the secondary level could make two concentration areas out of the subject matter fields and the third concentration area out of the requisite education courses.

Admission Requirements. A GPA of 2.0 is required. Students declare the general studies major just as they do any major. A visit with the general studies advisor (806.742.3831) is the best place to start. Students who permanently reside at a distance from Texas Tech and who are unable to travel to campus to attend classes may pursue the degree externally using print-based and Internet courses through the Division of Outreach and Distance Education. For information about Distance Education, call 806.742.7200 or visit www kode.ttu.edu.

Graduation Requirements. Requirements for the B.A. degree apply to the B.G.S degree. The student’s official catalog will be the catalog current when the student officially enters the B.G.S. program. All coursework in the general degree requirements, the three concentration areas, and electives must total a minimum of 120 semester hours. Each concentration area shall include 9 hours of Texas Tech coursework, 6 hours at the junior-senior level. Students should be aware that the later one enters the program the greater likelihood of needing more than the minimum total hours to complete the program, due to possible incompatibility of earlier completed courses with the selected concentration areas and general degree requirements. Similarly, prerequisites for courses selected in the concentration areas must be completed and, depending on the concentration, may not count toward the 18-hour minimum. At least 6 hours of upper-division coursework is required in each concentration area, with a total of 40 upper-division hours required for the degree. Students wishing to develop a concentration area based on a minor in the College of Mass Communications, the Rawls College of Business, or the College of Human Sciences must meet the GPA standard and complete necessary prerequisites to take those courses. Alternatively, students having an interest to develop a business or finance oriented concentration may do so, with guidance and approval of appropriate advisors, using courses from such disciplines as economics, personal financial planning, agricultural economics, consumer science, and retailing. Departmental requirements for entering these courses must be met.

Research Option. Highly motivated and focused students may wish to culminate the integration of concentration areas in a written research project supervised by a student-selected faculty member from one of the concentration areas. This can be done by selecting individual research or individual studies courses for the final 6 hours of coursework in one or more of the concentrations. Under the direction of a faculty member, such courses engage the student in readings, research, or an applied project related to the concentration areas. The faculty member may recommend, or the student may elect, that the project be evaluated by at least one other faculty member from each of the other concentration areas.

Bachelor of General Studies with Global Affairs Specialization. This specially structured interdisciplinary program is for students interested in pursuing global careers with the U.S. government, international organizations, nongovernmental organizations, private voluntary organizations, or further academic studies in related fields. The specialization consists of three inter-related minors, or concentration areas, of at least 18 hours each. All students will take the international studies minor as one concentration area. Working closely with the global affairs specialization advisor, students may choose the other two concentration areas from minors that offer substantial international content, in accord with their interests and career goals. For example, a student might choose one concentration area from the existing interdisciplinary studies minor programs, such as Asian studies, European studies, Russian language and area studies, or Latin American and Iberian studies. The other concentration area could be from a social science discipline, history, additional foreign language study, or another field that fits the student’s individual needs and interests. Students will consult with the program advisor to ensure that the areas of concentration they choose, in addition to the international studies minor, fit with the specialization’s requirements. (Note: In lieu of the B.G.S. program, students seeking a concentration in international economics should consider the Bachelor of Science in International Economics degree offered by the Department of Economics and Geography.) To complete the B.G.S. degree requirements for this specialization successfully, students must demonstrate proficiency in a foreign language by taking a minimum of two courses at a junior or senior level. Students can select language study as one of their three areas of concentration. The research option of the general studies degree is available to students in the global affairs specialization. To enhance their language and inter-cultural skills, students taking the specialization are strongly encouraged to undertake one semester of study abroad at one of Texas Tech’s international centers or through an affiliated program. The program advisor will work with students to assure that their degree plans comprehensively address their areas of interest. Contact information: Dr. John Barkdull, Department of Political Science, 227 Holden Hall, 806.742.4043, john.barkdull@ttu.edu.

Bachelor of Science

The B.S. degree permits a greater degree of specialization than the B.A. and is offered by the Departments of 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 ......................................... 11-16
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

Three 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

Three hours of coursework chosen from the Core Curriculum requirements approved list. This course may be used to satisfy another general degree requirement.

Major ....................................................... (min.) 36
(Including a minimum of 24 junior-senior hours)

Minor ....................................................... (min.) 18
Including a minimum of 6 junior-senior hours. The minor may be any departmental minor, an established interdisciplinary minor approved by the major department, or a student-initiated minor approved by the associate dean.

Adjunct Requirements .................................. As required
Requirements determined by the major department as essential to supplement the major.

Total for Degree .......................................... (min.) 121

Specific curricula are provided for all programs leading to the Bachelor of Science degree. Students are expected to 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 coursework 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>12</td>
</tr>
<tr>
<td>(Inc. ENGL 2311 and any ENGL literature course)</td>
<td></td>
</tr>
<tr>
<td>Foreign Language</td>
<td>11-16</td>
</tr>
<tr>
<td>Mathematics</td>
<td>6</td>
</tr>
<tr>
<td>(MATH 1330 and 1331 or more advanced courses)</td>
<td></td>
</tr>
<tr>
<td>Political Science and History</td>
<td>12</td>
</tr>
<tr>
<td>Personal Fitness and Wellness</td>
<td>2</td>
</tr>
<tr>
<td>Oral Communication</td>
<td>3</td>
</tr>
<tr>
<td>Natural (Laboratory) Science</td>
<td>8</td>
</tr>
<tr>
<td>Technology and Applied Science</td>
<td>3</td>
</tr>
<tr>
<td>Humanities</td>
<td>3</td>
</tr>
<tr>
<td>Three hours of literature taken in the English requirement will also satisfy this requirement.</td>
<td></td>
</tr>
<tr>
<td>Visual and Performing Arts</td>
<td>3</td>
</tr>
<tr>
<td>Individual or Group Behavior</td>
<td>3</td>
</tr>
<tr>
<td>(May be satisfied with courses taken in major)</td>
<td></td>
</tr>
<tr>
<td><strong>Total for Degree</strong></td>
<td>121</td>
</tr>
</tbody>
</table>

For more information and academic advice, contact the Department of Economics and Geography.

**'3+3' Early Admission Joint Program With Texas Tech School of Law**

Honors students in good standing who are working toward the B.A., B.S., B.F.A., B.M., or B.G.S. degree in the College of Arts and Sciences, the College of Visual and Performing Arts, or the Honors College may gain early admission to the Texas Tech University School of Law by completing coursework totaling a minimum of 100 semester hours in their undergraduate college and then completing the first year of coursework at the Texas Tech School of Law. To be eligible to participate in this program, students must meet all of the following criteria:

- Have an undergraduate GPA of at least 3.5.
- Have an LSAT score that places them in the top 10% nationwide.
- Have a SAT of at least 1300 or an ACT of at least 29.
- Be enrolled in the Honors College and making satisfactory progress toward an Arts and Sciences B.A. or B.S. degree consistent with the regulations established by the College of Arts and Sciences and the Honors College.
- Submit an Honors certification form to the Honors College at the time of application to the Law School.

Of the 100 semester hours of undergraduate work, at least the last 30 must be completed from 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. (Note that the Honors College residency requirement generally requires a minimum of three long semesters of work from Texas Tech for Honors graduation.)

The 100 hours of work must satisfy all graduation requirements for the B.A. or B.S. degree in the College of Arts and Sciences at Texas Tech, with the exception of requirements in the minor. Honors students must complete the minimum requirements for an Honors College designation as outlined in the Honors Student Handbook.

To earn the baccalaureate degree, the applicant for a degree under this plan must submit an official transcript from the Texas Tech School of Law following completion of the first year of coursework in the School of Law. Evidence of the successful completion of the first year of law school coursework (totaling 29 hours) will substitute for the 18 hours required for the minor and any electives needed (totaling up to 11 hours) for the baccalaureate degree.

The total number of credit hours from outside the College of Arts and Sciences (including those transferred as non-Arts and Sciences credit) and the credit hours from the School of Law applied to the baccalaureate degree cannot exceed 30 hours.

Any student selecting the “3+3” Early Admission Program option should plan carefully in consultation with the associate deans of the Honors College and the College of Arts and Sciences at least one year prior to beginning professional school. Due to the unique nature of the law school application process, students are strongly encouraged to meet with the Assistant Dean for Admissions at the School of Law at least two years prior to the desired start date for law school. Students must apply for the “3+3” program during the fall semester of their third year and must take the LSAT by December of that year. The Admissions Committee applies the same standards and procedures to both “3+3” applicants and traditional admission applicants. Students wishing to pursue the “3+3” program also must file a degree plan with an Arts and Sciences major and a Law minor at least one semester prior to beginning their coursework in the School of Law.

Further information may be found at www.prelaw.ttu.edu, www.honr.ttu.edu, and www.law.ttu.edu/lawWeb/prospective/specialprograms/3plus3Program.shtm.

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**Interdisciplinary Programs**

**Asian Studies**

The minor in Asian studies allows students throughout the university to develop expertise in a vital part of the world. Besides taking core courses and electives drawn from a wide range of disciplines, including architecture, geography, history, philosophy, and political science, students may also study Asian languages such as Chinese, Japanese, or Vietnamese. The minor in Asian Studies requires 18 hours of coursework in addition to the courses taken to fulfill a student’s major. **Contact information:** Dr. Patricia Pelley, Department of History, 806.742.1004 ext. 242, patricia.pelley@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, PAX 806.742.1088, yung.mei.tsai@ttu.edu.
Comparative Literature

Undergraduate Program

Comparative literature is designed for students who are interested in critical studies of literatures and cultures across national boundaries. The program provides a 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 coursework from either the Department of Classical and Modern Languages and Literatures or the Department of English if such coursework 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 4300, 4305, 4317, ENGL 3337, 3384, 3389, GERM 4312, HUM 2301, 2302, SLAV 3301, and W S 4310. Individual minor programs are arranged by the student and the director of the comparative literature program. This minor may not include coursework in the student’s major field unless such coursework is over and above the minimum catalog requirements for the major. Contact information: Dr. Yuan Shu, Department of English, 806.742.2500 ext. 240, yuan.shu@ttu.edu

Undergraduate Courses in Comparative Literature (C LT)

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.

Environmental Studies

The college offers an interdisciplinary minor in environmental studies. This minor is non-technical 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.

Graduate Program / Comparative Literature

Administered by the Comparative Literature Committee, this interdisciplinary specialization gives students the opportunity to study literature from a global perspective, to study two or more national literatures, and to concentrate attention upon the following special fields: periods, genres, theories, or relationships between literatures and other arts and disciplines.

 Majors in classical humanities, English, French, German, and Spanish with specializations in comparative literature are available at the master’s level. At the doctoral level, majors are offered in English and Spanish with specializations in comparative literature. Students specializing in comparative literature at both the M.A. and Ph.D. levels must be admitted to the program in which they plan to major (e.g., English, Spanish). The graduate advisor of the program in comparative literature oversees the preparation of the comparative literature specialization.

 Comparative literature candidates who are not international students should have completed sufficient language study to begin or continue graduate work in the literature of at least two languages. Inquiries concerning sound preparation for specializations in comparative literature at the master’s and doctor’s level should be addressed to the graduate advisor of the program in comparative literature.

 Students are required to take at least five courses for the specialization at the master’s level, including at least two graduate literature courses in languages other than their major and at least two graduate comparative literature (C LT) courses. The fifth course may be an interdisciplinary elective approved by the graduate advisor of the comparative literature program. Degree plans must be approved by both the student’s major advisor and the graduate advisor in comparative literature.

 At the Ph.D. level, the specialization involves a minimum of six courses, including at least two in comparative literature (C LT) and at least three graduate courses taught in one or more foreign languages. The sixth course may be an interdisciplinary elective approved by the graduate advisor of the comparative literature program. A student’s program is supervised by a doctoral committee drawn up in consultation with the student’s major advisor and the graduate advisor in comparative literature.

 Graduate Courses in Comparative Literature (C LT)

5301. Theories of Literature (3:3:0). Intensive exploration of selected theories or methodologies of literary study. May be repeated.

5310. Literature and Cultural Studies (3:3:0). Places a variety of national literatures in relation to other cultural institutions and structures. May be repeated for credit. Readings in English.

5314. Literature and Gender (3:3:0). Examines the representation of gender in various national literatures. May be repeated for credit.

5355. Studies in Comparative Literature (3:3:0). Practice of the study of comparative literature with emphasis on themes and motifs. (ENGL 5355)

7000. Research (V1-12).
No more than 6 hours from any department or program may count toward the minor. At least 6 hours must be from upper-division courses. Electives in the program include: AEAC 4313, ANTH 3314, 3317, ATMO 1300, 2301, BIOL 1305, 1401, 1402, 3303, 3307, 3309, 4310, 4330, 4350, 4392, ECO 3336, ENTX 4000, 4301, GEOG 1401, 3300, 3301, 3310, 3335, 3533, 3560, 4301, 4321, 4337, GEOI 1303, 3322, 3323, HLTH 2302, HIST 3327, 4323, LARC 3302, 4302, 4303, PHIL 3325, PSS 4330, RFWM 2301, 2302, 2305, 2307, 3302, 3307. Contact information: Dr. Mark Stoll, Department of History, 806.742.3744, mark.stoll@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 coursework 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 also should take at least one course in a European language other than English (or a course on an appropriate literature in 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. Aliza Wong, Department of History, 806.742.3744 ext. 227, aliza.wong@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: COMS 3333, 3334, HLTH 1300, 1305, 1307, 3313, 3314, 4312, HDFS 2303, 2322, 3301, 3320, 3321, 3322, 3324, 3326, 3331, 3332, 3530, HIST 3323, 3341, 4325, 4326, 4374, 4380, PFP 2325, 3301, PSY 3341, 4300, 4301, SOC 2331, 3325, 3331, S W 3311, 3312. Contact information: Dr. Charlotte Dunham, Department of Sociology, Anthropology, and Social Work, 806.742.2401 ext. 226, charlotte.dunham@ttu.edu

Graduate Program / Ethnic Studies

Ethnic studies is offered as an interdisciplinary minor for students who may find a greater knowledge of ethnic groups and majority–minority relations a useful complement to their major area of study. With the continued prominence of public issues related to race and ethnicity, students from diverse fields may benefit from either a broader or a more specialized knowledge of ethnicity. Students may focus on African-American, Mexican-American, or Native-American studies. The Ethnic Studies Committee, which is comprised of faculty from the departments offering courses acceptable as part of the minor, supervises the minor degree plans.

A doctoral minor consists of at least 15 hours of ethnic studies courses to be taken in at least two departments outside the student’s major field. A minor at the master’s level consists of 6 hours of ethnic studies courses in two departments outside the major. General rules of the Graduate School governing minors at both degree levels apply.

Courses in the ethnic studies program include, but are not limited to the following:

Graduate Program Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 5322</td>
<td>Social Anthropology (3:3:0)</td>
<td></td>
</tr>
<tr>
<td>ANTH 5323*</td>
<td>Topics in Cultural Anthropology (3:3:0)</td>
<td></td>
</tr>
<tr>
<td>ANTH 7000*</td>
<td>Research (V1-12)</td>
<td></td>
</tr>
<tr>
<td>ART 5315</td>
<td>Arts of the Indian Americas (3:3:0)</td>
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</tr>
<tr>
<td>COMS 5302</td>
<td>Intercultural Communication (3:3:0)</td>
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<tr>
<td>ECO 7000*</td>
<td>Research (V1-12)</td>
<td></td>
</tr>
<tr>
<td>EDBL 5332*</td>
<td>Foundations of Bilingual Education (3:3:0)</td>
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<tr>
<td>EDBL 5333*</td>
<td>Teaching the Multicultural-Multilingual Student (3:3:0)</td>
<td></td>
</tr>
<tr>
<td>EDEC 5314</td>
<td>Early Education for Culturally Diverse Children (3:3:0)</td>
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<tr>
<td>EDCI 7000*</td>
<td>Research (V1-12)</td>
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<tr>
<td>EDEL 7000*</td>
<td>Research (V1-12)</td>
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<tr>
<td>HIST 5319</td>
<td>Studies in Native-American History (3:3:0)</td>
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<tr>
<td>HIST 5333</td>
<td>Studies in African-American History (3:3:0)</td>
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<tr>
<td>HIST 6304*</td>
<td>Seminar in American History (3:3:0)</td>
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<td>HIST 7000*</td>
<td>Research (V1-12)</td>
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<tr>
<td>POLS 5327*</td>
<td>Selected Topics in American Government and Politics (3:3:0)</td>
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<td>POLS 7000*</td>
<td>Research (V1-12)</td>
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<td>PSY 5332</td>
<td>Stereotypes and Prejudice (3:3:0)</td>
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<tr>
<td>SOC 5312</td>
<td>Seminar in Urban Problems (3:3:0)</td>
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<td>SOC 5313</td>
<td>Seminar in Minority Relations (3:3:0)</td>
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<td>SOC 7000*</td>
<td>Research (V1-12)</td>
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<td>SPAN 5381</td>
<td>Hispanic Literature of the Southwest (3:3:0)</td>
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</tr>
<tr>
<td>SPAN 7000*</td>
<td>Research (V1-12)</td>
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* Courses marked with an asterisk will be considered acceptable as part of the minor when the topic studied deals with ethnic groups.
**Forensic Sciences**

The goal of the interdisciplinary minor is to offer students the opportunity to take courses pertinent to scientific and methodological issues associated with crime investigation and criminal behavior. All students minoring in forensic sciences must complete at least 18 hours in designated forensic-related courses. No more than 12 hours may be taken in one department or program. At least 12 hours must be taken in upper-division courses. Courses with a grade of D cannot be counted toward fulfillment of the minor. At least 6 hours of upper-division courses must be taken at Texas Tech. All students who are enrolled in the forensic sciences minor are required to enroll in the introductory forensic science course PHYS 2351 or ANTH 3300.

Course options in the physical and biological sciences include CHEM 3141, 3341, 4010, 4114, 4314, PHYS 2351, BIOL 3416, MBIO 3401, ZOOL 4321, ENTR 4325, 4326, ANTH 2305, 4343, and AHMT 4305.

Course options in the social and behavioral sciences include ANTH 2305, 3300, 4343, PSY 4000, 4384, SOC 3327, 3329, 3335, 4325, 4327, and NURS 3365.

Designated courses may require prerequisites before the student can enroll in them. Consult the catalog or contact the specific instructors for details. Prerequisite courses (except PHYS 2351 and ANTH 2305) do not count toward the minor. Cross-listed courses that are required by the major cannot be counted toward the minor.

**Contact information:** Dr. Robert Paine; Department of Sociology, Anthropology, and Social Work; 806.742.2401 ext. 241; robert.paine@ttu.edu

**General Studies**

For a description of the General Studies degree program, see “Bachelor of General Studies” in the “Undergraduate Degree Programs” section of the College of Arts and Sciences.

**Courses in General Studies (GST)**

**2001.** General Studies Abroad (V1-12). Individual studies in interdisciplinary, international, and multicultural experiences.

**2300.** Introduction to General Studies (3). An optional 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 an optional 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 approval.

**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 three required courses and three electives. The required courses include (1) GEOG 3300 or GEOG 3428; (2) GEOG 4302, RWFM 4315, or GEOG 4332; and (3) GEOG 3335, RWFM 4403, or GEOG 4331. Three electives can be chosen from ISQS 2340 or AGSC 2300, GEOG 3335, 4310, 4400, ISQS 2341, 3348, MATH 2300, ENGL 2311, 3365. Course substitutions are allowed, if approved by the director. Because this is interdisciplinary, no more than two courses from the student’s major department may be used toward the GIS minor. **Contact information:** Dr. Jeff Lee, Department of Economics and Geography, 806.742.2466 ext. 247, jeff.lee@ttu.edu.

**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 within the College of Arts and Sciences. Courses from other colleges may be accepted if they have been previously approved by the program advisors. The international studies minor is a required concentration area in the global affairs specialization for the Bachelor of General Studies degree.

**Contact information:** Dr. John Barkdull, Department of Political Science, john.barkdull@ttu.edu, 806.742.3121

**Latin American and Iberian Studies (LAIS)**

**Undergraduate Program**

A major in Latin American and Iberian Studies for a Bachelor of Arts degree consists of coursework in several departments. It requires 30 semester hours, which must be completed as follows:

- **Area I (9 hours):** Upper-division Latin American and Iberian content courses in Spanish and/or 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 3300 or 4300.

With prior approval, students may plan programs at variance with the above requirements to meet their special interests. 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.

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. LAIS 2300 and 3300 or 4300 are required. In addition, the standard requirements for a B.A. degree must be met. **Contact information:** Dr. Alberto Julian Perez, Box 42071, 256 Foreign Languages, 806.742.1562, julian.perez@ttu.edu

**Undergraduate Courses in Latin American and Iberian Studies (LAIS)**

**2300.** Latin America and Iberia: An Interdisciplinary Introduction (3:3:0). A basic survey of Latin American and Iberian culture and civilization.

**3300.** Topics in Latin American and Iberian Studies (3:3:0). Selected multidisciplinary readings dealing with different topics of Latin American and Iberian culture, literature, history and politics.

**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.
The remaining 6 hours may be taken from any group. Students are encouraged to work with a linguistics professor to construct an appropriate individualized program of courses.

A minor at the master’s level shall consist of a minimum of 9 hours in at least two areas outside the major. Certain courses not listed below may be considered acceptable as part of the minor when the topic studied deals with Latin America or Iberia. Students should contact the course instructor in the department in which the course is offered and the director of Latin American and Iberian Studies to determine if such courses are acceptable.

**Contact information:** Dr. Alberto Julián Pérez, Department of Classical and Modern Languages and Literatures, 806.742.3145

### Undergraduate Program

**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 within the College of Education.

**Contact information:** Dr. Colleen Fitzgerald, Department of English, 806.742.2500, colleen.fitzgerald@ttu.edu or Dr. Jim Holland, Department of Classical and Modern Languages and Literatures, 806.742.1565, jim.holland@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. consists 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. Students should take only one of ANTH 3305, ENGL 3371, or LING 4335, as all three are general introductions to linguistics. Students are encouraged to work with a linguistics professor to construct an appropriate individualized program of courses.

**Group A — ANTH 3305, ENGL 3371, LING 4335**

**Group B — ASL 3312, ENGL 3373, FREN 4302, 4306, GERM 4301, LAT 4302, SPAN 4302, 4303**

**Group C — EDBL 3337, ENGL 3372, 4373, LING 4311**

**Group D — ANTH 3351, COMS 3332, EDBL 3334, EDLL 3352, ENGL 2371, 4300, MCOM 3300, PHIL 4310, 4331, PSY 4324, 4343**

### Undergraduate Courses in 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.
Graduate Program / Linguistics

Graduate study in linguistics may be pursued through either the Department of English or the Department of Classical and Modern Languages and Literatures or students may pursue an interdisciplinary program combining courses not only from these departments but also others.

A Master of Arts degree is offered through the Department of English. Students may select a 36-hour nonthesis or a 30-hour plus thesis option with a concentration in linguistics. The department also offers a doctorate with a concentration in linguistics requiring students to take 18 hours of linguistics and write a dissertation on linguistics under the guidance of English faculty. English also offers a Certificate in Linguistics that can be earned by completing a minimum of 12 hours of linguistics courses in the Department of English. Students may earn a certificate without being admitted to a graduate degree program in the Department of English.

The Department of English offers graduate study focusing on the core areas of linguistics (e.g., syntax, phonology, morphology, semantics) as well as the structure of English, including its historical development and contemporary American dialects. The department includes specialists in East Asian and Native American languages and in Old and Middle English. Limited support is available for teaching assistantships in composition and lower-level courses.

A Master of Arts degree in Applied Linguistics is offered through the Department of Classical and Modern Languages and Literatures. Students may select a 36-hour nonthesis or a 30-hour plus thesis option in either general applied linguistics or in teaching English as a second or foreign language.

The option in general applied linguistics prepares students who plan to design programs for and/or teach second or foreign languages; it also provides a foundation in applied linguistics for students who plan doctoral studies in first and second language acquisition, second and foreign language teaching and learning, language testing and assessment, studies in second language composition, translation, language planning, or corpus linguistics. Both options include work using CMLL’s digital language laboratory and SCOLA (Satellite Communications for Learning) facilities for teaching and research. Faculty from several areas (anthropology, bilingual education, English, language literacy education, mass communications, psychology, and Spanish) offer supporting courses that may count toward the degree.

Candidates must demonstrate knowledge of a language other than English. Oral and comprehensive examinations are required. Limited support is available for teaching assistantships in TESOL and may be available for teaching assistantships in Arabic, American Sign Language, Chinese, and Japanese.

Graduate Courses in Linguistics (LING)

5310. Second and Foreign Language Testing (3:3:0). This course is designed to give language teachers a working knowledge of testing principles applied to second and foreign language classrooms and programs.


5325. Technology for Teaching Second and Foreign Languages (3:3:0). A study of theory, research, and practice in the use of technology for teaching second and foreign languages including audio, video, CALL, and Internet technologies.

5330. Second and Foreign Language Acquisition (3:3:0). A study of the theories and processes of second and foreign language acquisition, with emphasis on adult learners.

5335. Introduction to Linguistics for Second and Foreign Language Educators (3:3:0). Concepts in linguistics and linguistics analysis as they relate to bilingual education, ESL, and second or foreign languages.

5345. Seminar in Applied Linguistics (3:3:0). Study of current topics of interest in applied linguistics. Course content will vary. May be repeated for credit.


5355. Teaching English in International Contexts (3:3:0). This course is designed to prepare students methodologically and professionally for teaching English in international contexts.

6000. Master’s Thesis (V1-12).

7000. Research (V1-12).

Religion Studies

A minor in religion studies 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 understanding 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 coursework 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.

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. Contact information: Dr. D. Paul Johnson; Department of Sociology, Anthropology, and Social Work; 278A Holden Hall; d.paul.johnson@ttu.edu; 806.742.2400.

Core Courses: ANTH 3323, CLAS 3302, 3350, ENGL 3383, 3384, HIST 3328, 3342, 3344, 4347, 4349, PHIL 2350, 3302, 3324, POLS 3339, PSY 3310, SOC 4331

Other Courses: ANTH 3325, 3346, ART 3317, HIST 3348, 3394, 3395, 3398, 4374, PHIL 2320, POLS 3330, 3332

Russian Language and Area Studies

A major or minor in Russian language and area studies for a Bachelor of Arts degree consists of integrated coursework in several departments. 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 coursework. RUSN 1501 and 1502 are prerequisites of, but do not count towards, the major or minor. RUSN 2301, 2302 (or their equivalents), and 3304 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 coursework is necessary from courses approved for the major. RUSN 2301, 2302 (or their equivalents), and 3304 are required for all students seeking a minor. Courses taken for this major or minor may not be used to satisfy requirements for another major or minor. Standard requirements for a B.A. degree must be met. Contact information: Dr. Anthony Qualin and Dr. Erin Collopy, Department of Classical and Modern Languages and Literatures, 806.742.3145 ext. 244, anthony.qualin@ttu.edu
Department of Biological Sciences

Faculty

John C. Zak, Ph.D., Chairperson

Horn Professor: R. Baker


Associate Professors: Bilimoria, Collie, Deslippe, Diamond-Tissue, Dini, Gollahon, Held, Jeter, McGinley, McIntyre, Reilly, Rice, Rock, Rosenheimer, H. Zhang

Assistant Professors: Cannon, Salazar-Bravo, Schmidt, Xie, K. Zhang

Instructors: Atanassov, Dani, McAliley, Zimmermann

Adjunct Faculty: Acosta-Martinez, Arsuffi, Owen, Parajulee, Payton, Rodgers

About the Program

This department supervises the following degree programs:

- Bachelor of Science in Biology
- Bachelor of Science in Cell and Molecular Biology
- Bachelor of Science in Microbiology
- Bachelor of Science in Zoology
- Master of Science in Biology
- Master of Science in Biological Informatics
- Master of Science in Microbiology
- Master of Science in Zoology
- Doctor of Philosophy in Biology
- Doctor of Philosophy in Zoology

Undergraduate Program

Students majoring in biology for the B.S. degree must complete a minimum of 39 semester hours, including the following:

- BIOL 1403, 1404, 3309, 3320, 3120, 3416, and 4305.
- Additional hours at the junior or senior level to bring the total course hours from biological sciences to a minimum of 39, and may include either PHIL 3322 or 3325.

Students majoring in biology for the B.S. degree may gain a specialization in ecology and environmental biology by completing a minimum of 39 semester hours from this department, including the following:

- BIOL 1403, 1404, 3416, 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 (BIOL 4330, BOT 3404, ZOOL 3303, 3406, 4310, 4406, 4408, 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, or may substitute either PHIL 3322 or 3325.

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 4300 (counts as a laboratory course), BOT 3401, 3409, MBIO 4303, 4310, 4402, 4404, 4406, ZOOL 3401, 4304, 4009.
- 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), or may use either PHIL 3322 or 3325.
  - Strongly recommends 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 39 hours of core courses as well as additional biological sciences courses. Requirements include the following:

- BIOL 1403, 1404, 4305, BIOL 3416 or MBIO 4406, BIOL 4101 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 39.
- CHEM 1307, 1308, 1107, 1108, 3305, 3306, 3105, 3106, 3311, 3312.
- Recommended electives: BIOL 3416, 4300, 4301, ZOOL 3303, MBIO 4400, and FSDC 3301. May also use either PHIL 3322 or 3325. May also use either PHIL 3322 or 3325.

Students majoring in zoology for the B.S. degree must complete a minimum of 39 hours of the following biological science courses:

- BIOL 1403, 1404, 3120, 3309, 3320, 3416, 4305.
- Any four junior or senior level ZOOL courses (BIOL 3302 may count for one of the four).
- Additional biological science courses at the junior or senior level to bring the total course hours to a minimum of 39. May also use either PHIL 3322 or 3325.

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 advice. Information describing research interests of the faculty are available from advisors or on the departmental Web site at www.biol.ttu.edu. No more than 6 hours of undergraduate research credit may be counted toward any major in the department.

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 cal-
Arts and Sciences

of research credit (BIOL 4100) may be used to fulfill the minor BIOL 3320; for microbiology minor, MBIO 3401. Only 1 hour upper-division ZOOL class; for cell and molecular biology minor, level courses. Coursework for the zoology minor must include one these hours; another 6 hours must come from junior and senior in biological sciences (includes courses with BIOL, BOT, MBIO, wishing to minor in one of these fields must complete 18 hours cell and molecular biology, microbiology, or zoology. Students department and at least 6 hours of upper-division biological sciences courses for all majors in this Departmental Residency Requirement.

requirements for a major or minor (including adjunct requirements and minors from other departments) in any program in this department.

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. Coursework 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 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 1403 and 1404 or 1408 and 2401; 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 1403 and 1404 or 1408 and 2401; 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 3320, 4305 or ZOOL 3303.

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 taking 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 taking 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 Academic Testing Services, but advanced placement scores for BIOL 1401 and 1402 will not be accepted as credit toward major requirements in the department.

Biological Informatics (BINF) (To interpret course descriptions, see page 8.)

Graduate Course

5301. Biological Informatics (3:3:0). Introduction to assessment of data in computer data bases, management of multiple layers of biological information, and exploring hidden patterns in the data.

Biology (BIOL) (To interpret course descriptions, see page 8.)

Undergraduate Courses

1113. [BIOL 2106, 2406, ENVR 1101, 1401] Environmental Problems Laboratory (1:0:3). Prerequisite: BIOL 1305 (or concurrent enrollment) or permission of instructor. Laboratory and field studies of environmental problems. Not for major credit.

1305. [BIOL 2306, 2406, ENVR 1301, 1401] 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.

Graduate Program

The master’s and doctoral programs include specializations in the areas of animal physiology and biomedical sciences, biological informatics, ecology, evolution and systematic biology, microbiology, plant physiology, plant biotechnology, and quantitative biology.

Once admitted to a master’s or doctoral degree program, the student may be required by his or her advisory committee to take a preliminary, diagnostic examination that includes subject-matter usually required of undergraduates. If the preliminary examination reveals serious weaknesses in the student’s subject-matter background, the student may be required to take remedial courses designated by the advisory committee.

Doctoral students must have five members on their advisory committee. Otherwise, the basic degree requirements of the Graduate School determine the policy of the department. The Department of Biological Sciences has no general requirement of a foreign language. However, it may be necessary for a student to demonstrate proficiency in a foreign language in certain programs, if such is necessary for research purposes. The student’s advisory committee will make recommendations concerning language options, statistics, and basic work in other sciences.

The 36-hour nonthesis option may be elected by students working toward the M.S. degrees in biology, microbiology, biological informatics, and zoology. However, those students who expect to work beyond the M.S. degree, and toward the Ph.D. degree are strongly encouraged to choose the 30-hour thesis option.

All graduate students majoring in this department are required to take BIOL 6022 during their first fall semester after acceptance in the graduate degree program. During their first year, teaching assistants are required to take a special topics course (BIOL 6301) that emphasizes development of teaching skills.
1401. [BIOL 1411] 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.

1402. [BIOL 1413] 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.

1403. [BIOL 1406] Biology I (4:3:3). Prerequisite: One year of high school biology. Enrollment as a freshman requires a minimum composite SATI score of 1100, or a minimum composite ACT score of 24, or a minimum AP Biology score of 5. Students accepted provisionally cannot take BIOL 1403. Fundamentals of molecular biology, cell biology, genetics, and evolutionary theory. First semester of an integrated course recommended for majors studying in biological sciences or related disciplines. (Writing Intensive)


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.

3109. Principles of Ecology Laboratory (1:0:3). Prerequisite or corequisite: BIOL 3309. Explores ecology through laboratory and field exercises that enhance understanding of ecological processes spanning multiple levels from individuals to ecosystems.

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.

3201. Coral Reef Monitoring (2:2:2). Prerequisite: One year of introductory biology; open-water scuba certification. Course is taught from a sailboat and introduces students to coral reef ecology and diversity, and techniques to monitor fish populations.

3202. Reef Fish Monitoring (2:2:2). Prerequisite: One year of introductory biology; open-water scuba certification. Course is taught from a sailboat and introduces students to ichthyology, reef fish ecology, and techniques to monitor fish populations.

3301. Field Ecology (3:3:3). Prerequisite: One year of introductory biology. Course teaches students how to design, conduct, analyze, and report on the results of field studies in aquatic and terrestrial environments.

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.

3303. Tropical Marine Biology (3:3:3). Prerequisite: One year of introductory biology or Honors integrated science. This course introduces students to the ecology and diversity of tropical marine communities.

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 3309. Introduction to population biology theory with emphasis on intergenetics and ecology. (Writing Intensive)

3309. Principles of Ecology (3:3:0). Prerequisite: BIOL 1305, 1401, 1402, or consent of instructor. 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.


3416. Genetics (4:3:3). Prerequisite: BIOL 1401, 1402, or 1403. Genetic principles with emphasis on mechanisms and problem solving. (Writing Intensive)

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. (Writing Intensive)

4101. Undergraduate Seminar (1:1:0). 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. No more than 6 hours can be applied to degree requirements.

4103. 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 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. No more than 6 hours can be applied to degree requirements.

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 credit toward degree requirements if content is different.

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. (Writing Intensive)

4305. Organic Evolution (3:3:0). Prerequisite: BIOL 3416 or MBIO 4406. The principles and processes of evolution and how they relate to the ecology, physiology, behavior, morphology, and systematic classification of organisms. (Writing Intensive)

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. F, even years.

4320. Molecular Biology (3:3:0). Prerequisite: BIOL 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. (Writing Intensive)

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: BOT 3401. Investigation of the physiological processes of plants that contribute to understanding the ecological distribution and evolutionary success of plants in their physical environment.

4392. Marine Biology (3:3:0). Prerequisite: 1403 and 1404 or consent of instructor. Introduction to the study of marine organisms and their environments.
Arts and Sciences

5305. Advanced Cancer Biology (3:3:0). Prerequisite: BIOL 5320; ZOOL 5304 is recommended. This course presents a comprehensive overview covering the history of cancer biology to the most recent findings in the field. Molecular and cellular biology as well as clinical topics will be covered.

5309. Advanced Ecology (3:3:0). Prerequisite: Background in organismal biology or undergraduate ecology. A detailed examination of the structural and functional relationships underlying the organization of populations, communities, and ecosystems.

5310. Advanced Community Ecology (3:3:0). Prerequisite: A course in ecology or consent of instructor. An investigation of both theoretical and experimental approaches to understanding the composition, diversity, and structure of plant, animal, and microbial communities. E even years.

5311. Ecology for Teachers (3:3:0). Prerequisite: Admission to the Multidisciplinary Science Master's Program or consent of instructor. An investigation into ecology for individuals, populations, communities, and ecosystems for practicing teachers.

5312. Cell and Molecular Biology for Teachers (3:3:0). Prerequisite: Admission to the Multidisciplinary Science Master's Program or consent of instructor. An investigation into cellular and molecular biology intended for practicing teachers.

5320. Advanced Molecular Ecology (3:3:0). Coverage includes a rigorous examination of molecular processes in cellular functioning. Experimental approaches used to investigate molecular events in eukaryotes, prokaryotes, and viruses will be emphasized. S

5330. Advanced Landscape Ecology (3:3:0). Prerequisite: Consent of instructor. In-depth examination of how we quantify patterns and effects of spatial heterogeneity on organisms and ecological processes. Discussion section is required. F, odd years.

5401. Advanced Plant Physiology (4:3:3). Prerequisite: BIOL 3303 and 3307, or consent of instructor. Theory and techniques of system analysis and mathematical modeling applied to ecological problems. S, even years.

5402. Advanced Population Biology (4:3:3). Prerequisite: BIOL 3301, 3303, or equivalent. Introduction to the genetics or ecology of populations including a survey of topical, historic, and current literature with emphasis on experimental evaluation of testable hypotheses. S.

5600. Master's Thesis (VI-6).

6100. Advanced 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 additional credit.

6101. Seminar (1-1:0). Various topics in modern biology. May be repeated for credit.

6202. Preparation for Graduate Learning and Teaching in Biology (2:2:0). Prerequisite: Acceptance in a graduate degree program in the Department of Biological Sciences or consent of instructor. Preparation of graduate students for the roles of scholar, researcher, and teaching assistant. Emphasizes literature research, preparation of visual aids, innovative teaching strategies, and problem-solving methods. E

6301. Advanced 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.

6304. Principles and Practice of Phylogenetic Systematics (3:3:0). Prerequisite: BIOL 4305 or 5305; ZOOL 6302 recommended. Character, analysis, phylogeny reconstruction, consensus procedures, and phylogenetic classification, using morphological and molecular data.

6309. Advanced Topics in Quantitative Biology (3:3:0). Prerequisite: Consent of instructor. Studies of current applications of mathematics, statistics, and computing to the biological sciences. Content normally different each time offered. May be repeated for additional credit.

6315. Regulation of Gene Expression (3:0:3). Prerequisite: BIOL 5320 or 4320. An advanced, in-depth analysis of current research on mechanisms that regulate eukaryotic gene expression at transcriptional and post-transcriptional levels. S.

6350. Advanced Physiological Plant Ecology (3:3:0). Investigation of the physiological processes of plants that contribute to understanding the ecological distribution and evolutionary success of plants in their physical environment.

6392. Marine Biology (3:3:0). Prerequisite: Undergraduate degree in biology or consent of instructor. The study of marine organisms and their environments.

Undergraduate Courses

3401. Cooperative Research (3-6:0). Prerequisite: Consent of instructor. Activity directed toward fulfillment of the senior year program. May be repeated for additional credit.

Graduate Courses

6408. Research Techniques in Electron Microscopy (4:1:6). Prerequisite: MATH 1452, 2452. Introduction to operation of electron microscopes emphasizing independent work with organic or inorganic sample preparation and analysis for transmission or scanning electron microscopes.

7502. Biometry (3:4:3). Prerequisite: College algebra. The application of statistical methods to data from various fields of biological research. Special emphasis on conceptual bases of univariate and multivariate tests from both parametric and nonparametric perspectives. F.

7000. Research (V1-12).

8000. Doctor's Dissertation (V1-12).

Botany (BOT) (To interpret course descriptions, see page 8.)

Undergraduate Courses

3401. Plant Physiology (4:3:3). Prerequisite: Introductory botany or BIOL 1403 and 1404. One semester of organic chemistry. The physiology of plants with an emphasis on relationships of structure to function in vascular plants. (Writing Intensive)

3402. Comparative Morphology of Plants (4:3:3). Prerequisite: BIOL 1401 or 1404. A survey of plant diversity from an evolutionary perspective, including genetic analysis, classification schemes, identification / documentation techniques, and field trips to study local flora. (Writing Intensive)

3403. Evolution and Classification of Plants (4:3:3). Prerequisite: BIOL 1401 or 1404. A survey of plant diversity from an evolutionary perspective, including genetic analysis, classification schemes, identification / documentation techniques, and field trips to study local flora. (Writing Intensive)

3404. Plant Development (4:3:2). Prerequisite: BIOL 1401 or 1404. Integration of positional, environmental, hormonal, and genetic regulation of embryo-, morpho-, and organo-genesis; emphasis on model species and comparisons to animals. Alternate years. (Writing Intensive)

3405. Field Botany (4:3:6). 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.


Microbiology (MBIO) (To interpret course descriptions, see page 8.)

Undergraduate Courses

3401. 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. May not be applied to degree requirements for biological sciences majors.

3402. Principles of Microbiology (4:3:4). Prerequisite: BIOL 1401 and 1402 or BIOL 1403 and 1404; CHEM 3305 as pre- or corequisite. 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: MBBIO 3401. Anatomy and physiology of the bacterial cellular approach. (Writing Intensive)

4307. Industrial Microbiology (3:3:0). Prerequisite: MBBIO 3401. An introduction to fermentation techniques, food microbiology, production of various microbial products, microbial transformations, sewage disposal, and microbiological control. (Writing Intensive)

4310. Introduction to Virology (3:3:0). Prerequisite: MBBIO 3401 or BIOI 3320 or consent of instructor. An introduction to basic concepts in the structure, replication, and ecology of viruses from animals, plants, and proaryotes. (Writing Intensive)

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: MBBIO 3401 or BIOI 3309. 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: MBBIO 3401 or BIOI 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. (Writing Intensive)

4404. Pathogenic Microbiology (4:3:4). Prerequisite: MBBIO 3401 and 4402 or consent of instructor. A detailed study of pathogenic microorganisms. Laboratory discussion of medical case studies. (Writing Intensive)

4406. The Genetics of Microorganisms (4:3:3). Prerequisite: MBBIO 3401 or consent of instructor. The principles of genetic systems existing among microorganisms, with emphasis upon bacteria and bacteriophages.

Graduate Courses

5301. Advanced General Microbiology (3:2:3). Prerequisite or parallel: Organic chemistry. Content is similar to that of MBBIO 3401 except that readings or original research in one area of microbiology is required. May not be taken for credit by students who have previously taken MBBIO 3401.

5303. Microbe-Plant Interactions (3:3:0). Prerequisite: MBBIO 3400 or 3401 or BIOI 3420 or BOT 3401. Biochemical, molecular, genetic, and ecological basis of pathogenic and symbiotic microbe-plant interactions. F, even years.

5401. Current Perspectives in Microbial Ecology (4:3:3). Prerequisite: A course in microbiology, mycology, ecology, or related area, or consent of instructor; may not be taken for credit by students who have taken MBBIO 4401. Course will examine specific theories and concepts concerning ecology of the soil microflora and microfauna, and the roles of these organisms in ecosystem functioning. S, odd years.

5403. Immunobiology (4:3:4). Prerequisite: Consent of instructor. Content is similar to that of MBBIO 4402 except that readings or research in one area of immunology is required. May not be taken for credit by students who have taken MBBIO 4402. S.

5404. Pathogenic Microbiology (4:3:4). Prerequisite: MBBIO 3401 or 5301; may not be taken for credit by students who have received credit for MBBIO 4404. A detailed study of pathogenic microorganisms. S, odd years.

5408. Microbial Genetics (4:3:3). Prerequisite: MBBIO 3301 or consent of instructor. Topics include current techniques of genetic analysis, molecular biology, molecular genetics, nucleic acid metabolism, and gene regulation in microorganisms, with emphasis on bacteria and bacteriophages. May not be taken for credit by students who have taken MBBIO 4406.

6000. Master’s Thesis (V1-6).

6302. Advanced Bacterial Physiology (3:3:0). Prerequisite: MBBIO 3401 or 5301; 12 semester hours of chemistry, including biochemistry or concurrent registration; consent of instructor. Advanced study of bacterial physiology. S.


Zoology (ZOOL)

(To interpret course descriptions, see page 8.)

Undergraduate Courses

2402. Human Anatomy and Physiology (4:3:3). Three hours of chemistry recommended. A one-semester terminal service course for students requiring an overview of human anatomy and physiology. Not for major credit.


2404. [BIOL 2402]. Human Physiology (4:3:3). CHEM 1301 or equivalent recommended. In-depth study of human physiology for allied health majors requiring two semesters of human anatomy and physiology. Not for major credit.

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.


3403. Parasitology (4:3:3). 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.

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: BIOL 1401 and 1402 or 1403 and 1404 or consent of instructor. Structure, life history, and evolution of the invertebrates.

3407. Comparative Vertebrate Zoology (4:3:3). Prerequisite: BIOL 3320 or ZOOL 4409, organic chemistry. Hormones as chemical coordinators of bodily functions.

3412. 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.

3421. Insect Diversity (3:0:0). Prerequisite: BIOL 1403 and 1404 required. An advanced exploration of the behavior, ecology, and evolution of insects. (Writing Intensive)

4406. Introduction to Mammalogy (4:3:3). Prerequisite: Introductory zoology or junior standing in wildlife management; ZOOL 4407 recommended. Study of the classification, natural history, and ecology of mammals.


4408. General Ornithology (4:3:3). Prerequisite: Junior standing. Emphasis on laboratory and field work in systematic biology, ecology, and anatomy of birds. Local field trips.

4409. Comparative Animal Physiology (4:3:3). Prerequisite: CHEM 1308 and BIOI 1404. A comparison of physiological functions of animals in the major phyla. (Writing Intensive)

4410. Introduction to Ichthyology (4:3:3). Prerequisite: BIOI 1404, 3309, or consent of instructor. Diversity, evolutionary relationships, ecology, and anatomy of fishes. (Writing Intensive)

Graduate Courses

5304. Comparative Endocrinology (3:3:0). Prerequisite: ZOOL 2405, 3301, BIOI 1404. Hormones as chemical coordinators of bodily functions. S.

5306. Advanced Mammalogy (3:2:3). Studies of recent advances in mammalogy. For students who have not taken ZOOL 4306.

5308. Advanced Ornithology (3:2:3). Prerequisite: Consent of instructor. Selected topics including avian systematics, migration, physiology, ecology, and comparative behavior. S.

5312. Advanced Animal Behavior (3:3:0). Comparative animal behavior with emphasis on genetics and neurophysiology and how they relate to survival. F.

5401. Animal Histology for Advanced Students (4:2:6). Prerequisite: ZOOL 2405 or a course in chordate anatomy or consent...
of instructor. Microscopic anatomy of the normal cells, tissues, and organ systems of the human and other mammals are studied. Open to graduate students who have not taken ZOOL 3401 or equivalent.

5406. **Advanced Invertebrate Zoology (4:3:3).** Prerequisite: Consent of instructor. This course develops a comprehension of the structure, function, ecology, and evolution of invertebrate animals, with an emphasis on the relationships among taxa and the diversity within taxa. Written reports on special projects required. F.

5407. **Vertebrate Zoology for Advanced Students (4:3:3).** Diversity, evolutionary relationships, and adaptations of vertebrates. Field trips required. Open to students who have not taken ZOOL 4307.

5409. **Comparative Physiology for Advanced Students (4:3:3).** Prerequisite: ZOOL 2405 or 3406; BIOL 3420; CHEM 3305, 3306 recommended. A comparison of physiological functions including homeostatic mechanisms, muscle, nerve, in the major phyla. Laboratory reports written in a journal format are required.

5421. **Ecological Entomology (4:3:3).** Prerequisite: Consent of instructor. An advanced exploration of the behavior, ecology, and evolution of insects.

6000. **Master’s Thesis (V1-6).**

6302. **Principles of Systematic Zoology for Advanced Students (3:3:0).** Prerequisite: BIOL 3301 or equivalent; BIOL 4305 or 5305 recommended. Theory and practice of naming, describing, and classifying organisms. Speciation, phylogeny, reconstruction, and other current topics in evolutionary biology emphasized. F, even years.

6303. **Seminar in Mammalogy for Advanced Students (3:3:0).** Prerequisite: Consent of instructor. A historical perspective of mammalogy as a science including advances in ideology, character systems, and data analysis. Current topics and controversies will be addressed. S, odd years.

6320. **Comparative Neuroanatomy (3:2:3).** Prerequisite: Consent of instructor. A comparative study of the vertebrate central nervous system, with emphasis on the structure, development, and function of the mammalian brain.

6321. **Advanced Herpetology (3:2:3).** Prerequisite: Consent of instructor. The course will be concerned with the biology of amphibians and reptiles. Stress will be placed on classification, evolution, ecology, and anatomy of the various groups.

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**Department of Chemistry and Biochemistry**

**Faculty**

Dominick J. Casadonte Jr., Ph.D., Chairperson

**Horn Professors:** Bartsch, Knaff, Nes

**Piper Professor:** Casadonte

**Welch Professor:** Hase

**Professors:** Birney, Gellene, Korzeniewski, G. Li, Liu, Quitevis

**Associate Professors:** Morales, Niwayama, Paré, Poirier, Shaw, Shelly, Whittlesey

**Assistant Professors:** Blake, Fuertes, Hope-Weeks, Mayer, Pappas, Shi, Weber

**Instructors:** M. Jones, Z. Li, Mason, Truitt,

**Adjunct Faculty:** Dasgupta, Reid

**Joint Faculty:** Smith

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**About the Program**

This department supervises the following degree programs:

- Bachelor of Arts in Chemistry
- Bachelor of Science in Chemistry
- Bachelor of Arts in Biochemistry
- Bachelor of Science in Biochemistry
- Master of Science in Chemistry
- Doctor of Philosophy in Chemistry

Those students seeking graduate degrees may specialize in analytical, inorganic, organic, physical, or theoretical chemistry; chemical education; chemical physics; or biochemistry.

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**Undergraduate Program**

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. Students who have not completed the prerequisites for a course in which they have enrolled will not be allowed to continue and will be dropped from the course by the department.

**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, 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, forensics, environmental protection, clinical and pharmaceutical chemistry, technical sales, and chemical patent law). Though a B.S. is generally preferred by employers, a B.A. may also provide a sufficient background in chemistry for employment as a chemist in a small laboratory or to enter a graduate program leading to the M.S. or Ph.D. degree in chemistry. The minimum number of hours required for baccalaureate degrees is 120.

**Semester Hours**

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
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<tbody>
<tr>
<td>CHEM 1307, 1308 (or 1301, 1307, 1308), 1107, 1108, 3301, 3305, 3306, 3105, 3106, 3307, 3107, 3341, 3141, 4303, and 4 hours to be chosen from 3300, 3308, 3108, 4300, 4302, 4309, 4105, 4310, 4314, 4114</td>
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<td>MATH 1350 (if needed), 1351, 1352</td>
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<td>PHYS 1403 and 1404 or 1408 and 2401</td>
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<td>English</td>
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<td>American History</td>
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<td>POLS 1301, 2302</td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td>6 hours</td>
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<tr>
<td>Humanities</td>
<td>6 hours</td>
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<tr>
<td>Oral Communication</td>
<td>3 hours</td>
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<tr>
<td>Visual and Performing Arts</td>
<td>6 hours</td>
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<tr>
<td>Foreign Language</td>
<td>6-16 hours</td>
</tr>
<tr>
<td>Personal Fitness and Wellness</td>
<td>2 hours</td>
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**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 coursework in biochemistry, chemistry, and biology. Students who have not completed the prerequisites for a course in which they have enrolled will not be allowed to continue and will be dropped from the course by the department.

**Biochemistry, B.S. Degree.** The B.S. 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 specifically required for the B.S. biochemistry degree (see the biological sciences undergraduate advisor for specific requirements). This additional biology course may be selected from the advanced electives needed to fulfill the B.S. biochemistry degree.

**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 or biotechnology.

**Graduate Program**

Students majoring in this department for advanced degrees must pass three diagnostic examinations by the end of their second long semester. These examinations are based on the undergraduate curriculum.

Each student is required to take the diagnostic examinations in his or her area of specialization and any two others or a series of three Biological Chemistry Examinations designed for students whose academic background emphasizes biochemistry. These examinations are offered three times a year.

A master’s degree program includes a minimum of 19 credit hours of graduate-level coursework, 5 credit hours of research (CHEM 7000), and 6 hours of thesis (CHEM 6000). At least one graduate course must be from outside the area of specialization. A doctoral degree program includes a minimum of 26 credit hours of graduate-level coursework, 34 credit hours of research (CHEM 7000), and 12 credit hours of dissertation (CHEM 8000). At least two graduate courses must be from outside the area of specialization.

A cumulative examination system is used as the written part of the qualifying examination for the doctoral degree, with cumulative exams offered eight times each year. Passing three cumulative examinations by the end of the third year is required to satisfy the written part of the qualifying examination. Students in the inorganic chemistry division are required to pass a written preliminary exam and 2 credit hours of dissertation (CHEM 8000). At least two graduate courses must be from outside the area of specialization.

A cumulative examination system is used as the written part of the qualifying examination for the doctoral degree, with cumulative exams offered eight times each year. Passing three cumulative examinations by the end of the third year is required to satisfy the written part of the qualifying examination. Students in the inorganic chemistry division are required to pass a written preliminary exam and the cumulative examinations before the end of their third long semester. The successful oral defense of an independent research proposal is required after passing the written part of the qualifying examination. A successful oral defense of the Ph.D. research plan must be completed before the end of the second year.

Each student fulfilling the doctoral residence requirement in chemistry and biochemistry will normally enroll for 24 hours within a 12-month period. Ordinarily, this would be accomplished by taking 9 hours in two long semesters and 6 hours in the summer.
Texas Tech. For a chemistry minor, at least one of the junior-senior level courses must be taken at Texas Tech.

**Advanced Standing.** The department 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 Academic Testing Services prior to each semester. Previous registration for these examinations is not required for students entering Texas Tech for the first time. Students who are currently enrolled must apply to the Arts and Sciences Dean's Office for approval to take the examination. For all other courses, it is the student's responsibility to obtain approval from the dean's 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 either CHEM 1301 or 1307 must first take the Chemistry Placement Examination. Please consult the department Web site at www.depts.ttu.edu/chemistry for additional information. 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.

### Chemistry Curriculum, B.A. Degree

<table>
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<th>Course Code</th>
<th>Description</th>
<th>Credits</th>
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<tr>
<td>CHEM 1307, Prin. of Chem. I</td>
<td>Introductory Chemistry</td>
<td>3</td>
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<tr>
<td>CHEM 1107, Prin. of Chem. Lab. I</td>
<td>[CHEM 1112, 1412] Principles of Chemistry II (Laboratory)</td>
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<td>Fall</td>
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<td>ENGL 1301, Ess. Coll. Rhetoric</td>
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<td>Spring</td>
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<td>American History</td>
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<td>Oral Communication†</td>
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**SECOND YEAR**

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<th>Course Code</th>
<th>Description</th>
<th>Credits</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 3305, Org. Chem. I</td>
<td>Organic Chemistry</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 3105, Org. Chem. Lab. I</td>
<td>[CHEM 1405] Principles of Chemistry I (Laboratory)</td>
<td>1</td>
<td>Fall</td>
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<tr>
<td>POLS 1301, Amer. Govt., Org.</td>
<td>American Government</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>Humanities Elective†</td>
<td>Minor</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>PHYS 1408, Prin. of Physics I**</td>
<td>Physics</td>
<td>4</td>
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<td>English†</td>
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**THIRD YEAR**

<table>
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<tr>
<td>CHEM 3301, Desc. Inorg. Chem.</td>
<td>Inorganic Chemistry</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 3307, Phys. Chem. I</td>
<td>Physical Chemistry</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 3107, Phys. Chem. Lab. I</td>
<td>[CHEM 1305, 1405] Principles of Chemistry I (Laboratory)</td>
<td>1</td>
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<tr>
<td>Foreign Language†</td>
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<tr>
<td>Humanities Elective†</td>
<td>Minor</td>
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<td>Fall</td>
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**FOURTH YEAR**

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<th>Description</th>
<th>Credits</th>
<th>Semester</th>
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<tr>
<td>CHEM 3310, Mol. Biochem.</td>
<td>Molecular Biochemistry</td>
<td>3</td>
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<tr>
<td>Minor</td>
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<td>15</td>
<td>Fall</td>
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</tbody>
</table>

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** PHYS 1403 and 1404 may be substituted for PHYS 1408 and 2401.**

† Select from Arts and Sciences General Degree Requirements.

‡ Four advanced elective hours with at least 3 hours from CHEM 4300 or 4314 and the remaining hours from CHEM 3000 (3) or 4114.

### Chemistry Curriculum, B.S. Degree

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Credits</th>
<th>Semester</th>
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<tbody>
<tr>
<td>CHEM 1307, Prin. of Chem. I</td>
<td>Introductory Chemistry</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 1107, Prin. of Chem. Lab. I</td>
<td>[CHEM 1405] Principles of Chemistry I (Laboratory)</td>
<td>1</td>
<td>Fall</td>
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<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
<td>English</td>
<td>3</td>
<td>Spring</td>
</tr>
<tr>
<td>American History</td>
<td>American History</td>
<td>3</td>
<td>Spring</td>
</tr>
<tr>
<td>MATH 1351, Calculus I*</td>
<td>Mathematics</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>Personal Fitness and Wellness†</td>
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<td>Spring</td>
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<td>Visual or Performing Arts Elective†</td>
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</tr>
<tr>
<td>Oral Communication†</td>
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**SECOND YEAR**

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<tbody>
<tr>
<td>CHEM 3305, Org. Chem. I</td>
<td>Organic Chemistry</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 3105, Org. Chem. Lab. I</td>
<td>[CHEM 1405] Principles of Chemistry I (Laboratory)</td>
<td>1</td>
<td>Fall</td>
</tr>
<tr>
<td>POLS 1301, Amer. Govt., Org.</td>
<td>American Government</td>
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<td>Fall</td>
</tr>
<tr>
<td>Humanities Elective†</td>
<td>Minor</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>PHYS 1408, Prin. of Physics I**</td>
<td>Physics</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>English†</td>
<td>Total</td>
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**THIRD YEAR**

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<th>Description</th>
<th>Credits</th>
<th>Semester</th>
</tr>
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<tbody>
<tr>
<td>CHEM 3307, Phys. Chem. I</td>
<td>Physical Chemistry</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 3107, Phys. Chem. Lab. I</td>
<td>[CHEM 1405] Principles of Chemistry I (Laboratory)</td>
<td>1</td>
<td>Fall</td>
</tr>
<tr>
<td>Foreign Language†</td>
<td>Minority</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>Humanities Elective†</td>
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<td>Fall</td>
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<tr>
<td>Total</td>
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**FOURTH YEAR**

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<th>Credits</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 3310, Mol. Biochem.</td>
<td>Molecular Biochemistry</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>Minor</td>
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<td>15</td>
<td>Fall</td>
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</tbody>
</table>

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** PHYS 1403 and 1404 may be substituted for PHYS 1408 and 2401.**

† Select from Arts and Sciences General Degree Requirements.

‡ Four advanced elective hours from CHEM 3000 (3), 4300, 4302, 4310, 4314, 4114.
This course has no laboratory and will not satisfy a laboratory science requirement.

1305. [CHEM 1305, 1405] Chemistry and Society I (3:3:0). 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.

1306. [CHEM 1307, 1407] Chemistry and Society II (3:3:0). Prerequisite: CHEM 1305. This course consists of chemical applications within society and the modern chemical world.

1307. [CHEM 1511, 1411] Principles of Chemistry I (3:3:0). Prerequisite: CHEM 1301 or a passing grade on the Chemistry Placement Exam. 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.

1308. [CHEM 1312, 1412] Principles of Chemistry II (3:3:0). 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.

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.

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### Biochemistry Curriculum, B.A. Degree

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>CHEM 1307, Prin. of Chem. I</td>
<td>CHEM 1308, Prin. of Chem. II</td>
</tr>
<tr>
<td>CHEM 1107, Prin. of Chem. Lab. I</td>
<td>CHEM 1108, Prin. of Chem. Lab. II</td>
</tr>
<tr>
<td>BIOL 1403, Biology II*</td>
<td>CHEM 1404, Biology II*</td>
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<tr>
<td>American History†</td>
<td>American History†</td>
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<tr>
<td>MATH 1351, Calculus I*</td>
<td>MATH 1352, Calculus II*</td>
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<tr>
<td>Physical Fitness and Wellness†</td>
<td>Physical Fitness and Wellness†</td>
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<td>TOTAL</td>
<td>TOTAL</td>
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</tbody>
</table>

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** Failure to complete BIOL 1403 and 1404 in the first year will make the degree difficult to complete in four years without taking courses during summer sessions.
*** PHYS 1403 and 1404 may be substituted for PHYS 1408 and 2401.
† Select from Arts and Sciences General Degree Requirements.
‡ Four advanced elective hours with at least 3 hours from CHEM 4300, 4309, 4314 and the remaining hour from CHEM 3000 (3), 3308, 4105, 4114, 4302 or 4310.

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### Biochemistry Curriculum, B.S. Degree

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>CHEM 1307, Prin. of Chem. I</td>
<td>CHEM 1308, Prin. of Chem. II</td>
</tr>
<tr>
<td>CHEM 1107, Prin. of Chem. Lab. I</td>
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<td>BIOL 1403, Biology II*</td>
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<tr>
<td>MATH 1351, Calculus I*</td>
<td>MATH 1352, Calculus II*</td>
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<tr>
<td>Physical Fitness and Wellness†</td>
<td>Physical Fitness and Wellness†</td>
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<tr>
<td>TOTAL</td>
<td>TOTAL</td>
</tr>
</tbody>
</table>

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** Failure to complete BIOL 1403 and 1404 in the first year will make the degree difficult to complete in four years without taking courses during summer sessions.
† Select from Arts and Sciences General Degree Requirements.
‡ Four advanced elective hours with at least 3 hours from CHEM 4300 or 4314, and the remaining hours from BIOL 3320, 4320, CHEM 3000 (3), 4114, MBIO 4402, ZOOL 3405.
3141. Analytical Chemical Methods Laboratory (1:0:3). Corequisite: CHEM 3341. Discovery and practice of analytical laboratory techniques important to the biological and medical sciences.


3301. Descriptive Inorganic Chemistry (3:3:0). Prerequisite: CHEM 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)


3307. Physical Chemistry I (3:3:0). Prerequisite: CHEM 1308, PHYS 1404, 2400, MATH 2352. The study of gases, thermodynamics, chemical and physical equilibria, and solutions.

3308. Physical Chemistry II (3:3:0). Prerequisite: CHEM 3307 or CH E 3322. 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 3306 and BIOL 1401 and 1402 or BIOL 1404. First semester of a three-semester course in general biochemistry.


3313. Biological Chemistry Laboratory (3:1:6). Prerequisite: CHEM 3106, 3111. Techniques for the isolation, purification, and characterization of biomolecular species. (Writing Intensive)


3315. Analytical Chemical Methods (3:3:0). Prerequisite: CHEM 1308 and BIOL 1401 and 1402 or BIOL 1404. First semester of a three-semester course in general biochemistry.

3316. Analytical Chemistry (3:3:0). Prerequisite: CHEM 1308, MATH 1352. A lecture course in analytical chemistry methods emphasizing practical applications, including techniques important to the biological and medical sciences.

3317. Analytical Chemistry (3:3:0). Prerequisite: CHEM 1308, MATH 1352. A lecture course in the basic and advanced theoretical and techniques of analytical chemical methods. Required of all B.S. chemistry and biochemistry majors.

4010. Individual Studies in Chemistry (V1-6). Prerequisite: Consent of instructor. A structured independent study 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. (Writing Intensive)

4105. Inorganic Chemistry Laboratory (1:0:3). Prerequisite: CHEM 3105. 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: 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 the research and to submit a formal written report. May not be repeated for credit. (Writing Intensive)


4309. Advanced Inorganic Chemistry (3:3:0). Prerequisite: CHEM 3305 and MATH 1352. 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 3307 or CHE 4322. 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 1308, 3311; PHYS 1404 or 2401; MATH 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 3312, 3313, 3314, 3351 and 4311 or 3307. Applications of physical chemical techniques to proteins, nucleic acids, and membranes.

4314. Instrumental Analytical Methods (3:3:0). Prerequisite: CHEM 3341, 4311 or 3307 or 4311. Lecture course covering theories and application of instrumental chemical analysis methods. (Writing Intensive)

Graduate Courses

5010. Individual Studies in Chemistry (V1-6). Prerequisite: Consent of instructor. A structured independent graduate study course under the guidance of a faculty member. May be repeated for credit.

5102. Seminar (1:1:0 each). Prerequisite: Graduate standing in chemistry. Required of all graduate students majoring in chemistry.

5301. Advanced Inorganic Chemistry I (3:3:0). Prerequisite: CHEM 4309 or equivalent. Principles of coordination chemistry, bonding, properties, and reactions of complex compounds.

5302. Advanced Inorganic Chemistry II (3:3:0). Prerequisite: CHEM 5301. Reaction mechanisms of inorganic compounds.

5304. Topics in Chemistry (3:3:0). Prerequisite: Consent of instructor. Special topics in chemistry not included in other courses. Topics may be taken from the traditional chemical disciplines or any interdisciplinary combination. May be repeated under a different topic for credit.

5310. Polymer Chemistry (3:3:0). Prerequisite: CHEM 4311 or 3307 and 3306, or equivalents. An introduction to the chemistry of macromolecules, including the synthesis, structures, properties and applications of polymers.

5314. Advanced Analytical Chemistry (3:3:0). Prerequisite: CHEM 3307, 3306, 3351, or equivalents. General principles and special methods in inorganic and analytical chemistry.

5315. Atmospheric Chemistry (3:3:0). Prerequisite: Consent of instructor. An advanced course covering the production, monitoring, and fate of gases, vapors, and particulates in planetary atmospheres.

5316. Aquatic Chemistry (3:3:0). Prerequisite: Consent of instructor. An advanced course in the analytical, physical, and inorganic chemistry of naturally occurring aqueous solutions and suspensions.

5318. Analytical Separation Science and Technology (3:3:0). Prerequisite: Consent of instructor. The science and technology of analytical separation techniques, including chromatography, electrophoresis, field flow fractionation, and capillary separation.

5319. Electrochemical Analysis (3:3:0). Prerequisite: Consent of instructor. Principles and applications of electrochemistry with emphasis on topics in electroanalytical chemistry.

5320. Analytical Spectroscopy (3:3:0). Prerequisite: Consent of instructor. A detailed fundamental assessment and survey of the important techniques in analytical spectroscopy.

5321. Advanced Organic Chemistry I (3:3:0). Prerequisite: CHEM 3305 and 3306 or equivalents. Principles and reactions of organic chemistry, with emphasis on the most recent developments from the current literature.


5326. Organic Spectroscopic Analysis (3:3:0). Prerequisite: CHEM 3306 or equivalent. Theory and interpretation of spectra of organic compounds: MS, IR, UV-Vis, carbon and proton NMR.

5327. Physical Organic Chemistry I (3:3:0). Prerequisite: CHEM 5321. Properties and reactions of organic compounds and the mechanisms of organic reactions considered from the standpoint of the principles of physical chemistry.

5330. Biochemistry I (3:3:0). Prerequisite: CHEM 2303, 2103 or 5105, 5106, 3305, 3306 or equivalents. Properties of biological compounds. Chemical processes in living systems. For advanced study by graduate students with majors outside the department. Not appropriate for graduate students in the department.
Department of Classical and Modern Languages and Literatures

Faculty

Frederick Suppe, Ph.D., Chairperson
Horn and Qualia Chair: J. Pérez
Horn and Qualia Professor: Gafaiti
Professors: Christiansen, Larmour, A.J. Pérez, G. Pérez, Smith, Suppe, Wood
Associate Professors: Beard, Beustenier, Farley, Fry, Gorsuch, Graf, Grair, Holland, McClain, Qualin, Reed, Stein, Stratton, Zamora
Assistant Professors: Bonzo (Visiting), Borst, Cole, Collopy, Corbett, Elola, Ladeira, Lavigne, Pereira-Muro, Pratt, Robin, Sunseri, Surluga, Instructors: Hays, Meier, Thrasher
Adjunct Faculty: Le, Sneed

About the Program

This department supervises the following degree programs:

- Bachelor of Arts in Classics
- Bachelor of Arts in French
- Bachelor of Arts in German
- Bachelor of Arts in Spanish
- Master of Arts in Applied Linguistics
- Master of Arts in Classics
- Master of Arts in German
- Master of Arts in Romance Languages
- Doctor of Philosophy in Spanish

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. Graduate students majoring in romance languages may specialize in French or Spanish. The department also participates in the ethnic studies, honors, linguistics, comparative literature, and teacher education programs. See the “Interdisciplinary Programs” section of the College of Arts and Sciences.

Undergraduate Program

Majors and Minors for the B.A. Degree. A major may be obtained in classics, French, German, Russian Language and Area Studies, and Spanish. An undergraduate major in Spanish consists of 30 hours at the 2000 level and above, including a minimum of four 4000 level courses. An undergraduate major in French consists of 30 hours at the 2000 level or above, including five 4000 level courses one of which must be a writing intensive literature course. The German major consists of 30 hours at the 2000 level and above including a minimum of four (12 hours) 4000 level courses, one of which must be a capstone course (4305). The Classics major consists of 30 hours from Classics, Latin at the 1502 level and above, Greek, ART 3310, C.I.T 2301, HIST 3340, and PHIL 3301. Classics students pursuing teacher certification must replace classics with advanced Latin to complete 24 hours specifically in Latin.

For information on the B.A. degree or a minor in Russian area and language studies or applied linguistics, see program descriptions in the College of Arts and Sciences “Interdisciplinary Programs” section of this catalog.

A minor can be obtained in Arabic, American Sign Language, Chinese, Classics, Comparative Literature, French, German, Greek, Italian, Japanese, Latin, Latin American and Iberian Studies, Linguistics, Portuguese, Russian, Russian Language and Area Studies, Spanish, and Turkish. The minor consists of a minimum of 18-22 hours in a particular lan-
Graduate Program

Before beginning a graduate program in this department, students should consult the graduate advisor of the particular program concerning departmental admission procedures and degree requirements. Admission to the Graduate School requires departmental recommendation as well as approval by the graduate dean.

The master’s program offers advanced study in literature and linguistics. It is intended to be a distinctly different educational experience from undergraduate study. It requires study in greater depth and the development of critical thinking.

Applicants for the M.A. degree in Romance Languages, with a concentration in French or Spanish, may complete 24 hours of graduate courses and a thesis or 36 hours of coursework. The degree may include a six-hour minor. Applicants for the M.A. degree in Applied Linguistics, Classics, or German may complete 30 hours of graduate courses and a thesis or 36 hours of coursework. Areas of emphasis for Spanish, French, or German include literature, comparative literature, linguistics, civilization and/or culture. Areas of emphasis for classics include literature, language, gender, and art history. Classics candidates are directed to the Guide to the M.A. Degree Program in Classics, which is obtainable from the graduate advisor or the departmental office. Candidates for the M.A. degree in this department must demonstrate a reading knowledge of a second foreign language. Areas of emphasis for applied linguistics include teaching English as a second language, teaching second/foreign languages, or general applied linguistics. Candidates for the M.A. degree in Applied Linguistics must demonstrate knowledge of a language other than English (see also the “Applied Linguistics” section of this catalog). Oral and written comprehensive examinations are required. This department also participates in the joint M.B.A.–M.A. program. See a full description under the Rawls College of Business section of this catalog.

The department offers a 150-hour dual B.A.–M.A. option for outstanding students.

Graduate minors for the M.A. degree are available in applied linguistics, classics, German, Greek, Latin, Portuguese, Russian, and romance languages.

The doctoral program in Spanish requires both greater breadth of study than the M.A. program and greater concentration in the area selected for specialization. To fulfill these requirements the student must demonstrate a reasonable comprehensive knowledge of literature and the ability to engage in original research. To qualify for admission to candidacy for the Ph.D. degree in Spanish, applicants must complete a graduate minor in another language or demonstrate a reading knowledge of two approved languages other than English or Spanish. Any substitution must be submitted in writing to the Spanish graduate advisor and approved by the candidate’s doctoral committee.

Students in the Ph.D. program normally minor within the department in one of the above mentioned minor areas, but may select a combination of courses within and outside the department if approved by the appropriate graduate advisor. Students should consult with a graduate advisor for approved options. A Ph.D. minor consists of 15 to 18 hours of coursework in approved areas.

Coursework for the Ph.D. generally amounts to a minimum of 60 hours beyond the B.A. degree, including at least 45 hours of coursework in Spanish and 15 additional hours in a minor program outside the major field. In addition, the student must satisfy the preliminary examination requirement, pass qualifying examinations, and prepare and defend a dissertation.

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. Courses taught in English such as SPAN 3390, 3391, 3392, FREN 3390, GERM 3312, 3313, RUSN 3301, 3302, 3304, 4301, and 4302 may not be used to fulfill the foreign language requirement for any bachelor’s degree.

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 1507. Those students enrolled in French, German, or Latin 1507 but judged not qualified for 1507 are required to take 1501 pass-fail with approval of faculty.

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.

**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 GPA.

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 Learning Laboratory and Resource Center. 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.

**American Sign Language (ASL)**

*(To interpret course descriptions, see page 8.)*

**Undergraduate Courses**


3312. Introduction to Deaf Culture and Linguistics (3:3:0). Prerequisite: ASL 2302. Overview of deaf culture and history including deaf community values and issues. ASL linguistic structure.

4300. Individual Studies in ASL (3). Prerequisite: ASL 2302. Independent study in American Sign Language under the guidance of a faculty member. May be repeated for credit with consent of instructor.

**Arabic (ARAB)**

**Undergraduate Courses**

1501, 1502. Beginning Course in Arabic I and II (5:5:1 each). Introduction and development of the four language skills in Arabic. Listening comprehension, speaking, reading, and writing.

2301, 2302. Second Course in Arabic I and II (3:3:0 each). Prerequisite: ARAB 1501 and 1502. Reading, cultural background, grammar review, conversation and composition.

4300. Individual Studies in Arabic (3). Prerequisite: ARAB 2302 or equivalent. Independent work under the guidance of a faculty member. Contents vary to meet the needs of the student. May be repeated once.

**Chinese (CHIN)**

**Undergraduate Courses**


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.

**Classics (CLAS)**

**Undergraduate Courses**


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.


3304. Ancient Technology (3:3:0). Examination of the science and engineering of the ancient Egyptians, Greeks, and Romans through archeological remains and literary sources.

3315. World of Egypt and the Near East (3:3:0). Examination of the literature and/or art and archaeology of ancient Egypt, and the Near East in its cultural context.

3320. The World of Greece (3:3:0). Examination of the literature and/or art and archaeology of ancient Greece in its cultural context.

3330. The World of Rome (3:3:0). Examination of the literature and/or art and archaeology of ancient Rome in its cultural context.

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.


4300. Research in Classics (3). Undergraduate research in classics under direction of Instructor. May be repeated for credit. (Writing Intensive)

4310. Seminar in Classics (3:3:0). Prerequisite: Six hours of classics or consent of instructor. Intensive study of a topic in ancient culture. May be repeated for credit. (Writing Intensive)

**Graduate Courses**


5301. Studies in Greek-Roman Literature (3:3:0). Selected studies in major authors, genres, or themes. May be repeated for credit.


5311. Classical Art and Archaeology (3:3:0). Examines architecture, sculpture, and painting of the Greco-Roman World. May be repeated for credit.

5350. The Classical Tradition (3:3:0). Designed to acquaint students with the influence of ancient Rome and Greece on Western culture. Readings in English.

6000. Master’s Thesis (V1-6).

7000. Research (V1-12).
## Classical and Modern Languages and Literatures (CMLL)

### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>1301, 1302</td>
<td>1501, 1502 [CZEC 1511, 1512; VIET 1511, 1512] Individual Studies in Modern Languages I, II (3 each)</td>
<td>Introduction and development of skills in a modern language, including listening comprehension, speaking, reading, and writing.</td>
</tr>
<tr>
<td>1501, 1502</td>
<td>Individual Studies in Modern Languages I, II (5 each)</td>
<td>Introduction and development of the four languages skills: listening comprehension, speaking, reading, and writing. May be repeated twice for credit when language is different.</td>
</tr>
<tr>
<td>2301, 2302</td>
<td>Individual Studies in Modern Languages III, IV (3 each)</td>
<td>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. May be repeated for credit with consent of instructor.</td>
</tr>
</tbody>
</table>

### Graduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>5301</td>
<td>Research Methods and Bibliography (3:3:0)</td>
<td>Systematic study of research methods, bibliographical materials and problems in the fields of languages and literature.</td>
</tr>
<tr>
<td>5302</td>
<td>Literary Criticism and Theory (3:3:0)</td>
<td>Theories and practices of literary analysis and criticism with emphasis on critical / analytic thinking, reading and writing.</td>
</tr>
</tbody>
</table>

## English as a Second Language (ESL)

### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>1302</td>
<td>English Grammar and Composition for International Students (3:3:0)</td>
<td>Consent of instructor. Development of academic writing skills with emphasis on the grammar of written English.</td>
</tr>
</tbody>
</table>

### Graduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>5301</td>
<td>Advanced Writing for International Students (3:3:0)</td>
<td>Focusing on advanced writing projects, the preparation of theses and dissertations, and the preparation of research for publication.</td>
</tr>
<tr>
<td>5305</td>
<td>Academic Listening (3:3:0)</td>
<td>Teaches listening, note-taking, interpretative and verbal skills to students who are non-native speakers of English.</td>
</tr>
<tr>
<td>5310</td>
<td>English for Classroom Management (3:3:0)</td>
<td>Classroom management and teaching communication skills for non-native speakers of English. May be repeated once.</td>
</tr>
<tr>
<td>5315</td>
<td>Academic Writing (3:3:0)</td>
<td>Prepares non-native speakers of English for graduate-level academic writing. May be repeated once.</td>
</tr>
</tbody>
</table>

## French (FREN)

### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>1501, 1502</td>
<td>A Beginning Course in French I, II (5:5:1 each)</td>
<td></td>
</tr>
<tr>
<td>1507</td>
<td>Comprehensive French Review First Year (5:5:1)</td>
<td>Two years of high school French. A comprehensive one-semester review.</td>
</tr>
<tr>
<td>2301, 2302</td>
<td>A Second Course in French I, II (3:3:0 each)</td>
<td>Prerequisite: FREN 1501 and 1502 or 1507. Readings, cultural background, conversation, and composition.</td>
</tr>
<tr>
<td>3302</td>
<td>Major French Writers (3:3:0)</td>
<td>Prerequisite: FREN 2301 and 2302, or equivalent. A survey of major French writers. (Writing Intensive)</td>
</tr>
<tr>
<td>3303</td>
<td>French Conversation (3:3:0)</td>
<td>Prerequisite: FREN 2301 and 2302, or equivalent. Designed to increase vocabulary and attain oral fluency. May be taken concurrently with FREN 3301 or 3302.</td>
</tr>
</tbody>
</table>

### Graduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>5304</td>
<td>Grammar: A Comprehensive Review (3:3:0)</td>
<td>Prerequisite: FREN 2301 and 2302 or equivalent. A comprehensive overview of French grammar.</td>
</tr>
<tr>
<td>5319</td>
<td>French Culture (3:3:0)</td>
<td>A multimedia approach to topics related to French culture. Taught in English. Credit does not apply to major or minor. May not be repeated.</td>
</tr>
<tr>
<td>5320</td>
<td>French Civilization (3:3:0)</td>
<td>Historical, geographical, social, and artistic aspects of the development of the culture of France. Course content may vary. May be repeated for credit.</td>
</tr>
<tr>
<td>5321</td>
<td>French Cinema (3:3:0)</td>
<td>Presentation of the major trends of French cinema from the beginnings to the present. Course content may vary. May be repeated for credit.</td>
</tr>
<tr>
<td>5322</td>
<td>Francophone Literature and Culture (3:3:0)</td>
<td>Readings and topi cal studies relating to French-speaking cultures (in Africa, Europe, U.S., Quebec, and Caribbean) and Francophone culture that may require special treatment. May be repeated for credit.</td>
</tr>
<tr>
<td>5329</td>
<td>Studies in Literary Criticism and Theory (3:3:0)</td>
<td>Current and traditional ways of analyzing literary texts in their cultural contexts with emphasis on theory. Course content will vary. May be repeated for credit.</td>
</tr>
</tbody>
</table>
### German (GERM)

#### Undergraduate Courses


1507. Comprehensive German Review – First Year (5:5:1). Prerequisite: Two years of high school German. A comprehensive review of grammar, vocabulary, and conversational skills.

2301, 2302. [GERM 2311, 2312] 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.

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. (Writing Intensive)

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. (Writing Intensive)

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. (Writing Intensive)

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. (Writing Intensive)

3312. Literature of the Holocaust (3:3:0). Examination of the Holocaust as represented in literature, film, and art. Conducted in English. (Writing Intensive)

3313. Northern Myths and Legends (3:3:0). Introduction to German myths, epics, sagas, legends, and fairy tales. Selected readings in translation with lectures and discussions in English.

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. (Writing Intensive)

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. (Writing Intensive)

4309. Business German (3:3:0). Prerequisite: 6 hours from GERM 3301, 3303, 3304, or equivalent. Oral and written German with special attention to the idiomatic expressions and cultural practices of business in Germany.

4335. Internship to German (3). Prerequisite: Completion or concurrent enrollment in German 3000 or 4000 level course and consent of instructor. Teaching experience and service learning in community schools, while improving German language and communication skills. May be repeated once for credit.

#### Graduate Courses

5303, 5304. Intensive German for Graduate Research I, II (3:3:0 each). Accelerated grammar course acquainting graduates with German as a research skill; equivalent of two years of normal coursework. Not intended to meet major or minor degree requirements.

5314. History of the German Language (3:3:0). Prerequisite: Graduate standing, possessing reading ability of advanced German texts. Development of German from its origins to the present with emphasis on its phonological, morphological, and syntactic change.

5317. The German Novelle (3:3:0). A detailed study of the German Novelle from its origins to the early 1900s, with special emphasis on its development in the nineteenth century.

5318. German Romanticism (3:3:0). Study of German literature from 1790 to 1830.

5319. The German “Klassik” (3:3:0). Introduction to the classical works of Goethe and Schiller and other authors of the period.

5320. German Women Writers (3:3:0). Study of literary works produced by German women writers with emphasis on the 20th century.

5321. Seminar in Modern German Literature (3:3:0). Study of various genres of twentieth-century German literature, with special emphasis on philosophical and psychological aspects. May be repeated for credit.

5323. German Lyric (3:3:0). An introduction to the evolution of German lyric forms with close analysis of selected poems representative of the 18th, 19th, and 20th centuries.

5324. German Literature of the Enlightenment (3:3:0). A study of German literature from 1700 to 1785, including "Aufklärung," “Sturm und Drang,” and “Empfindsamkeit.”

5325. German Drama (3:3:0). Readings, analysis, and interpretation of German dramas and dramatic theories from the Romantic Age to the Contemporary Period.

5326. German Modernism (3:3:0). Readings, analysis, and interpretation of selected works from 1890-1940.

6000. Master's Thesis (V1-6).

7000. Research (V1-12).

### Greek (GRK)

#### Undergraduate Courses

1301, 1302. [GREE 1311, 1312] A Beginning Course in Greek I, II (3:3:0 each).

2301, 2302. [GREE 2311, 2312] A Second Course in Greek I, II (3:3:0 each). Prerequisite: GRK 1301 and 1302, 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.

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.

4302. Greek Composition (3:3:0). Practice in Greek prose composition. May be repeated for credit once with consent of instructor.

#### Graduate Courses

5330. Greek Prose (3:3:0). Selected readings from Greek texts in history, philosophy, oratory, rhetoric, biography, and the novel. Topics may vary. May be repeated for credit.

5340. Greek Poetry (3:3:0). Selected readings in Greek poetic texts from various genres. Topics may vary. May be repeated for credit.

7000. Research (V1-12).

### Italian (ITAL)

#### Undergraduate Courses

1301, 1302. [ITAL 1411, 1412] A Beginning Course in Italian I, II (3:3:0 each).

2301, 2302. [ITAL 2311, 2312] A Second Course in Italian I, II (3:3:0 each). Prerequisite: ITAL 1301 and 1302, or equivalent. Reading, cultural background, conversation, and composition.

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.

4301. Topics in Italian Literature (3:3:0). A study of selected classical masterpieces or contemporary Italian literary works. May be repeated once when content is different.

#### Graduate Courses

5301. Topics in Italian Literature (3:3:0). Study of selected Italian literary works. Class taught partially in Italian with Italian readings. May be repeated twice if content is different.

7000. Research (V1-12).
Japanese (JAPN)

**Undergraduate Courses**


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)**

**Undergraduate Courses**


1507. Comprehensive Latin Review First Year (5:5:0). Prerequisite: Equivalent of two years of high school Latin, placement exam, or departmental consent. A comprehensive one-semester review of first year Latin for qualified students.

2301, 2302. [LATI 2311, 2312] A Second Course in Latin I, II (3:3:0 each). Prerequisite: LAT 1501 and 1502 or 1507. Review; selected readings from standard authors.

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. Latin Composition (3:3:0). Practice in Latin prose composition. May be repeated for credit once with consent of instructor. (Writing Intensive)

4303. 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.

**Graduate Courses**


5325. Technology for Teaching Second and Foreign Languages (3:3:0). A study of the theories and processes of second and foreign language acquisition, with emphasis on adult learners.

5335. Introduction to Linguistics for Second and Foreign Language Educators (3:3:0). Concepts in linguistics and linguistic analysis as they relate to bilingual education, ESL, and second or foreign languages.

5345. Seminar in Applied Linguistics (3:3:0). Study of current topics of interest in applied linguistics. Course content will vary. May be repeated for credit.


5355. Teaching English in International Contexts (3:3:0). This course is designed to prepare students methodologically and professionally for teaching English in international contexts.

6000. Master’s Thesis (V1-6).

7000. Research (V1-12).

Portuguese (PORT)

**Undergraduate Courses**


2301, 2302. [PORT 2311, 2312] Intermediate Portuguese I and II (3:3:0 each). Reading, cultural background, grammar review, conversation, and composition.

3303. Studies in Portuguese (3:3:0). Independent studies in selected topics in Portuguese language and literature. May be repeated once when content differs.

3307. Luso-Brazilian Civilization and Literature (3:3:0). Examines the civilization and cultures of the Luso-Brazilian world through the study of representative literary, cultural and journalistic texts. Topics range from 16th through the 20th centuries. Films will be screened to illustrate the material. Taught in English. Course may be repeated with different content.

4300. Individual Studies in Portuguese (3). Prerequisite: PORT 2302 or equivalent. Contents will vary to meet the needs of the student. May be repeated once for credit. Individual study under the guidance of a faculty member.

**Graduate Courses**

5307. Luso-Brazilian Civilization and Literature (3:3:0). Examines the civilization and cultures of the Luso-Brazilian world through the study of representative literary, cultural, and journalistic texts. Topics range from 16th through the 20th centuries. Films will be screened to illustrate material. Taught in English. May be repeated for credit with different content.


5355. Readings in Luso-Brazilian Literature (3:3:0). Advanced topics in Luso-Brazilian literature. May be repeated for credit.

7000. Research (V1-12).

Linguistics (LING)

**Undergraduate Courses**

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.

**Graduate Courses**

5310. Second and Foreign Language Testing (3:3:0). This course is designed to give language teachers a working knowledge of testing principles applied to second and foreign language classrooms and programs.

### Classical and Modern Languages and Literatures

#### Slavic (SLAV)

**Undergraduate Courses**

3301. *Vampire Literature and 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.

3400. *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. (Writing Intensive)

### Spanish (SPAN)

**Undergraduate Courses**


1507. [SPAN 1305] *Comprehensive Spanish Review—First Year* (5:5:1). Prerequisite: Two years high school Spanish. A comprehensive one-semester review.


2301, 2302. [SPAN 2311, 2312] *A Second Course in Spanish I, II* (3:3:0 each). Prerequisite: SPAN 1501 and 1502 or 1507. Reading, cultural background, conversation, and composition. (Honors section offered.)

2303, 2304. *Intermediate Spanish for Hispanic Students I, II* (3:3:0 each). Prerequisite: placement exam. A second-year course designed for Hispanic students who have been educated in the United States and have had exposure to Spanish at home but may have had limited formal training in Spanish.


3302. *20th Century Russian Civilization Through Literature in Translation* (3:3:0). This course will deal with the literature and cultural history of the turn of the 20th century in Russia and with the survival of this pre-1917 cultural tradition among the émigrés 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.

3304. *Russian Culture* (3:3:0). An examination of the important historical, political, and cultural events and trends that have been instrumental in forming Russian cultural identity.

3305. *Studies in Advanced Russian* (3). Prerequisite: RUSN 2302 or consent of instructor. Advanced Russian language skill development at third and fourth year levels. May be repeated three times when content differs.

3401. *The Great Russian Realists: Tolstoy and Dostoevsky* (3:3:0). Examines the significance of masterpieces by Tolstoy and Dostoevsky. The works will be read in translation. Conducted in English. (Writing Intensive)

3402. *Contemporary Russian Literature in Translation* (3:3:0). This course will examine the works of major Russian authors such as Aleksandr Solzhenitsyn and Tatiana Tolstaya from 1953 to the present. Conducted in English. (Writing Intensive)

3410. *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.

**Graduate Courses**

5301. *Russian Language for Graduate Students* (3:3:0). This course is conducted entirely in Russian. Students work towards achieving an American Council for Teaching Foreign Languages advanced or superior proficiency rating. May be repeated up to 3 times.

5303. *Topics in Russian Culture* (3:3:0). This course will study selected aspects of classical or contemporary Russian culture organized around a particular period or theme. Readings, most writings, and a significant portion of the class will be in Russian. May be repeated up to three times when content is different.

5304. *Topics in Russian Literature* (3:3:0). This course will study selected aspects of classical or contemporary Russian literary texts organized around a particular period or theme. Readings, most writings, and a significant portion of the class will be in Russian. May be repeated up to three times when content is different.

7000. *Research* (V1-12).
Arts and Sciences

5345. History of the Spanish Language (3:3:0). Prerequisite: One year of Latin or equivalent. The development of the Spanish language from its earliest forms to the present.

5347. Language Development (3:3:0). Mastery of language skills through readings, compositions, and directed oral projects. Offered only in programs abroad each summer.

5348. Culture and Literature (3:3:0). Analysis and interpretation of cultural and literary expressions of the host country. Offered only in programs abroad each summer.

5352. Methods of Literary Criticism (3:3:0). Theories and practices of literary analysis and criticism.

5353. Bibliography and Methods of Research (3:3:0). Systematic study of bibliographical materials, methods, and problems in the field of Hispanic research.

5354. Hispanic Literary Criticism (3:3:0). A study of movements, genres, influences, forms, themes, and other concepts in Hispanic literatures from the Middle Ages to the present.

5355. Seminar in Hispanic Literature (3:3:0). Advanced topics in Hispanic literature and literary theory. May be repeated for credit.

5361. Medieval Literature (3:3:0). Spanish literature from its earliest monuments to the end of the Middle Ages.

5362. Golden Age Literature (3:3:0). Selected authors, works, and genres.


5366. Twentieth-Century Spanish Prose (3:3:0). A comprehensive study of the principal literary currents, authors, and works with emphasis on the contemporary period.

5368. Twentieth-Century Spanish Theatre and Poetry (3:3:0). A comprehensive study of the principal literary currents, authors, and works with emphasis on the contemporary period.

5370. Colonial Spanish American Literature (3:3:0). A study of this literature from the Pre-Columbian era to the end of the Spanish American baroque.

5374. Nineteenth-Century Spanish American Literature (3:3:0). A comprehensive study of the principal literary currents, authors, and works of the nineteenth century.


5381. 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).

5392. The Play in Spanish (3:3:0). Prerequisite: Consent of instructor. Intensive analysis of a play and preparation for two public performances.

6000. Master's Thesis (V1-6).

7000. Research (V1-12).

8000. Doctor's Dissertation (V1-12).

Turkish (TURK)

Undergraduate Courses

1501. 1502. Beginning Turkish I and II (5:5:1 each). Introduction and development of the four language skills in Turkish: Listening comprehension, speaking, reading and writing.

2301, 2302. Second Course in Turkish I and II (3:3:0 each). Prerequisite: TURK 1501 and 1502. Reading, cultural background, grammar review, conversation and composition.

3307. Turkish Culture (3:3:0). Turkish history, culture, and civilization. Course utilizes resources from Archives of Turkish Oral Narrative. Course may be repeated once with different content. Taught in English.

4300. Individual Studies in Turkish (3). Prerequisite: TURK 2302 or equivalent. Independent studies in the language under the guidance of a faculty member. May be repeated for credit with consent of instructor.

Vietnamese (VIET)

Undergraduate Course

4300. Individual Problems in Vietnamese (3). Content varies to meet the needs of students. May be repeated for credit.
Department of Communication Studies

Faculty
K. David Roach, Ed.D., Chairperson
Professors: Olaniran, Roach, Stewart, Williams
Associate Professor: Hughes
Assistant Professors: Carter, Gring, Heuman, Langford, Scholl
Lecturers: Gant, Neal
Adjunct Professor: Trank

About the Program
This department supervises the following degree programs:
• Bachelor of Arts in Communication Studies
• Master of Arts in Communication Studies

Undergraduate Program
The Department of Communication Studies at Texas Tech prepares students for careers in business, industry, social service, and education. 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 communication (speech and debate) and maintains a local chapter of Delta Sigma Rho–Tau Kappa Alpha (national forensic honorary). The department also sponsors a chapter of Lambda Pi Eta (the National Communication Honor Society of the National Communication Association). 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. 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 1301, 2300, 2301, 2302, and 3311. Students have the option to declare a concentration in one of three areas: communication and public affairs (CPA), interpersonal communication (IPC), or corporate-organizational communication (COC).

A student who declares a concentration will take 12 hours in the specialization and 9 hours of electives in communication studies. A student who chooses not to declare a concentration will take a minimum of 6 hours from each of the three concentrations plus 3 hours of a COMS elective at the junior/senior level toward the required total of 36 hours in the major. Courses in the communication and public affairs concentration include COMS 3313, 3314, 3315, 3318, 4304, and 4310. Courses in the interpersonal communication concentration include COMS 3331, 3332, 3333, 3334, 4304, and 4330. Courses in the corporate-organizational communication concentration include 3351, 3353, 3355, 3358, 3359, 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 major 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)
(To interpret course descriptions, see page 8.)

Undergraduate Courses

1300. [SPCH 1311] 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 oral communication Core Curriculum requirement.

1301. [SPCH 1318] 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.


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. May be applied toward the individual or group behavior Core Curriculum requirement.

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.

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.

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, and cultural 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.

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.

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)

3351. Communication in Instruction and Training (3:3:0). Instructional communication theory applied to the processes of instruction, training, and change in varied learning contexts. Attention to delivery skills.

3352. 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.

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.

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.


4000. Independent Research in Communication Studies (VI-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.

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.

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.

5111. Communication Instruction in Higher Education I (1:1:0). First of two courses required of all communication studies teaching assistants. Provides individual development in philosophies and practices unique to teaching basic oral communication courses.

5112. Communication Instruction in Higher Education II (1:1:0). Second of two courses required of all communication studies teaching assistants. Provides individual development in philosophies and practices unique to teaching basic oral communication courses.

5300. Communication Theory (3:3:0). A comprehensive overview of contemporary communication theories and research. Students will read original work beginning with general semiotic theory, progressing to contemporary published reviews of theoretical work in communication studies.

5301. Qualitative Research Methods (3:3:0). The course will introduce research methods of discourse analysis, conversation analysis, ethnography, applied qualitative communication research, and development of grounded theory. Students must engage in field work, interview participants, and write essays based on gathered data to complete this course successfully.

5302. Intercultural Communication (3:3:0). An examination of the relationship between culture and communication and approaches to studying intercultural communication.

5303. Communication in Small Groups (3:3:0). A study of factors affecting interpersonal communication in small group settings. Course content includes consideration of both theoretical and applied orientations to the study of small group communication.


5305. Quantitative Research Methods (3:3:0). The study of quantitative research methods in communication research, emphasizing research designs, quantitative treatments, and analysis. Course requirements will include data entry, statistical analysis, and a research prospectus.

5306. Theories of Rhetoric (3:3:0). An in-depth study of rhetorical theories which have had significant impact on the research, teaching, and practice of communication behavior. Students must write a lengthy research paper in order to successfully complete this course.

5307. Historical Critical Research Methods (3:3:0). Survey of contemporary methods of rhetorical criticism and their application in analyzing a wide variety of message types. Students must write multiple essays exemplifying rhetorical criticism in order to successfully complete this course.

5309. Conflict Management and Problem Solving (3:3:0). In-depth study of, and research into conflict resolution through mediation and negotiation.

5313. Theories of Persuasion (3:3:0). Analysis of representative theories and models of persuasive processes and their implications for communication behavior. Theories of public, interpersonal, and mass communication are included.

5314. Communication Issues in Health and Healthcare (3:3:0). An exploration of the nature and roles of discourse processes in healthcare communication, including interpersonal, organizational, public, and intercultural communication contexts.

5315. Nonverbal Communication (3:3:0). Examines communication functions and nonverbal message behavior. Considers a variety of behavioral domains and interaction contexts from both theoretical and practical perspectives.

5318. Interpersonal Communication (3:3:0). Communication theory and research on historical and contemporary topics in interpersonal communication contexts.

6000. Master’s Thesis (V1-6).

6302. Seminar in Interpersonal Communication (3:3:0). A research course focusing on specific topics in interpersonal communication. Topics vary with students’ needs. May be repeated for credit.

6303. Seminar in Organizational Communication (3:3:0). A research course focusing on specific topics in organizational communication. Topics vary with students’ needs. May be repeated for credit.

6304. Seminar in Rhetorical Theory (3:3:0). A research course focusing on specific topics in rhetorical theory. Topics vary with students’ needs. May be repeated for credit.

6307. Seminar in Instructional Communication (3:3:0). A research course focusing on specific topics in instructional communication. Topics vary with students’ needs. May be repeated for credit.

6308. Seminar in Cultural and Intercultural Communication (3:3:0). A research course focusing on specific topics in cultural and intercultural communication. Topics vary with students’ needs. May be repeated for credit.

7000. Research (V1-12).
Department of Economics and Geography

Faculty

Joseph E. King, Ph.D., Chairperson

Professors: Elbow, King, Steinmeier, Templer

Associate Professors: Al-Hmoud, Becker, Carter, Gilbert, Lee, McComb, Mulligan, Rahnama, von Ende

Assistant Professors: Delahunty, De Silva, Edwards, Kishor, Sorrensen, Summers, Vargas

Instructors: Barbato, Jones

About the Program

This department supervises the following degree programs:

- Bachelor of Arts in Economics
- Bachelor of Science in Economics
- Bachelor of Science in International Economics
- Bachelor of Arts in Geography
- Master of Arts in Economics
- Doctor of Philosophy in Economics

The economics faculty supervises the professional requirements of the economics major for the Bachelor of Business Administration degree offered through the Rawls College of Business. 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.

Undergraduate Program

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 a course in statistics: MATH 2345 or 2300) and 18 semester hours in a minor field are required for the B.A. degree. Candidates for the B.A. degree in economics are encouraged to consult with their advisors. Other requirements are listed 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, ECO 4305, 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).

The B.S. in international economics degree program provides correlated emphasis on international economics, international politics, and international business. Course requirements for this degree are listed in the “General Degree Requirements” section of the College of Arts and Sciences.

Requirements for the minor in economics are: ECO 2301, 2302, 3311, 3312, and two elective courses in advanced economics.

Students majoring in economics must complete a minimum of 12 semester hours of their economics courses in residence at Texas Tech University. Students minorin 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.

Graduate Program

Students seeking a degree in economics should consult with the graduate advisor or the chairperson of the department.

The Master of Arts program requires a thesis and 24 semester hours beyond the bachelor's degree. A student may instead select a nonthesis 36-semester hour plan. In addition to the traditional program, the student may take courses with an applied emphasis in economics and related minor fields after consultation with the graduate advisor.

The candidate for the doctor’s degree must choose three specializations from within the areas of international economics, economic development, monetary economics, public finance, labor economics, agricultural economics, natural resource economics, industrial organization, and special fields of economics.

The doctoral student in economics must demonstrate a mathematical proficiency in calculus and analytical geometry.

Although no graduate major is offered in geography, minors for both the master's and doctor's degrees are available. The geography faculty also participates in the university’s interdisciplinary Doctor of Philosophy degree program in Land-Use Planning, Management, and Design and in the arid land studies, environmental evaluation, and international development plans of the Interdisciplinary Studies master's program. Selected geography graduate-level courses may be used to fulfill requirements for these degrees.
The geography major consists of 31 hours of coursework in geography plus MATH 2300 (or equivalent). Required courses are GEOG 1401, 2300, 2351, 3300, 3340, 3350, and GEOG 4300. An additional 6 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, 4321, and 4400) and human and regional geography (GEOG 3337, 3350, 3351, 3352, 3354, 3356, 3360, 3363, 3364, 4305, and 4357). GEOG 4310, Internship in Geography, is open to seniors with a 3.0 GPA or better and may be substituted for 3 hours of courses in either of the blocks. Requirements for the minor are GEOG 1401, 2300 or 2351, 3300, and 9 hours of upper-division geography.

Students majoring in geography must complete a minimum of 12 semester hours of geography courses from Texas Tech. The geography minor requires at least 6 hours from Texas Tech.

**Teacher Education.** Geography coursework is included in the social science composite field certification program in secondary education. Specific course requirements for this program may be obtained in the department.

**Economics (ECO)**

*(To interpret course descriptions, see page 8.)*

### Undergraduate Courses

**2301. [ECON 2302] 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.


**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.

**3305. Game Theory (3:3:0).** Analysis of strategic interaction. Strategies of rational choice will be derived and analyzed in economics and other environments.

**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.


**3320. Managerial Economics (3:3:0).** Prerequisite: ECO 2301. The application of economic theory to problems of business enterprise.

**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 international monetary systems.

**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.

**3300. 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.

**3305. Introduction to Econometrics (3:3:0).** Prerequisite: ECO 2301, 2302, 3311, and MATH 2345 or equivalent, or consent of instructor. Application of linear regression analysis including simple statistics, probability, distributions, hypothesis testing, and linear regression.

**3314. 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.

**3322. The Economics of Labor Markets.** Prerequisite: ECO 3312 or ECO 3320. Labor as a factor of production, labor market participation and hours worked, compensating wage differentials, human capital investment, income inequality, migration, and discrimination.

**3323. Monetary Theory (3:3:0).** Prerequisite: ECO 3311. Analysis of money supply, money demand, interest rates, income and price level determination, and transmission mechanisms. Emphasizes monetary policies in an open economy context.

**3331. 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.

**3332. 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.

### Graduate Courses

**5310. Price and Income Theory (3:3:0).** Designed for graduate students who need intensive study of intermediate economic price and income theory.


**5312. Microeconomic Analysis (3:3:0).** Prerequisite: ECO 5310 or consent of instructor. Theory of household and firm choice, duality, commodity and factor market structures, general equilibrium and welfare economics. Emphasis on theory and policy applications.

**5313. Mathematical Economics I (3:3:0).** Prerequisite: Consent of instructor. The application of mathematical techniques to economic model-building.

**5314. Econometrics I (3:3:0).** Prerequisite: AAEC 5311 or ISQS 5349 or consent of instructor. Topics chosen from the following: problems in single and multiple regressions, qualitative choice models, specification tests, estimation of rational expectations models, and fixed-effects models.

**5315. Mathematical Economics II (3:3:0).** Prerequisite: ECO 5313 or consent of instructor. Advanced topics in the application of mathematics to economic model-building including dynamic models and programming techniques.

**5316. Time Series Econometrics (3:3:0).** Prerequisite: ECO 5314. Contemporary issues in time series econometrics. Topics include dynamic models, ARMA models, stationarity, causality and exogeneity, unit root tests, integration and error correction.


**5318. History of Economics (3:3:0).** This course examines various historical episodes and their influence on the development of economic theories.

**5320. Managerial Economics (3:3:0).** Prerequisite: Consent of instructor. The application of economic analysis to the problems of private firms and public institutions. Emphasis on mathematical techniques of analysis.

**5323. Monetary Theory I (3:3:0).** Prerequisite: ECO 3323 or 5310. Introduction to monetary theories and their policy implications. Partial and general equilibrium models of price levels,
inflation rates, income flows, and interest rates are developed in an open economy context.

5324. Seminar in Public Finance (3:3:0). Prerequisite: Consent of instructor. Analysis of economic effects of taxation, governmental expenditures, debt management, and budgetary process.

5325. Seminar in Economic Policy (3:3:0). Prerequisite: Consent of instructor. Analysis of major economic issues, theories, or policies. May be repeated for credit.

5328. Monetary Theory II (3:3:0). Prerequisite: ECO 5323 or consent of instructor. Recent developments and controversies in monetary theory and policy with emphasis on leading edge issues in the current financial system.


5332. Advanced International Finance (3:3:0). Prerequisite: Advanced graduate standing and consent of instructor. Advanced study of theory, problems, and policies associated with the international monetary system. (FIN 5332).

5333. Advanced International Economics (3:3:0). Prerequisite: ECO 5333 or consent of instructor. Advanced study of theory, problems, and policies in international economics.

5337. Healthcare Economics (3:3:0). Prerequisite: ECO 5300 or equivalent. The application of economic principles to the analysis of problems and the formulation of policies in the healthcare sector of the economy.

5346. Game Theory (3:3:0). Introduction to game theory with an emphasis on economic applications.

5347. Topics in Industrial Organization (3:3:0). Prerequisite: ECO 5312 or consent of instructor. Study of recent research in applied microeconomics and business behavior. Topics include oligopoly, vertical integration, collusion, and the empirical links between monopoly power and profitability.

5381. Empirical Studies in Macroeconomics (3:3:0). Prerequisite: ECO 5311 or consent of instructor. Contemporary theoretical and empirical macroeconomic issues. Use of empirical studies to evaluate competing hypotheses. Student conducted empirical studies.

5382. Advanced Microeconomics (3:3:0). Prerequisite: ECO 5312 or consent of instructor. Topics include investment and capital theory, uncertainty, general equilibrium, and welfare.

6000. Master’s Thesis (V1-6).
7000. Research (V1-12).
8000. Doctor’s Dissertation (V1-12).

Geography (GEOG)

To interpret course descriptions, see page 8.

Undergraduate Courses

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. [GEOG 1301] 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.

2300. [GEOG 1302] Introduction to Human Geography (3:3:0). Survey of human geography, including factors affecting location of different aspects of culture, economy, and politics.

2351. [GEOG 1303] 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.


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.

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. Economic Geography (3:3:0). Consideration of the characteristics and distribution of production and consumption of goods and services and of variation and interaction of economic activities.

3340. Introduction to Research in Human Geography (3:3:0). An introduction to research and research methods in geography. (Writing Intensive)


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 such as sprawl, city decline, and metropolitan transportation.

3352. Geography of US 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.

3356. Contemporary Texas and the American Southwest (3:3:0). Study of the physical and contemporary cultural geography of Texas and the American Southwest.

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.

4300. Seminar in Geography (3:3:0). A capstone course required of all majors, intended to assess knowledge in the discipline. Topics vary. May be repeated for credit. (Writing Intensive)


4302. Advanced Geographic Information Systems (3:2:2). Prerequisite: GEOG 3300 or equivalent. An advanced and applied course in geographic information systems. Major topics include data acquisition, database management, and spatial analysis techniques. Course emphasizes experience with professional GIS software.

4303. 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 knowledge and GIS tools.

4321. Biogeography (3:3:0). Prerequisite: GEOG 1401 or consent of instructor. Study of plants and animals in their spatial context, functional interaction, and as related to human impacts.

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. (Writing Intensive)

4400. Topics in Geographic Information Systems (4:2-4). Prerequisite: Consent of instructor. A focused exploration of specialized applications of geographic information systems. Laboratory emphasizes the use of GIS software in problem solving context. May be repeated for credit when topics vary.
Department of English

Faculty

Sam A. Dragga, Jr., Ph.D., Chairperson

Professors: Aycock, Barker, Clarke, Covington, Dragga, Hurst, Kuriyama, Miner, Purinton, Wenthe, Whitlark

Associate Professors: Baake, Baehr, Carter, Conrad, Crowell, Daghistani, Desens, Fitzgerald, Grass, Hawkins, Jones, Kemp, Kimball, Kolosov-Wenthe, Lang, McFadden, Patterson, Poch, Rickly, Samson, Schoenecke, Shelton, Shu, St.Amant

Assistant Professors: Baugh, Borshuk, Couch, Eaton, Frangos, Kim, Koerber, Rice, Snead, Spurgeon, Still, Ybarra, Zdenek

Lecturers: Duke, Heise, Hester, Hiemstra, McLaughlin, Myers, Rylander

About the Program

This department supervises the following degree programs:

- Bachelor of Arts in English
- Master of Arts in English
- Master of Arts in Technical Communication
- Doctor of Philosophy in English
- Doctor of Philosophy in Technical Communication and Rhetoric

The department also offers a graduate certificate in linguistics and cooperates in interdepartmental programs in linguistics and comparative literature at both the undergraduate and the graduate levels.

Undergraduate Program

Undergraduate English majors must specialize in either literature and language, in technical communication, in creative writing, or in the certification program for teaching in the secondary schools.

The department sponsors both the local chapter of Sigma Tau Delta (of the national English honorary society) and a chapter of the Society for Technical Communication. The department publishes four international journals: Conradiana, The Eighteenth Century: Theory and Interpretation, The Iron Horse Literary Review, and William Carlos Williams Review.

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 minor in 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. To receive credit toward graduation, a student who is an English major or minor must receive at least a C in 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 required English courses.

Students who score 360 or below (verbal) on the SAT examination or 15 or below (English) on the ACT examination are required to pass ENGL 0301 or any approved assessment instrument approved by the Coordinating Board (ASSET, COMPASS, ACCU-PLACER, or THEA) before they can take ENGL 1301. Although ENGL 0301 appears 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 recorded on the transcript; therefore, it will not be computed in the student’s grade point average. This course counts for meeting the Texas Success Initiative (TSI) requirements for writing skills.
development. Students who must fulfill this requirement should visit the TSI Office located in 72 Holden Hall.

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).

**Literature and Language Concentration**

Students majoring in English with a concentration 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 concentration 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 2388 are required for an English major with a concentration in literature and language. Majors must complete 15 hours at the 3000-level and 12 hours at the 4000-level in the following courses:

<table>
<thead>
<tr>
<th>I. 3000-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Period Courses</td>
</tr>
<tr>
<td>Take three of the following: ENGL 3302, 3304, 3305, 3307, 3308, 3309, 3323, 3324, 3325, 3335, 3336, 3337.</td>
</tr>
<tr>
<td>• One course must be Early: ENGL 3302, 3304, 3305, 3323, 3335</td>
</tr>
<tr>
<td>• One must be American: ENGL 3323, 3324, 3325</td>
</tr>
<tr>
<td>• One must be British: ENGL 3302, 3304, 3305, 3307, 3308, 3309</td>
</tr>
<tr>
<td>Note that some courses fulfill more than one category (e.g., ENGL 3302 is both Early and British; ENGL 3323 is both Early and American). However, three courses are required from this group.</td>
</tr>
<tr>
<td>B. Two additional 3000-level courses.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. 4000-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. ENGL 4301</td>
</tr>
<tr>
<td>B. One genre course: ENGL 4311, 4312, 4313, 4314, or 4315</td>
</tr>
<tr>
<td>C. ENGL 4374</td>
</tr>
<tr>
<td>D. One additional 4000-level course from the following: ENGL 4300, 4311, 4312, 4313, 4314, 4315, 4321, 4351, or 4373</td>
</tr>
</tbody>
</table>

**Technical Communication Concentration**

The major in English with a concentration 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.

ENGL 1301, 1302, 2311, and a 2000-level literature course are required for a concentration in technical communication. Majors must complete 15 hours at the 3000-level and 12 hours at the 4000 level in the following courses:

<table>
<thead>
<tr>
<th>I. 3000-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. One style or linguistics course: ENGL 3366, 3371, or 3373</td>
</tr>
<tr>
<td>B. Four courses from 3365, 3366 (may not also be used for I.A.), 3367, 3368, or 3369</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. 4000-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Three courses from 4365, 4366, 4367, 4368, 4369, or 4378</td>
</tr>
<tr>
<td>B. ENGL 4380</td>
</tr>
</tbody>
</table>

**Creative Writing Concentration**

The major in English with a concentration in creative writing is designed for students wishing to write fiction, nonfiction, 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, nonfiction, and poetry. In addition to the opportunities for writing and literary study, this concentration 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. Permission to take 4351 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, 2308, 2371, or 2388; and 3 hours from ENGL 2351 or 2391. Advanced courses include 15 hours at the 3000 level and 12 hours at the 4000 level.

<table>
<thead>
<tr>
<th>I. 3000-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. One early literature period course: ENGL 3302, 3304, 3305, or 3335</td>
</tr>
<tr>
<td>B. One British literature period course: ENGL 3302, 3304, 3305, 3307, 3308, or 3309</td>
</tr>
<tr>
<td>C. One American literature period course: ENGL 3323, 3324, or 3325</td>
</tr>
<tr>
<td>D. Six hours of ENGL 3351 under two separate genres (fiction, poetry, or creative nonfiction)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. 4000-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. ENGL 4301</td>
</tr>
<tr>
<td>B. One genre course: ENGL 4311, 4312, 4313, 4314, or 4315</td>
</tr>
<tr>
<td>C. ENGL 4351</td>
</tr>
<tr>
<td>D. One additional 4000-level course from the following: ENGL 4300, 4311, 4312, 4313, 4314, 4315, 4321, 4342, 4351, 4373, or 4374</td>
</tr>
</tbody>
</table>

**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. In addition, the certification program requires a 2.5 GPA in the teaching field. 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, 2371, 2388, or 2391). Students wishing to follow any of the degree programs leading to certification should consult with the department’s undergraduate advisor.

**English (ENGL)**

(To interpret course descriptions, see page 8.)

<table>
<thead>
<tr>
<th>Developmental Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>0301. Developmental Writing (3:3:0). Emphasizes the development of fluency and coherence in writing and increased capability in usage and grammar. Students are assigned to this course on the basis of testing and evaluation, and successfully complete this course before registration in ENGL 1301. Not applicable toward general degree requirements in any degree program. Hours for ENGL 0301 are in addition to the minimum number needed for graduation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Undergraduate Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1301. [ENGL 1301] Essentials of College Rhetoric (3:3:0). Prerequisite: Successful completion of ENGL 0301 or a satisfactory score on SAT, ACT, or English department writing sample. A</td>
</tr>
</tbody>
</table>
Graduate Program / English

Before beginning a graduate program in English, students must consult the Director of Graduate Studies concerning departmental admission procedures and degree requirements. Admission to the Graduate School requires departmental recommendation as well as approval by the Graduate Dean. Information on the requirements is available at www.english.ttu.edu.

The Graduate Certificate in Linguistics comprises a minimum of 12 hours in linguistics courses. The program usually includes study in phonology, syntax, and semantics, but flexibility is essential in meeting the diverse backgrounds, motivations, and goals of the students. The Director of Linguistics, in consultation with faculty and the Director of Graduate Studies, will develop and specify a program of study appropriate for each student in the program. If students decide to pursue studies beyond the certificate level, course credit earned towards the certificate can be considered toward a graduate degree in English.

The master’s degree program in English offers advanced study in literature, creative writing, rhetoric, and linguistics. It is intended to be not merely a continuation of undergraduate work but a distinctly different educational experience requiring study in greater depth and the development of critical thinking.

Applicants for the M.A. degree in English may complete 30 hours of graduate courses and a thesis or 36 hours of coursework. Areas of concentration are English and American literature, comparative literature, linguistics, and creative writing. Supporting work is available in bibliography, film, literary criticism, teaching college composition, and technical and professional writing. Reading knowledge of one foreign language is required. In their final semester in the M.A. program, thesis students must successfully complete an oral defense and nonthesis students must submit a portfolio of their work for faculty review.

The doctoral program in English requires both greater breadth of study than the M.A. program and greater concentration in an area selected for specialization. To fulfill these requirements the student must demonstrate a reasonably comprehensive knowledge of literature and the ability to engage in original research.

Doctoral students in English may specialize in an area of English literature; American literature; two closely related areas of English and American literature; comparative literature; creative writing; linguistics; or literature, technology, and discourse. They may minor outside the department or create a secondary concentration within the department in one of the above areas or in technical communication.

Coursework for the Ph.D. generally amounts to 60 hours beyond the B.A. degree, including at least 45 hours of coursework in English. All students are reviewed annually for satisfactory progress. In addition, the student must pass a qualifying examination and prepare and defend a dissertation. Reading knowledge of two foreign languages or high competence in one language is required.

The master’s degree program in technical communication combines study of the history, theory, research, and genres of technical communication with practice in applying this knowledge. The thesis option requires students to complete 24 hours of graduate courses in technical communication and electives or a minor, 6 hours of research methods, and a thesis. The nonthesis option requires students to complete 36 hours of graduate courses in technical communication, electives, and a minor. Students who elect the nonthesis option must pass a comprehensive portfolio examination in the semester of graduation.

The master’s degree in technical communication is also available online. Application and admission processes and degree requirements are similar to those for the on-campus program. All distance students complete 36 hours of graduate coursework in technical communication, language- and communication-related electives, or a minor. The courses require a substantial independent research project that could result in an article for publication. Prospective students are advised to consult www.english.ttu.edu/TC/DL for details of degree requirements and the course schedule.

The doctoral program in technical communication and rhetoric aims to engage the students in acquiring broad knowledge of the history, theory, research, genres, and practice of technical communication and rhetoric; specialized knowledge of some aspect of communication or rhetoric; and ability to conduct independent research. The Ph.D. requires at least 60 hours of graduate courses beyond the bachelor’s degree, proficiency in research methodology, and a dissertation. The 60 hours include 45 hours in the specialization. The remaining 15 hours may be used for a minor in a field other than technical communication and rhetoric or for more courses in the specialization, including communication-related courses in other departments. A minor may be taken in one department or may consist of a cluster of courses on related topics from different departments.

The doctoral degree in technical communication and rhetoric is also available online. Application and admissions processes and degree requirements are similar to those for the on-campus degree. In addition to fulfilling all the degree requirements of the on-campus program, all distance students attend a two-week seminar every May. Prospective students are advised to consult www.english.ttu.edu/tc for details of degree requirements and the course schedule.

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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 genres and styles. (Writing Intensive)

1302.  [ENGL 1302] Advanced College Rhetoric (3:3:0). Prerequisite: Successful completion of ENGL 1301. Focuses on writing from sources, research methods, and documentation. (Writing Intensive)

2305.  Introduction to Poetry (3:3:0). Prerequisite: ENGL 1301, 1302. Critical study of and writing about a variety of poems. (Writing Intensive)

2306.  Introduction to Drama (3:3:0). Prerequisite: ENGL 1301, 1302. Critical study of and writing about a variety of plays. (Writing Intensive)

2307.  Introduction to Fiction (3:3:0). Prerequisite: ENGL 1301, 1302. Critical study of and writing about a variety of short stories and novels. (Writing Intensive)

2308.  Introduction to Nonfiction (3:3:0). Prerequisite: ENGL 1301, 1302. Critical study of and writing about a variety of historical, biographical, and scientific writings. (Writing Intensive)

2311.  [ENGL 2311] Introduction to Technical Writing (3:3:0). Prerequisite: ENGL 1301 and 1302. Introduction to patterns of writing used in reports and letters for business, industry, and technology. (Writing Intensive)

2351.  [ENGL 2307, 2308] 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. (Writing Intensive)

2371.  Language in a Multicultural America (3:3:0). Prerequisite: ENGL 1301 and 1302. This course examines language in the U.S. as it relates to race, gender, class, religion, and ethnicity. (Writing Intensive)

2388.  Introduction to Film Studies (3:3:0). Prerequisite: ENGL 1301 and 1302. Introduction to the history, aesthetics, and
criticism of avant-garde, documentary, and narrative film.  

(Writing Intensive)  

3291. Introduction to Critical Writing (3:3:0). Prerequisite: ENGL 1301, 1302. Extensive practice in writing critical essays about literature. (Writing Intensive)  

3292. 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. (Writing Intensive)  

3294. 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. (Writing Intensive)  

3295. 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. (Writing Intensive)  

3297. 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. (Writing Intensive)  

3298. Nineteenth Century British Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. British poetry, prose, and drama from 1870 to 1900. This course may be repeated for credit once when topics vary. (Writing Intensive)  

3299. Modern and Contemporary British Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. British poetry, prose, and drama from 1900. This course may be repeated for credit once when topics vary. (Writing Intensive)  

3302. 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. (Writing Intensive)  

3303. 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. (Writing Intensive)  

3304. Nineteenth Century American Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. American poetry, prose, and drama from 1870 to 1900. This course may be repeated for credit once when topics vary. (Writing Intensive)  

3305. Modern and Contemporary American Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. American poetry, prose, and drama from 1900. This course may be repeated for credit once when topics vary. (Writing Intensive)  

3306. 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. (Writing Intensive)  

3307. Early Modern World Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Representative works in translation from 1400 to 1600. This course may be repeated for credit once when topics vary. (Writing Intensive)  

3308. Modern and Contemporary World Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Representative works in translation from 1400 to 1600. This course may be repeated for credit once when topics vary. (Writing Intensive)  

3309. Creative Writing (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Intensive examination of one or more authors. May be repeated once for credit when topics vary. (Writing Intensive)  

3310. Creative Writing (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Exploration of styles and techniques in the genre. May be repeated once under a separate genre. (Writing Intensive)  

3311. Issues in Composition (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Exploration of principles and practices in rhetoric and writing. (Writing Intensive)  

3312. Professional Report Writing (3:3:0). Prerequisite: Junior standing. Preparation of professional and academic reports and publications through the use of communication analysis. (Writing Intensive)  

3313. 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. (Writing Intensive)  

3314. Usability Testing (3:3:0). Prerequisite or corequisite: ENGL 3365. Principles and techniques of designing usable documents with emphasis on oral and visual language. (Writing Intensive)  

3315. 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. (Writing Intensive)  

3316. Information Design (3:3:0). Prerequisite: ENGL 2311 or 3365. Principles of design, visual rhetoric, and visual communication and application of those principles in document design. (Writing Intensive)  


3319. Modern English Syntax (3:3:0). Prerequisite: 6 hours of 2000-level English courses. The syntactic and morphological analysis of modern English. (Writing Intensive)  

3321. 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. (Writing Intensive)  


3323. 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. (Writing Intensive)  

3324. Religion and Literature (3:3:0). Prerequisite: 6 hours of 2000-level English courses. An exploration of the relations between science and technology and literature and discourse. (Writing Intensive)  

3325. Multicultural Literatures of America (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Representative works by Americans of different cultures. May be repeated once for credit when topics vary. (Writing Intensive)  

3326. 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. May be repeated once for credit when topics vary. (Writing Intensive)  

3327. Short Story (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Short stories around the world. (Writing Intensive)  

3328. Literature of the Southwest (3:3:0). Prerequisite: 6 hours of 2000-level English courses. Examines the diverse literatures and cultures of the Southwest. (Writing Intensive)  

3329. Literature and War (3:3:0). Prerequisite: 6 hours of 2000-level English courses. This course explores the representation of war and conflict in literature and emphasizes diverse perspectives involved. May be repeated once for credit when topics vary. (Writing Intensive)  

3330. 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. (Writing Intensive)  

3331. 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. (Writing Intensive)  

3332. 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. (Writing Intensive)  

3333. 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. (Writing Intensive)  

3334. 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. (Writing Intensive)  

3335. 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. (Writing Intensive)  

3336. 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. (Writing Intensive)  

3337. 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
Graduate Courses

5000. English as a Profession (V1-3). Introduction to professional issues in English. Topics include teaching dossiers, grant writing, project management and strategies for professional conduct and advancement. May be repeated.

5060. History and Theories of College Composition (V1-3). Seminar in history and contemporary theories of composition and rhetoric studies. Required for all new teaching assistants and graduate part-time instructors.

5067. Methods of Teaching College Composition (V1-3). Prerequisite: ENGL 5060. Introduces methods of teaching writing through assigned readings, supervised participation in teaching activities, and seminar discussion.

5300. Individual Studies (3:3:0). Prerequisite: Approval of the faculty mentor and Director of Graduate Studies. Independent study under the guidance of a graduate faculty member. May be repeated.


5303. Studies in Medieval British Literature (3:3:0). Concentrated studies in British literature to 1500, treating in various semesters poetry, prose, drama, and major authors.

5304. Studies in Renaissance British Literature (3:3:0). Concentrated studies in British literature, 1500-1600, treating in various semesters poetry, prose, drama, and major authors.

5305. Studies in Shakespeare (3:3:0). Emphasis on the comedies, tragedies, histories, poetry, or a combination of these.


5311. Studies in Twentieth-Century British Literature (3:3:0). Concentrated studies in British literature, 1900-present, treating in various semesters poetry, prose, drama, and major authors.


5324. Studies in Twentieth-Century American Literature (3:3:0). Concentrated studies in American literature, 1900-present, treating in various semesters poetry, prose, drama, and major authors.


5337. Studies in Linguistics (3:3:0). Special topics. May be repeated when the topic varies.

5338. Syntax (3:3:0). This course surveys syntactic analysis and generative syntactic theory.

5339. Phonology (3:3:0). This course surveys the study of sound patterns, phonological description and analysis, and generative phonological theory.


5342. Critical Methods (3:3:0). Survey of contemporary critical methods with special attention to their application to literature.


5350. Studies in Drama (3:3:0). Concentrated studies in American, British, or world drama.

5351. Studies in Film and Literature (3:3:0). Readings, analysis, and research in the interrelationships between film and literature.


5361. Theories of Invention in Writing (3:3:0). Classical and modern theories of rhetorical invention.
Environmental Toxicology

Department of Environmental Toxicology

Faculty

Ronald J. Kendall, Ph.D., Chairperson

Professors: Cobb, Dixon, Kendall, Wang

Associate Professors: Anderson, Hooper, McMurry, Presley, E. Smith

Assistant Professors: Canas, Cox, Gao, Goddard-Codding, Maul, Ramkumar, P.N. Smith

Research Assistant Professors: Brown, Rainwater, Tang

About the Program

This department offers study in the following graduate degree programs:

- Master of Science in Environmental Toxicology
- Doctor of Philosophy in Environmental Toxicology

Joint Programs

- Master of Science in Environmental Toxicology/Doctor of Jurisprudence
- Master of Science in Environmental Toxicology/Master of Business Administration

Undergraduate Program

Environmental toxicology offers a graduate program within the College of Arts and Sciences as well as fixed and variable credit courses for undergraduates. The courses are 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 preparation for completion of these courses. Interested students should contact faculty within the department.

Environmental Toxicology (ENTX)

(To interpret course descriptions, see page 8.)

Undergraduate Courses

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.

4325. Principles of Toxicology I (3:3:0). Prerequisite: Consent of instructor. First half of two-semester course. Examines foundations of toxicological sciences, covering principles, disposition and half of toxicity mechanisms. (Writing Intensive)

4326. Principles of Toxicology II (3:3:0). Prerequisite: ENTX 4325. Second half of two-semester course. Covers remaining toxicity mechanisms, toxic agents and applied toxicology. (Writing Intensive)

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).

Graduate Course

6000. Master’s Thesis (V1-6).

6100. Graduate Seminar (1:1:0). Prerequisite: Graduate standing or consent of instructor. A participatory seminar where graduate students condense, review, and present research findings on focused topics. Subject matter varies by semester. May be repeated for credit.
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>6300</td>
<td>Advanced Topics in Environmental Toxicology (3:3:0).</td>
<td>Special areas of current interest not generally covered in other courses. Content normally different each time offered. May be repeated for credit.</td>
</tr>
<tr>
<td>6312</td>
<td>Biological Threats in the Environment (3:3:0).</td>
<td>Prerequisite: Undergraduate biological background or consent of instructor. Detailed examination of characteristics, surveillance, and control of naturally-occurring zoonoses and diseases exploitable as biological weapon agents. (Writing Intensive)</td>
</tr>
<tr>
<td>6314</td>
<td>Chemical Warfare and Protective Countermeasures (3:3:0).</td>
<td>Coverage of chemical warfare agents, their protective measures, and technologies. Suitable for science and engineering majors.</td>
</tr>
<tr>
<td>6325</td>
<td>Principles of Toxicology I (3:3:0).</td>
<td>Prerequisite: Graduate standing in the department or consent of instructor. First half of two semester course. Examines the foundations of toxicological sciences. Covers principles, disposition, and first half of toxicity mechanisms. (Writing Intensive)</td>
</tr>
<tr>
<td>6326</td>
<td>Principles of Toxicology II (3:3:0).</td>
<td>Prerequisite: ENTX 6325. Second half of two semester course. Covers remaining mechanisms, toxic agents, and applied toxicology. (Writing Intensive)</td>
</tr>
<tr>
<td>6327</td>
<td>Molecular Toxicology (3:3:0).</td>
<td>Prerequisite: ENTX 6325 and 6326 or consent of instructor. Molecular mechanisms and control of phase I and phase II xenobiotic metabolizing enzymes, oxidative stress, and carcinogenesis. Emphasizes prototypical chemicals with multiple modes of action.</td>
</tr>
<tr>
<td>6331</td>
<td>Reproductive and Developmental Toxicology (3:3:0).</td>
<td>Prerequisite: ENTX 6325 and 6326 or consent of instructor. Mechanistic treatment of chemical effects on reproductive and developmental processes and the resulting impacts on reproductive function, fertility, and the developing offspring.</td>
</tr>
<tr>
<td>6351</td>
<td>Analytical Toxicology Lecture (3:3:0).</td>
<td>Prerequisite: ENTX 6445 or consent of instructor. Theory of isolation, detection, identification, and quantification of toxic substances and their transformation products in environmental and biological samples.</td>
</tr>
<tr>
<td>6361</td>
<td>Environmental and Wildlife Toxicology (3:3:0).</td>
<td>Prerequisite: Organic chemistry, ecology, or consent of instructor. Examines exposure and effects of chemicals in wildlife, their study in the lab and field, and use of conducting ecological risk assessments.</td>
</tr>
<tr>
<td>6365</td>
<td>Fundamentals of Aquatic Ecotoxicology (3:3:0).</td>
<td>Prerequisite: Graduate or advanced undergraduate background in biological, chemical, or environmental sciences or consent of instructor. Covers effects of water pollution on aquatic organisms and human health. Subjects include fate and transport in aqueous systems, acute toxicity and toxicity tests, and effects of pollutants on aquatic systems from molecular to global levels.</td>
</tr>
<tr>
<td>6366</td>
<td>Advanced Environmental Toxicology (3:3:0).</td>
<td>Prerequisite: ENTX 6325 and 6326, 6445, or consent of instructor. Examines toxicological principles at population, community, and ecosystem levels stressing population dynamics, life history changes, community composition, and ecosystem dynamics.</td>
</tr>
<tr>
<td>6367</td>
<td>Advanced Wildlife Toxicology (3:3:0).</td>
<td>Prerequisite: ENTX 6325 and 6326, 6445, or consent of instructor. Environmental contaminant effects on reproduction, health, and well being of wildlife species and applications to ecological risk assessment.</td>
</tr>
<tr>
<td>6371</td>
<td>Procedures and Techniques in Ecological Risk Assessment (3:3:0).</td>
<td>This course is designed to provide students with a solid foundation in risk assessment methods. Students will learn how the ecological risk assessment framework developed by the U.S. EPA is used to assess the potential hazards of chemicals.</td>
</tr>
<tr>
<td>6385</td>
<td>Statistical Applications in Environmental Toxicology (3:3:0).</td>
<td>Prerequisite: STAT 5302 or equivalent. Designed for students who wish to understand the interrelationships of statistical distributions and particular statistical approaches to environmental toxicology data analysis.</td>
</tr>
</tbody>
</table>

Graduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>6391</td>
<td>Modeling and Simulation in Ecotoxicology (3:2:1).</td>
<td>Prerequisite: Calculus. Model development, implementation, and simulation applied to ecotoxicology; stressor responses; toxicokinetics; individual organism effects; individual-based models; population, community, and landscape effects; parameter estimation; design and analysis of simulation experiments; and model validation.</td>
</tr>
<tr>
<td>6431</td>
<td>Biomarkers in Toxicology (4:2:2).</td>
<td>Prerequisite: ENTX 6325 and 6326. Lecture and laboratory on biomarker theory and use. Biochemical, physiological, histological responses to chemical exposure, effects and susceptibility are studied. Laboratory stresses individual and team approaches.</td>
</tr>
<tr>
<td>6445</td>
<td>Chemical Sources and Fates in Environmental Systems (4:4:0).</td>
<td>Prerequisite: Organic and analytical or environmental chemistry or consent of instructor. Environmental phenomena and physical properties of chemicals are used to understand processes governing chemical fate in the environment from global to micro scales.</td>
</tr>
</tbody>
</table>

7000. Research (V1-12).
8000. Doctor's Dissertation (V1-12).

Toxicology (TOX)

Graduate Program

The Institute of Environmental and Human Health integrates the efforts of Texas Tech University, the School of Law, and the Health Sciences Center in a joint venture to assess the impacts of toxic chemicals and other stressors on the natural environment. Attracting graduate students at both the master's and doctoral level, TIEHH includes faculty with backgrounds in biological sciences, medicine, epidemiology, biostatistics, engineering, chemistry, computer science, law, mathematics, pharmacology, physiology, and wildlife biology. Because of the multidisciplinary nature of environmental toxicology, prospective students should contact the graduate advisor to discuss prerequisites and prior training. Generally, a strong background in the natural, physical, or health sciences will provide the necessary preparation. Students interested in pursuing a degree must complete online applications to the Graduate School (www.gradschool.ttu.edu) and to the Environmental Toxicology Graduate Program (www.tiehh.ttu.edu).

The M.S. program (36 hours) and the Ph.D. program (72 hours) are composed of coursework emphasizing the principles of toxicology, the environmental fate of chemicals, statistical approaches to study design, data handling, and data analysis, and seminars in environmental toxicology. Supplemental coursework, research, and thesis or dissertation hours are chosen by the student with the guidance of their committee, allowing for focus on the student's particular research emphasis. Students pursuing either degree must perform an original research project, prepare a written thesis or dissertation, and defend the work in a public defense.
The B.A. program with a major in geology requires GEOL 1303, 1101, 1102, 2305, 3302, 3421, 3428, at least 13 hours of junior-senior level geosciences electives (six hours of which must include a laboratory), and a senior research project, GEOL 4312. Adjunct requirements include MATH 1321, CHEM 1307, 1107, PHYS 1403. 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 coursework; 6 hours must be at the junior-senior level. The atmospheric science minor requires ATM 1300, 1100, 2301, 2316, 3301, 4300, and GEOL 3522 or another approved science or mathematics course.

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.

Geosciences—Geology Concentration Curriculum, B.S. Degree

### About the Program

This department supervises the following degree programs:

- Bachelor of Arts in Geosciences
- Bachelor of Science in Geosciences
- Master of Science in Atmospheric Science
- Master of Science in Geosciences
- Doctor of Philosophy in Geosciences

Areas of concentration at the undergraduate level include geology and geophysics and a minor in atmospheric science.

### Undergraduate Program

**Geology Concentration, B.S. Degree.** The geology concentration 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.

**Geophysics Concentration, B.S. Degree.** The geophysics concentration 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. A geophysics degree requires a minor in mathematics, physics, atmospheric sciences, geology, engineering, or an approved composite of courses from these fields. The courses required for the geophysics major will vary depending on the chosen minor. The geophysics major combined with the appropriate minor (or adjunct classes) must include the following courses: GEOL 1303, 1101, 1304, 1102, 2305, 3102, 3302, 3310, 3421, 4101; G PH (two of the following) 4300, 4322, 4323; CHEM 1307, 1107; PHYS 1408, 2401; MATH 1351, 1352, 2350, and 2360 (or 3350); an additional 15 hours of approved upper-level electives chosen from atmospheric science, geology, geophysics, physics, engineering, or mathematics (at least 6 hours of these electives must be in fields other than geology); and a senior research project (GEOL 4312) in a topic related to geophysics.

**Geology Concentration, 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 students 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, 3302, 3421, 3428, at least 13 hours of junior-senior level geosciences electives (six hours of which must include a laboratory), and a senior research project, GEOL 4312. Adjunct requirements include MATH 1321, CHEM 1307, 1107, PHYS 1403. The minor may be in any area approved by the college.

### Arts and Sciences Faculty

**James E. Barrick, Ph.D., Chairperson**

**Horn Professor:** Chatterjee

**Professors:** Barnes, Barrick, Güven, Haragan, Leary, Lehman

**Associate Professors:** Chang, Gurrola, Karlsson, Nagihara, Ridley, Schroeder, Yoshinobu

**Assistant Professors:** Basu, Holterhoff, Leverington, Weiss

**Adjunct Faculty:** Correa, Johnson
**Graduate Program**

Master’s degree candidates may specialize in areas within geology, atmospheric science, and geophysics. At the doctoral level, research concentrations for the major in geoscience are available in (a) sedimentology, sedimentary petrology, petroleum geology; (b) clay mineralogy and low temperature geochemistry, igneous petrology, high temperature geochemistry, and stable-isotope geochemistry; (c) paleobiology and biostratigraphy; (d) geophysics, structural geology, tectonics; and (e) integrated studies in earth and atmospheric sciences. Details concerning the specific makeup of these areas are available from the department.

General degree requirements are those of the Graduate School. Admitted students are strongly encouraged to associate themselves with a faculty member or members by the end of their first semester in residence. The instructor(s) will serve as the student’s principal advisor and will be responsible for the student’s degree program.

The department encourages students with bachelor’s degrees from other sciences to enter the geosciences graduate program. Required leveling work will be determined on an individual basis, primarily by the staff member(s) in the student’s field of interest. A graduate minor may be taken either inside or outside this department.

Requirements for the master’s degree in atmospheric science beyond those stipulated by the Graduate School, if any, are determined in each case by the student’s thesis committee. Requirements for the master’s degree in geoscience are completion of 27 graduate hours in geology, geophysics, or related fields; 3 hours in science or engineering beyond those required for an undergraduate degree; and 6 hours of thesis credit. A 36-hour nonthesis option in geoscience is also available.

Requirements for the doctor’s degree follow those of the Graduate School. The first-year Ph.D. student will be expected to prepare and defend a research proposal. The intent of this work is to determine whether the individual is capable of Ph.D.-level research. In the second year, the student will formalize the dissertation topic and committee. Under normal circumstances, the committee will consist of 3 to 5 members, including the faculty advisor. The Comprehensive Examination will be completed before the end of the fourth long semester in residence. One tool subject is required. Tool subjects include foreign language, computer science, and statistics and are determined by the graduate advisor and the student’s dissertation committee. The tool can be met by taking two successive courses in the tool subject for a total of at least 6 semester hours, except for foreign language as outlined in the Graduate School section of this catalog.

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**Atmospheric Science (ATMO)**

*(To interpret course descriptions, see page 8.)*

**Undergraduate Courses**

1100. [GEOL 1147, 1447] Atmospheric Science Laboratory (1:0:2). Discussion and practical experience in weather analysis, methods of instrumentation, and observational meteorology.

1300. [GEOL 1347, 1447] 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.

2316. Severe and Hazardous Weather (3:3:0). Prerequisite: ATMO 1100, 1300. Basic meteorology of severe or hazardous weather, focusing on events affecting the U.S., especially the Great Plains and adjacent regions of Texas.

**Graduate Courses**

5101. Atmospheric Science Seminar (1:1:0). Discussions of current research or selected topics of interest. May be repeated for credit.

5301. Individual Studies in Atmospheric Science (3:3:0). Prerequisite: Consent of instructor. A structured independent graduate studies course under the guidance of a faculty member. May be repeated for credit.

5302. Weather, Climate, and Applications (3:3:0). Basic principles of atmospheric science, with particular emphasis on applications, including severe weather, air pollution, and global climate change.


5316. Dynamics of Severe Storms (3:3:0). Observations and theoretical studies of severe storms. Conceptual and numerical models of storm structure and development.


5319. Boundary Layer Meteorology (3:3:0). Boundary-layer turbulent transfer processes are examined, including diffusion, mixing, diabatic modification, low-level jet formation, and moisture discontinuities.


5321. Cloud and Precipitation Physics (3:3:0). Processes of cloud droplet nucleation; initial growth of droplets and cloud droplet size spectra; theories of natural precipitation processes and techniques for precipitation enhancement.

5327. Radar Meteorology (3:3:0). Applications of radar to investigation of precipitating weather systems. Emphasis is given to analysis and interpretation of radar data in conjunction with other data sources.

5328. Synoptic Meteorology (3:2:3). Basic techniques of interpreting meteorological data. Applications of analysis techniques to basic research and weather forecasting.

5331. Analysis of Geophysical Data Fields (3:3:0). The application of fourier analysis, times series and spectral analyses, and objectives analysis to geophysical data fields.

5332. Regional Scale Numerical Weather Prediction (3:3:0). Regional scale dynamics, numerical solution of geophysical problems, and numerical prediction of severe weather events such as tornadoes and flash floods. Development of numerical prediction models.

5351. Meteorological Data Acquisition and Instrumentation Systems (3:2:3). Exploration, design, integration and application of meteorological data acquisition and instrumentation systems.


5353. Meteorologic Field Experiments (3:3:0). An overview of designing, planning, and completing atmospheric field experiments.

6000. Master’s Thesis (V1-6).

7000. Research (V1-12).

**Geochemistry (G CH)**

**Graduate Courses**

5300. Individual Studies in Geochemistry (3:3:0). A structured independent graduate studies course under the guidance of a faculty member. May be repeated for credit.


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* May be used in fulfilling natural (laboratory) science requirements.

** May be used in fulfilling technology and applied science requirements.
5305. Environmental and Aquen Geochemistry (3:3:0). Prerequisite: Inorganic chemistry or equivalent. Theoretical and applied aspects of geochemistry occurring in the upper crust. May be repeated for credit.

5307. X-Ray Diffraction Methods (3:2:3). Fundamental and practical aspects of X-ray diffraction on polycrystalline substances such as minerals, rocks, and other solids.

5309. Clay Mineralogy (3:2:3). Atomic structures of clay minerals in relation to physical, engineering, and colloidal chemical properties of these materials. Instrumental methods of clay analysis such as X-ray diffraction and ion exchange methods.


Geology (GEOL)

Undergraduate Courses

1101. * [GEOL 1103, 1403] Physical Geology Laboratory (1:0:2). Laboratory study of rocks, minerals, and geologic mapping.

1102. * [GEOL 1104, 1404] 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. * [GEOL 1303, 1403] Physical Geology (3:3:0). Beginning course. A study of earth materials (rocks and minerals), formation (erosion and deposition), diastrophism (earth movements and mountain building), volcanism, and earth resources.

1304. * [GEOL 1304, 1404] 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.


2305. [GEOL 2309, 2409] 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.

3102. Field Methods in Structural Geology (1:0:3). Corequisite: GEOL 3202. Topics include field structural analysis and an introduction to geologic mapping.

3301. Geomorphology and Aerial Photointerpretation (3:2:3). Prerequisite: GEOL 1303, 1101, or consent of instructor. Introductory course in processes that produce morphogenetic changes at earth's surface. Evolutionary development of hill slopes and drainage channels. Illustrated by aerial photos.

3302. Structural Geology (3:2:3). Prerequisite: GEOL 2305. 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. (Writing Intensive)

3310. Qualitative Methods in Geology (3:3:0). This class will emphasize error propagation in geologically sampled data, and computer methods to process these data.

3322. Oceanography (3:3:0). Prerequisite: GEOL 1303 or GEOF 1401 or ATM 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 sedimentary patterns.

3323. ** Environmental Geology (3:3:0). Prerequisite: GEOL 1303 or GEOF 1401. Study of geological processes that affect human activities, emphasizing natural hazards, water resources, waste disposal, energy, mineral resources, and land use and planning.

3421. Petrology (4:2:1). 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. (Writing Intensive)

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.

5001. Problems in Geosciences (V1-6). Independent study under guidance of a faculty member.

5101. Seminar (1:1:0).

5211. Sedimentary Petrology (2:2:0). Origin, classification, and diagenesis of siliciclastic and carbonate sediments and sedimentary rocks. May be repeated for credit.

5212. Sedimentary Petrology Methods (2:0:6). Textural analysis, mineral separation, and thin section petrography of siliciclastic and carbonate sediments and sedimentary rocks. May be repeated for credit.

5300. Individual Studies in Geology (3:3:0). A structured independent graduate studies course under the guidance of a faculty member. May be repeated for credit.

5303. Advanced Igneous Petrology (3:3:0). Phase relations, geochemistry, and tectonic setting of igneous rocks. Emphasis on modern concepts of magma origin and differentiation. May be repeated for credit.

5305. Tectonic Evolution of Western North America (3:3:0). Prerequisite: Consent of instructor. Survey of the geologic and tectonic evolution of the western margin of North America over the past 3 billion years.

5310. Advanced Quantitative Methods in Geology (3:3:0). This class will emphasize computer methods of error analysis, data processing, and modeling of geological data. Applications to current research problems will be included.

5311. Micropaleontology (3:2:3). Lectures and labs are designed to acquaint the student with basic lab techniques, morphology, and classification within the major microfossil groups, and to

5350. 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 (VI-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.


4321. Igneous and Metamorphic Petrography (3:2:3). Prerequisite: GEOL 4320. The study of rock texture and paragenesis in thin section.


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.

4361. Advanced Structural Geology (3:3:3). Prerequisite: GEOL 3302. Topics include deformation mechanisms and rheology, tectonic evolution of oceanic lithosphere and evolution of arcs.

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. 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.

May be used in fulfilling natural (laboratory) science requirements.

May be used in fulfilling technology and applied science requirements.
demonstrate the usefulness and importance of microfossils as biostratigraphic and paleoecologic tools.

5314. Problems in Stratigraphy (3:3:0). Analysis of selected stratigraphic units emphasizing geometry, paleogeography, environments of deposition, depositional models, and theoretical problems.


5325. Petrophysics (3:3:0). Physical properties of reservoir rocks, including porosity, permeability, composition, and texture. Interrelationships between rock characteristics and electric log responses in geologic exploration and exploitation.

5327. Problems in Paleontology (3:2:3). Subjects include origin of life, Precambrian life, origin and relationships of fish, amphibians, reptiles, dinosaurs, pterosaurs, birds, and primates; mass extinction and impact cratering processes.

5340. Advances in Historical Geology (3:3:0). Survey of currently important topics in earth processes and history for science educators, with an emphasis on how geologists interpret modern and past geologic events.


5342. Spatial Data Analysis and Modeling in Geosciences (3:2:3). Introduction to vector GIS data manipulation, geostatistics, and spatial modeling applied to geosciences. Involves computer lab exercises.

5361. Advanced Structural Geology (3:3:3). Prerequisite: GEOL 3302. Topics include deformation mechanisms and rheology, tectonic evolution of oceanic lithosphere, and evolution of arcs. May be repeated once for credit.

5362. Advanced Tectonics (3:3:0). Survey of the plate tectonics paradigm in terms of its historical development and modern application.

5399. Advanced Petrophysics (3:3:0). Analysis of complex reservoirs, such as shaly sands, carbonates with complex pore geometries, fractured reservoirs, and gas-bearing dolomites. The development and use of new logging tools is also covered.

5410. Vertebrate Paleontology (4:3:3). An introduction to the principles of paleontology governing evolution, morphology, and phylogeny of major groups of vertebrates.


5428. GIS in Natural Science and Engineering (4:3:3). Survey of the broad spectrum of geo-information science and technology applied to researches in natural science and engineering. Involves computer lab exercises.

6000. Master’s Thesis (V1-6).

7000. Research (V1-12).

8000. Doctor’s Dissertation (V1-12).

Geophysics (G PH)

Undergraduate Courses

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.


Graduate Courses

5211. Advanced Seismic Exploration Methods (2:1:3). Methods to collect, process, and interpret seismic data are discussed.

5223. Advanced Applied Electrical Methods (2:1:3). Electromagnetic, resistivity, and ground penetrating radar methods of geophysical investigation are discussed.

5231. Seismic Wave and Ray Theory is discussed.

5233. Electrical Methods (2:2:0). Theory and numerical representation of electromagnetic and electrical methods are discussed.

5300. Individual Studies in Geophysics (3:3:0). Prerequisite: Consent of instructor. A structured independent graduate studies course under the guidance of a faculty member. May be repeated for credit.


5324. Radiative Transfer (3:3:0). Principles of radiation, the radiative transfer equation. Applications to absorption, emission, and scattering processes. Determination of physical properties from satellite measurements.

Department of Health, Exercise, and Sport Sciences

Faculty

Professors: Carter, McComb, Reeve
Associate Professors: Burns, Hart, Lochbaum, Massey-Stokes, Meaney, Miller, Roncesvalles, Tacón, Williams
Assistant Professors: Bae, Boros, Kim, Sawyer
Instructors: Griffin, Wiedenfeld

About the Program

This department supervises the following degree programs:

- Bachelor of Arts in Exercise and Sport Sciences
- Bachelor of Science in Exercise and Sport Sciences
- Bachelor of Science in Health
- Master of Science in Exercise and Sport Sciences
- Master of Science in Sports Health

These academic programs prepare individuals for professional careers, advanced graduate study, and entry into allied health programs. The department also participates in collaborative Ph.D. degree programs in physiology (with the Department of Physiology, Texas Tech Health Sciences Center), in curriculum and instruction (with the Department of Curriculum and Instruction, College of Education), and in sport and exercise psychology (with the Department of Educational Psychology and Leadership, College of Education). In addition, the department offers courses for all university students in the personal fitness and wellness program.

Undergraduate Program

Bachelor of Science, Bachelor of Arts
Exercise and Sport Sciences

Students majoring in exercise and sport sciences may choose from one of four tracks: physical education teacher education; exercise and health promotion; exercise science; or sport studies. The minimum number of hours for the major is 36, including 24 junior-senior level hours. Departmental faculty members will provide information about career options associated with each track. A four-year plan for each track is presented in this section. Students must meet with a departmental advisor to verify appropriate courses and other degree requirements for each track. Students in pre-allied health fields should consult with the departmental advisor for information on required courses and acceptable substitutions.

Bachelor of Science in Health

Students interested in careers in health promotion should choose to major in health, which requires 48 hours. The two tracks in this major are the community health track and the school health track.
School Health Track

The school health track prepares students for careers in teaching health in EC-12 schools. A 2.5 GPA is required to enroll in teacher education courses. Also, students must meet other requirements outlined by the College of Education.

### FIRST YEAR

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1320, (recommended)*</td>
<td>MATH or PHIL 2310*</td>
</tr>
<tr>
<td>BIOL 1402 or BIOL 1403 or</td>
<td>POLS 2302, Am. Public Policy</td>
</tr>
<tr>
<td>or CHEM 1305 &amp; 1105 or PHYS 1401</td>
<td>ZOOL 2403, Human Anatomy</td>
</tr>
<tr>
<td>POLS 1301, Amer. Govt., Org.</td>
<td>PF&amp;W 1112, Diet and Exercise</td>
</tr>
<tr>
<td>HLTH 1300, Patterns of Healthful Living</td>
<td>HLTH 1302, Found. of Health</td>
</tr>
<tr>
<td>TOTAL</td>
<td>TOTAL</td>
</tr>
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### SECOND YEAR

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 2300-level (except ENGL 2371)**</td>
<td>ENGL 2300-level (except ENGL 2371)**</td>
</tr>
<tr>
<td>Sophomore Foreign Language***</td>
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<tr>
<td>EDIT 2318, Computing/Information Tech</td>
<td>HIST 2301 or HIST 3310</td>
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<tr>
<td>HIST 2300, History of U.S. to 1877</td>
<td>COMS 2300 (recommended)</td>
</tr>
<tr>
<td>HLTH 1305, Human Sexuality</td>
<td>Visual and Performing Arts</td>
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### THIRD YEAR

<table>
<thead>
<tr>
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<th>Spring</th>
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<tbody>
<tr>
<td>HLTH 3311, Comm. &amp; Chronic Dis.</td>
<td>HLTH 3314, Health for Adol.</td>
</tr>
<tr>
<td>HLTH 3313, Preadolescents</td>
<td>HLTH 3255, Hlth. Cor. Chem. Dep.</td>
</tr>
<tr>
<td>HLTH 4312, Psychosocial Health</td>
<td>HDFS 3326 or HD 3306</td>
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<tr>
<td>EDSE 2300, Schools, Soc., &amp; Div.#</td>
<td>EDUL 4380, Lit. in Content Areas</td>
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### FOURTH YEAR

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<tbody>
<tr>
<td>HLTH 4307, Hlth Prog Plan &amp; Eval.</td>
<td>EDSE 4000, Stud. Teaching Sec.</td>
</tr>
<tr>
<td>HLTH 4330, Coor. School Hlth Prog</td>
<td>EDEL 4000, Stud. Teaching Elem.</td>
</tr>
<tr>
<td>EDSE 4311, Cur. Plan, Dev., &amp; Eval</td>
<td>EDSE 4330, Capstone</td>
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<td>EDSE 4320, Instructional Methods</td>
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Designated health electives: ESS 3314, HLTH 2302, HLTH 2307, HLTH 3301, and HLTH 3302

* Only one of MATH 1300, 1320, and 1420 may apply. Only one of MATH 1330 and 1430 may apply.

** ENGL 2371 does not fulfill the requirement for 3 hours of sophomore English.

*** Foreign language requires 6 hours of sophomore-level courses. A high school transcript is needed if two years of language were not taken in high school. If two years were taken in high school, a placement test or review course will be required before enrolling in sophomore-level courses. This model assumes that the student passed the Foreign Language Placement exam and is permitted to enroll in 6 hours of sophomore-level foreign language courses. Students who do not score high enough to place into the sophomore-level courses will need to take the review course in addition to two sophomore courses.

# In this model, EDSE 2300 fulfills both the multicultural requirement and the individual/group behavior requirement.

The minor for this track is 27 hours of education courses needed for teacher certification. To begin this minor, students must file an application with the College of Education one semester before beginning these classes, have a GPA of 2.5, and have passed the TSI test. These courses are to be completed in the last 3 semesters of this degree. Check with the College of Education for curriculum changes.

University and College of Arts and Sciences degree requirements must be satisfied.

Community Health Track

The community health track prepares students for careers in public and private agencies that provide health information and interventions to a variety of individuals and groups.

### FIRST YEAR

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<tr>
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<tr>
<td>or CHEM 1305 &amp; 1105 or PHYS 1401</td>
<td>ZOOL 2403, Human Anatomy</td>
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<td>POLS 1301, Amer. Govt., Org.</td>
<td>PF&amp;W 1112, Diet and Exercise</td>
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<td>HLTH 1302, Foundations of Health</td>
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<td>ENGL 2300-level (except ENGL 2371)**</td>
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<td>Designated Multicultural#</td>
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### THIRD YEAR

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<tr>
<td>HLTH 3311, Com. and Chronic Dis.</td>
<td>HLTH 3312, Hlth Con. of Sp. Pop.</td>
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<tr>
<td>HLTH 3325, Hlth. Chem. Depend.</td>
<td>ESS 3321, First Aid</td>
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<td>Elective</td>
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### FOURTH YEAR

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<tbody>
<tr>
<td>HLTH 4307, Prog. Plan. and Eval.</td>
<td>HLTH 4475, Inter. in Com. Health</td>
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<td>HLTH 4312, Psychosocial Health</td>
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Designated health electives - Choose a minimum of 9 hours from the following courses: ESS 2222, ESS 4363, HLTH 1305, HLTH 2302, HLTH 2307, HLTH 3301, HLTH 3302, PSY 4332. Departmental advisor may approve other electives depending on student’s career interest.

* Only one of MATH 1300, 1320, and 1420 may apply. Only one of MATH 1330 and 1430 may apply.

** ENGL 2371 does not fulfill the requirement for 3 hours of sophomore English.

*** Foreign language requires 6 hours of sophomore-level courses. A high school transcript is needed if two years of language were not taken in high school. If two years were taken in high school, a placement test or review course will be required before enrolling in sophomore-level courses. This model assumes that the student passed the Foreign Language Placement exam and is permitted to enroll in 6 hours of sophomore-level foreign language courses. Students who do not score high enough to place into the sophomore-level courses will need to take the review course in addition to two sophomore courses.

This model assumes that a 3-hour course that fulfills the multicultural requirement will also fulfill the individual/group behavior requirement. University and College of Arts and Sciences degree requirements must be satisfied. Elective courses may be required to fulfill the 121-hour degree with 40 hours of 3000-4000 level courses; 24 hours of these courses must be from health. IMPORTANT: Only a possible 34 hours of the required 40 hours of 3000-4000 level courses will come from this track with only 6 hours of designated electives at the 3000-4000 level. By completing at least 6 hours in a minor at the 3000-4000 level, students will fulfill the 40 hours of 3000-4000 level coursework and avoid the need of extra coursework to fulfill the 40-hour requirement of 3000-4000 level courses.

A minor of 18 hours minimum is required.
Sports Studies Track
The sport studies track provides for the study of interdisciplinary ideas, concepts, and issues related to sport and physical activity from social and cultural perspectives. Upon graduation, students may pursue management and/or coaching opportunities in youth, intercollegiate, or professional sports. Additionally, students may pursue the advanced study of sport at the graduate level. Students interested in coaching interscholastic (junior/high school) sports should pursue teacher certification through the PETE track.

<table>
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<td>HIST 2300, History of U.S. to 1877</td>
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<td>or CHEM 1305 &amp; 1105 or PHYS 1401</td>
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<td>ZOOL 2403, Human Anatomy</td>
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<td>ESS 1301, Introduction to ESS</td>
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<td>HIST 2301 or HIST 3310</td>
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<td>ESS 3301, Biomechanics</td>
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<tr>
<td>CS 1300 or EDIT 2318 (recommended)</td>
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<td>ESS 3354, Sport in World Culture</td>
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<tr>
<th>THIRD YEAR</th>
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<tr>
<td>ESS 3303, Motor Learning</td>
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<td>ESS 3314, Life Span Motor Dev.</td>
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<tr>
<td>ESS 3305, Exercise Physiology</td>
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<tr>
<td>ESS 3318, Exercise &amp; Sport Psych.</td>
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* Only one of MATH 1300, 1320, and 1420 may apply. Only one of MATH 1330 and 1430 may apply.

** ENGL 2371 does not fulfill the requirement for 3 hours of sophomore English.

*** Foreign language requires 6 hours of sophomore-level courses. A high school transcript is needed if two years of language were not taken in high school. If two years were taken in high school, a placement test or review course will be required before enrolling in sophomore-level courses. This model assumes that the student passed the Foreign Language Placement exam and is permitted to enroll in 6 hours of sophomore-level foreign language courses. Students who do not score high enough to place into the sophomore-level courses will need to take the review course in addition to two sophomore courses.

This model assumes that a 3-hour course fulfilling the multicultural requirement will also fulfill the individual/group behavior requirement.

A minor of 18 hours minimum is required.

University and College of Arts and Sciences degree requirements must be satisfied. Additional support and elective courses may be required to total the minimum of 121 hours with 40 of those hours at the 3000-4000 level; 24 hours should be ESS courses.

Exercise and Health Promotion Track
Students majoring in exercise and sport sciences seeking careers in commercial, corporate, or clinical exercise settings should complete the exercise and health promotion track. The knowledge, abilities, and skills gained in this track prepare students to pursue nationally recognized certifications, such as those offered by the American College of Sports Medicine and other professional fitness organizations.

<table>
<thead>
<tr>
<th>FIRST YEAR</th>
<th>Fall</th>
<th>Spring</th>
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<tr>
<td>MATH 1320 (recommended)*</td>
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<td>MATH or PHIL 2310*</td>
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<tbody>
<tr>
<td>ESS 3301, Biomechanics</td>
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<td>ESS 3303, Motor Learning</td>
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<td>ESS 3314, Life Span Motor Dev.</td>
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<tr>
<td>ESS 3318, Exer. and Sport Psych.</td>
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<td>ESS 4363, Ex. Psych.</td>
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<td>ZOOL 2404, Human Physiology</td>
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<td>NS 1325, Nut., Foods, &amp; Healthy Living</td>
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<td>ESS 3368, Ex. Testing &amp; Pres.</td>
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Exercise and health promotion designated electives include ESS 3323, ESS 4345, ESS 4398, HLTH 3301, HLTH 3311, HLTH 4307, NS 4330, and PSY 4330.

* Only one of MATH 1300, 1320, and 1420 may apply. Only one of MATH 1330 and 1430 may apply.

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*** Foreign language requires 6 hours of sophomore-level courses. A high school transcript is needed if two years of language were not taken in high school. If two years were taken in high school, a placement test or review course will be required before enrolling in sophomore-level courses. This model assumes that the student passed the Foreign Language Placement exam and is permitted to enroll in 6 hours of sophomore-level foreign language courses. Students who do not score high enough to place into the sophomore-level courses will need to take the review course in addition to two sophomore courses.

This model assumes that a 3-hour course fulfilling the multicultural requirement will also fulfill the individual/group behavior requirement.

These courses should be taken in the following order: ZOOL 2403, ESS 3305, ESS 3368, plus ESS 4372 before ESS 4475.

A minor of 18 hours minimum is required.

University and College of Arts and Sciences degree requirements must be satisfied. Additional elective courses may be required to fulfill the required 121-hour degree with 40 hours of 3000-4000 level courses; 24 hours should be ESS courses.
Physical Education Teacher Education Track

Students majoring in exercise and sport sciences pursue teacher certification through the physical education teacher education (PETE) track. The certification program prepares students to teach physical education in the EC – 12 grade levels. In addition to the required courses in the PETE track, students must complete the minor in education. A 2.5 GPA is required to enroll in teacher education courses. Also, students must meet other requirements outlined by the College of Education. Students interested in teaching physical education or sport coaching in junior and senior high schools should complete the requirements in this track.

Exercise Science Track

The exercise science track provides students an opportunity for concentrated study in the scientific foundations of exercise and physical activity. Students are prepared for advanced graduate study in biomechanical, physiological, and psychological aspects of exercise. Students pursuing entry into allied health programs (e.g., physical therapy, occupational therapy, medical school) may select this track. Students interested in admission to allied health programs must consult with the departmental advisor regarding prerequisites for those programs.

<table>
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<th>Spring</th>
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<tbody>
<tr>
<td>ESS 3301, Biomechanics</td>
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<td>ESS 3303, Motor Learning</td>
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<td>ESS 3318, Ex. &amp; Sport Psych.</td>
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<td>EDSE 4300-level</td>
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PTE core requires a minimum of 5 hours of PFW. ESS electives include 11 hours from PFW (2 additional hours maximum), ESS 2222, ESS 3321, ESS 3352, ESS 3354, ESS 3356, ESS 4398 (see advisor for appropriate topics).

Exercise science core electives must include a minimum 9 hours from the following: ESS 3323, ESS 3368, ESS 4361, ESS 4363, ESS 4365, ESS 4366, and ESS 4368.

Exercise science designed electives (select 6 hours): C E 2301, C E 3302, CHEM 2303, ESS 4000 (6-hour max), ESS 4395, ESS 4398, HLTH 3301, HLTH 3311, PSY 3317 or PSY 3327, ZOOL 2404, and other electives as approved by departmental advisor.

For the minor, students are encouraged to pursue additional coursework in a second teaching content area.

The minor for this track is 27 hours of education courses needed for teacher certification. To begin this minor, students must file an application with the College of Education one semester before beginning these classes, have a GPA of 2.5, and have passed the TSI test. These courses are to be completed in the last three semesters of this degree. Check with the College of Education for curriculum changes. Students are strongly encouraged to pursue additional coursework in a second teaching content area.

University and College of Arts and Sciences degree requirements must be satisfied.
**Minor in Exercise and Sport Sciences**

The minors in exercise and sport sciences require a minimum of 18 hours in ESS courses with at least 12 hours from 3000 level or above ESS courses. No more than 3 hours from ESS 4000 may be counted. Six credit hours of ESS courses are required in residency. See a departmental advisor for additional information and completion of the minor in exercise and sport sciences on the degree plan.

**Minor in Health**

The minors in health require a minimum of 18 hours in HLTH courses with at least 12 hours from 3000 level or above HLTH courses. No more than 3 hours from HLTH 4300 may be counted. Six credit hours of HLTH courses are required in residency. See a departmental advisor for additional information and completion of the minor in health on the degree plan.

**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, 3305, 3325, 4325, and one course from health, nutrition, or first aid (ESS 3321). Beginning September 2004, coursework in therapeutic exercise-modalities will be required. Upon satisfactory completion of these requirements students will be qualified to take the Texas Athletic Training Licensure Examination.

**Personal Fitness and Wellness Program**

University students interested in learning sport skills, improving their physical fitness, and developing knowledge about sport, exercise, and physical activity should enroll in courses in the personal fitness and wellness program. To satisfy the College of Arts and Sciences requirement of two hours of fitness and wellness, students may complete any two personal fitness and wellness (PF&W) courses. For a specific activity, the completion of the course sequence is allowed if the sequence is taken in the appropriate order from beginning to advanced levels. 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)**

*(To interpret course descriptions, see page 8.)*

**Undergraduate Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1301</td>
<td>[PHED 1164, 1238, 1301]. Introduction to Exercise and Sport Sciences (3:3:0).</td>
<td>An introduction to the professions in exercise and sport sciences including the history, ideas, events, people, and programs that shaped those professions.</td>
</tr>
<tr>
<td>2222</td>
<td>Resistance Training and Conditioning (2:0:4).</td>
<td>Principles of resistance training and other methods of physical conditioning with emphasis on program planning and implementation.</td>
</tr>
<tr>
<td>2245</td>
<td>Practical Experiences in Physical Education (2:1:2).</td>
<td>Prerequisite: ESS 1301. Teaching experiences in physical education settings.</td>
</tr>
<tr>
<td>2275</td>
<td>Practicum in Exercise and Health Promotion (2:0:4).</td>
<td>Prerequisite: ESS 1301. Supervised experiences in clinical, commercial, and corporate exercise and health facilities.</td>
</tr>
<tr>
<td>3301</td>
<td>Biomechanics (3:2:2).</td>
<td>Prerequisite: ZOOL 2403 or equivalent. The mechanical analysis of human motion with emphasis on biomechanical principles and techniques.</td>
</tr>
<tr>
<td>3303</td>
<td>Motor Learning (3:2:2).</td>
<td>A study of the many aspects of learning and performance of motor skills. (Writing Intensive)</td>
</tr>
<tr>
<td>3305</td>
<td>Exercise Physiology (3:2:2).</td>
<td>Prerequisite: ZOOL 2403 or equivalent. A study of the various physiological systems as they function during exercise and training.</td>
</tr>
<tr>
<td>3314</td>
<td>Life Span Motor Development (3:2:2).</td>
<td>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. (Writing Intensive)</td>
</tr>
<tr>
<td>3318</td>
<td>Exercise and Sport Psychology (3:2:2).</td>
<td>Emphasis on the social and psychological factors pertaining to participation in sport and exercise.</td>
</tr>
<tr>
<td>3321</td>
<td>First Aid (3:2:2).</td>
<td>Skills and knowledge in First Aid and CPR. American Red Cross certification is possible.</td>
</tr>
<tr>
<td>3323</td>
<td>Care and Prevention of Athletic Injuries (3:3:0).</td>
<td>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.</td>
</tr>
<tr>
<td>3335</td>
<td>Health and Physical Education for Children (3:3:0).</td>
<td>Prerequisite: Junior standing. Knowledge and experiences in planning and implementing developmentally appropriate health and physical education programs for early childhood settings and elementary schools.</td>
</tr>
<tr>
<td>3342</td>
<td>Principles of Teaching Skill Themes and Movement Concepts (3:2:2).</td>
<td>Knowledge and experiences in teaching skill themes and movement concepts. (Writing Intensive)</td>
</tr>
<tr>
<td>3345</td>
<td>Adapted Physical Activities (3:2:2).</td>
<td>Prerequisite: ESS 2245 and ESS 3342. Theory and practice in administering and interpreting screening tests and adapting motor activities to the needs of the disabled.</td>
</tr>
<tr>
<td>3352</td>
<td>Gender Issues in Sport (3:3:0).</td>
<td>Examination of the ways sport experiences differ for males and females emphasizing historical, social, behavioral, and physiological dimensions. (W S 3307)</td>
</tr>
<tr>
<td>3354</td>
<td>Sport in World Cultures (3:3:0).</td>
<td>Historical and philosophical aspects of contemporary sport and leisure patterns across cultures, emphasizing the role of sport in society.</td>
</tr>
<tr>
<td>3356</td>
<td>Principles of Sport Coaching (3:3:0).</td>
<td>Principles of effective coaching including team motivation and organization, managing coach - athlete relationships, and administering personnel, facilities, and contests.</td>
</tr>
<tr>
<td>4000</td>
<td>Independent Studies in Exercise and Sport Sciences (V1-6).</td>
<td>Prerequisite: Departmental approval. A structured independent study under the guidance of a faculty member. May be repeated for credit up to 6 hours. (Writing Intensive)</td>
</tr>
<tr>
<td>4326</td>
<td>Practicum in Athletic Training (3).</td>
<td>Prerequisite: ESS 3323, 4325, or departmental approval. Supervised clinical experience in athletic training. May be repeated once for credit.</td>
</tr>
<tr>
<td>4327</td>
<td>Therapeutic Exercise and Modalities (3:3:0).</td>
<td>Prerequisite: ESS 3323 and departmental approval. Examines therapeutic modalities and rehabilitative techniques to reduce trauma and pain and to restore normal function following traumatic or overuse injury.</td>
</tr>
<tr>
<td>4345</td>
<td>Assessment of Physical Performance (3:3:0).</td>
<td>Methods of measurement and evaluation, including statistical applications, used in assessing fitness and motor skills.</td>
</tr>
<tr>
<td>4358</td>
<td>Sport Management (3:2:2).</td>
<td>Fundamental concepts and theories for management in sport programs. (Writing Intensive)</td>
</tr>
<tr>
<td>4361</td>
<td>Applied Biomechanics (3:3:0).</td>
<td>Prerequisite: ESS 3301. Study and application of biomechanical principles and methods in exercise, sport and clinical assessment and applied research.</td>
</tr>
<tr>
<td>4363</td>
<td>Principles and Theories in Exercise Psychology (3:3:0).</td>
<td>Prerequisite: ESS 3318. Psychological principles and theories related to exercise behavior in apparently healthy individuals and special populations. (Writing Intensive)</td>
</tr>
<tr>
<td>4365</td>
<td>Applied Motor Behavior (3:3:0).</td>
<td>Prerequisite: ESS 3303 and 3314. Analysis and application of motor behavior principles to special and clinical populations with motor problems.</td>
</tr>
<tr>
<td>4366</td>
<td>Motor Control (3:3:0).</td>
<td>Prerequisite: ESS 3303 and 3305, or equivalents. Multi-level approach to the neural foundations and theories underlying the control movements.</td>
</tr>
</tbody>
</table>
| 4368 | Applied Exercise Physiology (3:3:0). | Prerequisite: ESS 3305. Examination of physiological adaptations including changes in metabolic energy pathways, cardiorespiratory and
Graduate Program / Health, Exercise, and Sport Sciences

The M.S. in Exercise and Sport Sciences provides advanced study in biomechanics, exercise physiology, motor behavior, sport and exercise psychology, sports management, or teaching physical education and sport. The degree program consists of a minimum of 36 hours of graduate work; thesis and nonthesis options are available. The department will determine and prescribe any necessary leveling work. No foreign language is required.

The M.S. in Sports Health is designed to prepare students to work in medically based health and fitness settings. These clinical settings use exercise as a tool to improve health and fitness or as a means of rehabilitation (cardiovascular, pulmonary, or musculoskeletal). This program integrates sports medicine and exercise science and is appropriate for clinical exercise scientists and allied health professionals who wish to pursue careers in fields related to exercise science (e.g., clinical exercise physiologist, nurse, athletic trainer, physical therapist, physician). Students complete courses offered by the Department of Health, Exercise, and Sport Sciences in the College of Arts and Sciences and the Department of Rehabilitation Sciences at the Health Sciences Center. The knowledge, skills, and abilities required for certifications by leading organizations such as the American College of Sports Medicine and the National Strength and Conditioning Association serve as the foundations for the courses in this degree program.

Both thesis and nonthesis options are available for the degree which is administered through the Department of Health, Exercise, and Sport Sciences. The thesis option requires 42 hours of coursework including 6 hours of thesis credit. The nonthesis option requires 42 hours of coursework and the completion of comprehensive examinations covering course content. In consultation with their advisor, students have the option to select courses that are aligned with their career goals to fulfill degree requirements. Current course descriptions may be found in the listings of the various departments.

### Program Courses

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AHAT 5300</td>
<td>Advanced Anatomy (3:3:0)</td>
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<tr>
<td>ESS 5002</td>
<td>Internship in Sports Health (V1-6)</td>
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<tr>
<td>ESS 5305</td>
<td>Motor Learning (3:3:0)</td>
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<tr>
<td>ESS 5306</td>
<td>Biomechanics (3:3:0)</td>
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<tr>
<td>ESS 5307</td>
<td>Motor Development (3:3:0)</td>
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<tr>
<td>ESS 5310</td>
<td>Biomechanics of Musculoskeletal System (3:3:0)</td>
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<tr>
<td>ESS 5312</td>
<td>Behavioral and Psychological Aspects of Exercise (3:3:0)</td>
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<tr>
<td>ESS 5314</td>
<td>Methods in Biomechanics Research (3:3:0)</td>
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<tr>
<td>ESS 5315</td>
<td>Research Methods in Exercise and Sport Sciences (3:3:0)</td>
<td></td>
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<tr>
<td>ESS 5332</td>
<td>Applied Physiology of Exercise (3:3:0)</td>
<td></td>
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<tr>
<td>ESS 5334</td>
<td>Clinical Exercise Testing and Prescription (3:3:0)</td>
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<tr>
<td>ESS 5335</td>
<td>Cardiopulmonary Exercise Physiology (3:3:0)</td>
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<tr>
<td>ESS 5336</td>
<td>Skeletal Muscle Physiology (3:3:0)</td>
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<tr>
<td>ESS 5337</td>
<td>Electrocardiography (3:3:0)</td>
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<tr>
<td>ESS 6000</td>
<td>Master's Thesis (V1-6)</td>
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<tr>
<td>ESS 7000</td>
<td>Research (V1-12)</td>
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<tr>
<td>HLTH 5313</td>
<td>Health Behavior and Health Promotion (3:3:0)</td>
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<tr>
<td>HLTH 5344</td>
<td>Psychosocial Aspects of Health (3:3:0)</td>
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</tbody>
</table>

Students seeking either degree should consult with the chairperson of the department or the departmental secretary for graduate programs about their programs before enrolling in any courses.

The department also participates in a three collaborative Ph.D. programs in the areas of physiology (with the Department of Physiology, Texas Tech Health Sciences Center), in curriculum and instruction (with the Department of Curriculum and Instruction, College of Education), and in sport and exercise psychology (with the Department of Educational Psychology and Leadership, College of Education).

The collaborative Ph.D. program in physiology is designed to include both basic and applied physiology coursework with laboratory experiences using animal and human models.

The collaborative Ph.D. program in curriculum and instruction is designed to meet the needs of students who wish to teach, conduct research, and serve as faculty members in departments of kinesiology, exercise science or physical education within institutions of higher education. Within the departments, these faculty members would be engaged in preparing future physical education teachers and coaches.

The collaborative Ph.D. program in sport and exercise psychology is designed to meet the needs of students who wish to become faculty members in institutions of higher education. The student will be prepared to serve as faculty in departments of kinesiology as well as educational psychology and leadership. In addition, students wishing to earn a Ph.D. will be prepared for applied sport psychology careers as well as coaching.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5309</td>
<td>Children in Sport</td>
<td></td>
<td>The study of the physiological, psychological, and sociological variables</td>
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<td></td>
<td></td>
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<td>that influence children’s participation in sport.</td>
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<tr>
<td>5310</td>
<td>Biomechanics of the Musculoskeletal System (3:3:0)</td>
<td></td>
<td>Structure and function of the musculoskeletal system. Emphasis on tissue</td>
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<td>load, joint and muscle function, and biomechanical considerations for</td>
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<td>human performance and injury prevention.</td>
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<tr>
<td>5312</td>
<td>Behavioral and Psychological Aspects of Exercise (3:3:0)</td>
<td>ESS 5306 or consent of instructor. Examination of methods</td>
<td>The study of psychological processes and behaviors as they relate to</td>
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<td>research, instrumentation, and quantitative application of kinematic and</td>
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<td>kinetic concepts in the biomechanical analysis of human movement.</td>
</tr>
<tr>
<td>5313</td>
<td>Applied Psychology of Sport (3:3:0)</td>
<td>ESS 5320 or consent of instructor. Survey of psychological</td>
<td>Applied aspects of psychological skills in sport and how individuals can</td>
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<td></td>
<td>use these skills to positively affect sport and exercise participation,</td>
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<td>performance, motivations, and enjoyment.</td>
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<tr>
<td>5314</td>
<td>Methods in Biomechanics Research (3:3:0)</td>
<td>ESS 5306 or consent of instructor. Examination of methods</td>
<td>Study of leadership theory and its</td>
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<td></td>
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<td></td>
<td>application to the effective management of sport programs. The</td>
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<td>course will also examine current research topics in exercise and sport</td>
</tr>
<tr>
<td>5315</td>
<td>Research in Exercise and Sport Sciences (3:3:0)</td>
<td></td>
<td>Financial concepts and issues related to the sport industry, including</td>
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<td>methods and sources of revenue acquisition, financial analysis techniques,</td>
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<td></td>
<td></td>
<td>and economic impact.</td>
</tr>
<tr>
<td>5316</td>
<td>Management of Sport and Athletics (3:3:0)</td>
<td>ESS 5306 or consent of instructor. Examination of methods</td>
<td>Methods of organizing and administering sport and athletic programs. Study</td>
</tr>
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<td></td>
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<td>of staff, program, budget, health and safety, facilities, public health,</td>
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<td>duties of an athletic director, and national, state, and local controls.</td>
</tr>
<tr>
<td>5322</td>
<td>Historical Perspectives in Exercise and Sport Sciences</td>
<td>ESS 5308 or equivalent. Applied principles of exercise</td>
<td>Examination of significant historical people and events that shaped the</td>
</tr>
<tr>
<td></td>
<td>(3:3:0)</td>
<td>physiology including cardiorespiratory, biochemical, and</td>
<td>scientific study of exercise and sport.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>environmental considerations.</td>
<td></td>
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<tr>
<td>5324</td>
<td>Marketing and Promotion in Sport (3:3:0)</td>
<td></td>
<td>Understanding the sport industry. Developing knowledge and skills of</td>
</tr>
<tr>
<td></td>
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<td>marketing process in sport operations. Sport sponsorship, promotion, and</td>
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<td></td>
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<td></td>
<td>public relations.</td>
</tr>
<tr>
<td>5325</td>
<td>Legal and Ethical Aspects of Sport (3:3:0)</td>
<td>ESS 5308 or equivalent. Applied principles of exercise</td>
<td>Ethical theory and professional ethics of sport managers. The principles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>physiology including cardiorespiratory, biochemical, and</td>
<td>of laws (constitutional, tort, contractual, labor, and antitrust laws, etc.)</td>
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<tr>
<td></td>
<td></td>
<td>environmental considerations.</td>
<td>affecting sport management.</td>
</tr>
<tr>
<td>5327</td>
<td>Sport Facility Planning and Management (3:3:0)</td>
<td>ESS 5308 or equivalent. Applied principles of exercise</td>
<td>Principles and practices in functional and societal considerations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>physiology including cardiorespiratory, biochemical, and</td>
<td>Planning, construction, use, and maintenance of facilities.</td>
</tr>
<tr>
<td>5328</td>
<td>Sport in American Culture (3:3:0)</td>
<td>ESS 5308 or equivalent. Applied principles of exercise</td>
<td>Analysis of the place of sport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>physiology including cardiorespiratory, biochemical, and</td>
<td>American culture and the impact of sport on American culture.</td>
</tr>
<tr>
<td>5329</td>
<td>Sport Event Management (3:3:0)</td>
<td>ESS 5308 or equivalent. Applied principles of exercise</td>
<td>The study of management principles and process specific to the design,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>physiology including cardiorespiratory, biochemical, and</td>
<td>operation, and implementation of sporting events.</td>
</tr>
<tr>
<td>5332</td>
<td>Applied Physiology of Exercise (3:3:0)</td>
<td>ESS 5320 or consent of instructor. Survey of physical</td>
<td>Applied physiology of exercise including cardiorespiratory, biochemical,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>education and sport research focusing on contemporary</td>
<td>and environmental considerations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>issues.</td>
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</tr>
<tr>
<td>5334</td>
<td>Clinical Exercise Testing and Prescription (3:3:0)</td>
<td>ESS 5308 or equivalent. Applied principles of exercise</td>
<td>Advanced theory and practical application to clinical aspects of exercise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>physiology including cardiorespiratory, biochemical, and</td>
<td>testing and prescription. Concentration on diseased and disabled populations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>environmental considerations.</td>
<td></td>
</tr>
<tr>
<td>5335</td>
<td>Cardiopulmonary Exercise Physiology (3:3:0)</td>
<td>ESS 5308 or equivalent. Applied principles of exercise</td>
<td>Structure and function of the human cardiopulmonary system during exercise.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>physiology including cardiorespiratory, biochemical, and</td>
<td></td>
</tr>
<tr>
<td>5336</td>
<td>Skeletal Muscle Physiology (3:3:0)</td>
<td>ESS 5308 or equivalent. Applied principles of exercise</td>
<td>Structural and functional characteristics of skeletal muscle and the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>physiology including cardiorespiratory, biochemical, and</td>
<td>regulation of energy pathways that support muscle contractile activity.</td>
</tr>
<tr>
<td>5337</td>
<td>Electrocardiography (3:3:0)</td>
<td>ESS 5308 or equivalent. Applied principles of exercise</td>
<td>An in-depth study of exercise-electrocardiography (ECG) preparation,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>physiology including cardiorespiratory, biochemical, and</td>
<td>administration, and interpretation.</td>
</tr>
<tr>
<td>5338</td>
<td>Laboratory Techniques in Exercise Physiology (3:3:0)</td>
<td>ESS 5308 or consent of instructor. Selected research</td>
<td>Laboratory techniques in exercise physiology. Examination of methods</td>
</tr>
<tr>
<td></td>
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<td>methods used in the quantitative assessment of exercise</td>
<td>research methods used in the quantitative assessment of exercise tolerance,</td>
</tr>
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<td></td>
<td>tolerance, muscle metabolism, and training adaptations.</td>
<td></td>
</tr>
<tr>
<td>5341</td>
<td>Curriculum and Instruction in Physical Education and Sport</td>
<td>ESS 5308 or consent of instructor. Survey of physical</td>
<td>An examination of the contemporary curriculum and methodologies for</td>
</tr>
<tr>
<td></td>
<td>(3:3:0)</td>
<td>education and sport research focusing on contemporary</td>
<td>effective instruction in physical education and sport.</td>
</tr>
<tr>
<td>5343</td>
<td>Applied Research in Physical Education and Sport (3:3:0)</td>
<td>ESS 5308 or consent of instructor. Survey of physical</td>
<td>Applied researching in physical education and sport.</td>
</tr>
</tbody>
</table>

**Health (HLTH)**

(To interpret course descriptions, see page 8.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1300</td>
<td>[PHED 1304, 1305] Patterns of Healthful Living (3:3:0)</td>
<td>A study of patterns of mental, physical, and social development of the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>individual including relationships of individual and community health.</td>
</tr>
<tr>
<td>1302</td>
<td>Foundations of Health (3:3:0)</td>
<td>Basic knowledge of the health field for persons pursuing a degree in health.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Principles of the discipline as a historical overview will be addressed.</td>
</tr>
<tr>
<td>1305</td>
<td>[PSYC 2306, SOCI 2306] Human Sexuality (3:3:0)</td>
<td>Examination of the structural and functional traits of sexuality and how</td>
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<td></td>
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<td>they affect well-being; covers relationships, reproduction, and lifestyle</td>
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<td></td>
<td>alternatives. (W S 1305)</td>
</tr>
<tr>
<td>2275</td>
<td>Practicum Community Health (2:4)</td>
<td>Principles: ESSL 2306. Supervised field experience in community health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>setting.</td>
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<tr>
<td>2302</td>
<td>Environmental Health and Awareness (3:3:0)</td>
<td>Examines critical issues and relationships affecting biopsychic health</td>
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<td>including personal, community, and international ecology.</td>
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<tr>
<td>2307</td>
<td>Understanding Death and Dying (3:3:0)</td>
<td>Exploration of issues concerning the death and dying process, including</td>
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<td>death anxiety, bereavement, grief, and mourning. Biological, psychologi-</td>
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<td>cal, social, and cultural aspects will be addressed.</td>
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<td>2360</td>
<td>Community Health (3:3:0)</td>
<td>An introduction to community health, including an overview of the</td>
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<td>competency areas of a health educator and their applicability in community</td>
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<td>settings. (Writing Intensive)</td>
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<tr>
<td>3301</td>
<td>Epidemiology (3:2:2)</td>
<td>Principles and practices in cause, prevention, and control of diseases in</td>
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<td>school, community, national, and international settings. Includes</td>
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<td>examination of culture, belief, and values in disease transmission.</td>
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<tr>
<td>3302</td>
<td>Current Trends in Health (3:3:0)</td>
<td>An in-depth analysis of current issues that govern the politics, policies,</td>
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<td>and practices in the health field.</td>
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<tr>
<td>3311</td>
<td>Communicable and Chronic Diseases (3:3:0)</td>
<td>Examines etiology of diseases from a body-systems approach, with special</td>
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<td>emphasis on sexually transmitted diseases, cancer, and cardiovascular</td>
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<td>disease.</td>
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<td>3312</td>
<td>Health Considerations of Special Populations (3:3:0)</td>
<td>A process-oriented course addressing health needs and/or problems of</td>
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<td>various ethnic, cultural, and socio-economic groups.</td>
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<td>3313</td>
<td>Health for Preadolescents (3:3:0)</td>
<td>An introduction to community</td>
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<td>health, including an overview of the competency areas of a health educator</td>
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<td>and their applicability in community settings. (Writing Intensive)</td>
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<tr>
<td>3314</td>
<td>Health for Adolescents (3:3:0)</td>
<td>An in-depth study of health issues relating to children as well as</td>
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<td>emphasis on behaviors that would affect health for children.</td>
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<td>3317</td>
<td>Health Concerns in Chemical Dependencies (3:3:0)</td>
<td>A holistic approach to the nonuse, use, and misuse of substances that</td>
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<td>alter mood and behavior, focusing on the implications to family</td>
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<td>relationships and personal health.</td>
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<tr>
<td>4300</td>
<td>Individual Studies in Health (3:3:0)</td>
<td>An independent study program allowing students to pursue an area of</td>
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<td>special interest under the guidance of a professor. (Writing Intensive)</td>
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<tr>
<td>4307</td>
<td>Health Planning and Evaluation (3:3:0)</td>
<td>Principles and applications of planning and implementing health programs</td>
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<td>in a variety of school and community settings including health</td>
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<td>monitoring techniques. (Writing Intensive)</td>
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<tr>
<td>4312</td>
<td>Psychosocial Health (3:3:0)</td>
<td>An introduction to community</td>
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<td>health, including an overview of the competency areas of a health educator</td>
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<td></td>
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<td>and their applicability in community settings. (Writing Intensive)</td>
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**Undergraduate Courses**
Graduate Courses

5313. Health Behavior and Health Promotion (3:3:0). Provides an overview of various health behavior theories and their application to health promotion and education.

5344. Psychosocial Aspects of Health (3:3:0). This course is an examination of psychosocial factors and processes that influence health status, health beliefs, behaviors, and outcomes.

Personal Fitness and Wellness (PF&SW)

Undergraduate Courses

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. [PHED 1338] Diet and Exercise (1:0:2). A concepts-based activity 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 and Freestyle 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.

1126. Tae Kwon Do (1:0:2). Teaches techniques and applications of Olympic style Tae Kwon Do. Students will also learn Hapkido self-defense techniques, cardiovascualr workouts, philosophy, breathing techniques, and stress management.

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, 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. [PHED 1153] Lifeguard Training (1:0:2). Prerequisite: Swimming proficiency, skills and knowledge in lifesaving, standard first aid, and CPR for the professional rescuer. The American Red Cross Lifeguard Training Certification is possible.

1141. [PHED 1151, 1152, 1251, 1252] 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.

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.

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. [PHED 2155] 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. May be repeated for credit. 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

Faculty

Jorge Iber, Ph.D., Chairperson

Horn Professor: Kuether
Professors: Bell, Carlson, Howe, Iber, Inglis, Rainger, Reckner, Steinhart, Walker
Associate Professors: Brink, D’Amico, Forsythe, McBe, Miller, Mosher, Pelley, Stoll, Willet
Assistant Professors: Adams, Alford, Fallwell, Hart, Hahn, Milam, Shulman, Wilson, Wong
Lecturers: Kreidler, Monroe, Tydeman

About the Program

This department supervises the following degree programs:

- Bachelor of Arts in History
- Master of Arts in History
- Doctor of Philosophy in History

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; a minor in women’s studies; Honors College programs; and Arts and Sciences minors in Asian studies, community and urban studies, environmental studies, ethnic studies, European studies, family life studies, humanities, and religious studies.

Undergraduate Program

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 within colleges, universities, or 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 Concentration. The department offers an art history concentration in conjunction with the School 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, including one of the courses from 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 3301, 3302, 3328, 3342, 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 prior approval by the department advisor or a 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 2322 or 2323 (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 HIST 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 1300; 3353 or 3360; and 3352, 3354, or 3356
- ECO 2301, 2302, and 3311
- PSY 1300
- SOC 1301
Graduate Program / History

Information on departmental admission standards, prerequisites, and other matters dealing with graduate study in history may be acquired by writing the graduate advisor or the chairperson of the department or by consulting the departmental Web site.

A student in the standard master's degree program must complete 30 hours of graduate courses including, HIST 5304. HIST 6301 is the required seminar in the 6000 course series. HIST 5304 must be taken in the first semester that it is offered after admission, and HIST 6301 must follow in the next semester offered after the student has completed HIST 5304. Students must also complete a 6-hour nondepartmental minor and 6 hours in thesis work. Coursework is planned in consultation with the graduate advisor or thesis director soon after admission to the graduate program. The department requires a reading knowledge of one foreign language. Instead of the standard master's degree requirement of a 6-hour minor taken in another department, students with an interest in archival administration can substitute a 6-hour minor composed of HIST 5309 and 3 hours of archival practicum taken as HIST 7000.

To provide a program of study, a student must take an additional 30 hours in history and 6 in a minor. Of the history hours, 6 must be from HIST 5304, 6301, and either 5305 or 5306. Students must also take an additional 6000-level class and earn a grade of B or better in both courses under two or more instructors. No more than 18 semester hours may be offered in any of the three geographical areas: North America, Europe, or World. Students following the nonthesis route must pass a comprehensive examination during the semester they plan to graduate.

The department offers doctoral work in three major geographical areas—North America, Europe, World—and in certain approved thematic and/or interdisciplinary areas of study. For purposes of examining students, these areas are usually subdivided into the fields listed below. Students may propose other fields, which will require approval by the student's Ph.D. committee and the graduate advisor.

**North America:** Chronological grouping—Colonial and early Republic, 19th century United States, and 20th century United States history. Topical grouping—African American, cultural, diplomatic, economic, environmental, Hispanic-Latino, immigration, intellectual, legal and constitutional, military, Native American, popular culture, science and technology, social, South, sports, Texas, urban, West, and women's history.

**Europe:** Ancient, medieval, early modern Europe to 1789, modern Europe, modern Britain and the Empire-Commonwealth, science and technology. Early modern European history and modern European history may each be subdivided into two topical or chronological fields. Topics may include social, gender, family and demography, urban, cultural, intellectual, colonial/postcolonial, race and ethnicity, diaspora and immigration, political, diplomatic, science and technology, and military history.

**World History:** Africa, regional and national histories; Asia, regional and national histories; Latin America, colonial and national histories. Thematic areas: colonial histories, nationalist and anticolonial movements, postcolonial histories, religious studies, social history, economic history, diasporic studies, cultural and intellectual history.

**Thematic and/or Interdisciplinary:** Religion and such other fields as approved by the student's Ph.D. committee and the graduate advisor.

Doctoral students must choose four fields of study for their programs. Students should have two fields in one geographic area, one field in a different geographic area, and one thematic and/or interdisciplinary field. Thematic and/or interdisciplinary fields include colonial/postcolonial, cultural, ethnic, gender, intellectual, military, public history, religion, science and technology, social, and other topics. A student may do a 15-hour outside minor for the fourth field. Students will define their fields in consultation with their Ph.D. advisor and with approval by their Ph.D. committee and the graduate advisor. A student choosing two fields in North America or Europe should select at least one field from the chronological grouping. Dissertations may be written in North American, European, or World history (projects in other areas require the specific approval of the department's Graduate Studies Committee). All doctoral programs must include HIST 5305 and two seminars in the 6000-course series, or their equivalents. All doctoral students who have not previously taken HIST 5305 are required to take it in the first fall semester of their Ph.D. program. Doctoral and master's students must take HIST 6301 in the first semester it is offered after the student has earned a grade of B or higher in HIST 5304.

Within the first year of a student's doctoral program, the student and his or her Ph.D. committee chair will put together a preliminary degree plan. Prior to approval of the plan by the graduate advisor, the plan will then be discussed and refined in a joint meeting of the student and the full Ph.D. committee. In the qualifying examination, the student is expected to show command of four fields.

All Ph.D. students must demonstrate minimum research competency in foreign language. Students may do so by fulfilling one of the options listed below. Students must obtain approval of their committee for the option they choose and complete the requirement to the committee’s satisfaction. The language requirement must be completed before taking the qualifying examination. Among foreign languages offered, students will normally choose German, French, Latin, or Spanish. For dissertation projects in the area of Southeast Asia utilizing the Vietnam Archive, the approved languages are normally French and Vietnamese. Some dissertation proposals may require proficiency in more than two non-English languages.

1. Complete two foreign language programs of study, each of which will be the equivalent of two years of university study as defined in the “Foreign Language Requirement” section of this catalog. After completion of each language, a student will need to prove competency by successfully translating an assigned passage of text.

2. After completing one foreign language program of study, which is the equivalent of two years of university study as defined in the “Foreign Language Requirement” section of this catalog, and after successfully translating an assigned passage of text, the student may continue work in that language with a faculty member in the department. Students must demonstrate “advanced proficiency” as defined by the American Council on the Teaching of Foreign Languages Proficiency Guidelines (revised 1999) and will need to translate historically relevant text in a manner acceptable to both the student's Ph.D. committee and the graduate advisor.

3. After completing one foreign language program of study, which is the equivalent of two years of university study as defined in the “Foreign Language Requirement” section of this catalog, and after successful translating an assigned passage of text, the student may complete the requirement by gaining competency with a research tool broadly relevant to the student's research program and career interests. That will require taking at least two graduate level classes or their equivalent pertaining to that research tool. The graduate advisor will maintain a listing of possible research tool courses. Students may propose other research tool courses, which will require approval by the student's Ph.D. committee and the graduate advisor. Research tool courses may not be counted toward a student's Ph.D. fields.
Undergraduate Courses

1300. [HIST 2311] Western Civilization I (3:3:0). Western civilization from its dawn to the 17th century. Culture and the arts stressed alongside politics. (E)

1301. [HIST 2312] 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)


2300. [HIST 1301] 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)

2301. [HIST 1302] History of the United States Since 1877 (3:3:0). Continuation of HIST 2300. (US)

2322. [HIST 2321] World History to 1500 (3:3:0). Introduction to basic narrative and major themes in world history from origins to 1500. Satisfies university’s humanities and multi-cultural requirements. (AAL)

2323. [HIST 2322] World History Since 1500 (3:3:0). Introduction to basic narrative and major themes in world history since 1500. Satisfies university’s humanities and multi-cultural requirements. (AAL)


3302. Ancient Civilization II (3:3:0). Introduction to the study of ancient Rome. (E)

3304. The Southern Frontier (3:3:1). Examines earliest U.S. frontier from European exploration and colonization to statehoods. Special emphasis on confrontation and accommodation among Spanish, French, British and southeastern woodland Indians. (US)

3305. Creating the American Nation, 1785-1840 (3:3:0). This course examines the political and cultural processes by which the U.S. was formed in the decades following the American Revolution. (US)

3306. African American History to 1877 (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 1960s to the present. (US)

3307. African American History from 1877 to Present (3:3:0). This course surveys the history of African Americans from their earliest migrations through the acculturation, termination, and civil rights movements of the 20th century. (US)

3322. World History to 1500 (3:3:0). Satisfies university’s humanities and multi-cultural requirements. (AAL)

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 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 the growth of military technology. (US)

3332. History of United States Military Affairs Since 1900 (3:3:0). Examines 20th American military history up to the present. (US)

3334. Technology in Modern America (3:3:0). An analysis of major developments in American technology since 1870 and their impact on society, culture, politics, and economy. (US)

3335. Progressive Reforms in America (3:3:0). Reformers of the Progressive era 1880-1930, roots and legacies; focusing on arts as a tool in economic, political, social, and cultural reforming efforts at local, national levels.


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)

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)

3342. Religion and Science (3:3:0). Through analysis of historical development from antiquity to the present, the course will examine the interplay between religion and science in the western tradition. (E)

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). Survey of 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)
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 of professional instructors. (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 Macedon, 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 until the end of the Renaissance in 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. Cultural and political history of France and England from 1789-1815; the Napoleonic Era and the Enlightenment. The Revolution and its drama, ideas, events, personalities, and complexities. Napoleon: hero, 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)

4357. France and Algeria: From the Colonial to the Postcolonial (3:3:0). Prerequisite: Junior standing or consent of instructor. Ideological and cultural relationship between France and Algeria from 1800 to the present. (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. (E)

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)

4370. Great Cities (3:3:0). Seminar on the history of a single major city, using it as a microcosm to study political, social, cultural, and intellectual development over time. May be repeated when topics vary.

4371. Race, Nation, and Identity (3:3:0). Prerequisite: Junior standing or consent of instructor. Nineteenth and twentieth century concepts of difference as construed by race, nation, and identity. (E)

4372. History of Comparative Genocide (3:3:0). Examines the history of the term “genocide” and analyzes modern and contemporary examples of mass exterminations.

4373. Tudor-Stuart England, 1450-1668 (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 1668. (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, populace, 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 social classes, old and new forms of authority 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 political, economic, 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)

4378. History of Italian Fascism (3:3:0). This course examines the origins of Italian Fascism and its development from the 1920s through 1940s, including the topics of propaganda, race, imperialism, gender, and war.

4380. A History of Masculinity (3:3:0). Examines the history of masculinity and manhood in Great Britain and the United States since the mid-nineteenth Century.

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 the New World into an independent nation in the 19th century. (E)

4391. Modern South Africa (3:3:0). Prerequisite: Junior standing or consent of instructor. Ideological and cultural relationship between France and Algeria from 1800 to the present. (E)

4392. Modern South Asia (3:3:0). Prerequisite: Junior standing or consent of instructor. Social, economic and political history of India and Pakistan from Mughal Empire to present, including the British Empire, partition and independence.

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.

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.

Graduate Courses

5101. Teaching of History in College (1:1:0). An observation-and-advice course rather than a seminar. Concerned with supervision of teaching assistantships, evaluation, course planning, and advice and assistance to individual instructors.

5303. Oral History Methodology (3:3:0). This course offers materials on the theory and methods for the collection and analysis of oral histories uses in reconstructing US, European, and other societies.

5304. Historical Methods (3:3:0). Research methods; bibliography, government documents, newspapers, dissertations, archives and manuscripts, oral history, quantitative history, historical archeology; literary organization and style; footnote and bibliographic form.

5305. Historiography (3:3:0). A survey of major historians and historical works from Herodotus to the present, emphasizing the development of history as an intellectual orientation and as an academic discipline.

5307. Studies in World History (3:3:0). This course provides an overview of the field of world history emphasizing both the general past and methodological debates.


5309. Administration of Archival and Manuscript Collections (3:3:0). An intensive study of archival principles and techniques emphasizing current trends and challenges, with an opportunity for professional management and/or research faculty enhancement through in-service training.

5310. Studies in American Cultural and Intellectual History (3:3:0). Examines the intersection of intellectual and cultural history at various periods in American history. May be repeated once for credit when topics vary.

5311. Studies in United States Colonial and Revolutionary History (3:3:0). Topics vary from semester to semester, including seventeenth-century Massachusetts, the coming of the American Revolution, and the new nation after 1776.


5314. Studies in United States Economic History (3:3:0). An examination of the major issues and controversies of the South with emphasis on the period from the American Revolution to the present.

5315. Studies in United States Diplomatic History (3:3:0). An examination of selected areas with emphasis on exploration, settlement, Anglo-American expansion, foreign and Indian conflicts, life-ways, and resulting changes in American institutions.


5317. Studies in American Legal and Constitutional History (3:3:0). An examination of selected topics concerning the history of the bar, judiciary, police, corrections, legal doctrines, and statutory law.

5318. Studies in United States Diplomatic History (3:3:0). American diplomacy and foreign policy with emphasis on either pre-1900 or post-1900 periods. Stress on the literature of United States diplomatic history.

5319. Studies in the History of Science and Technology (3:3:0). Topics vary to include major works covering the social, political, and cultural implications of American religious history. Topics may vary.

5320. Studies in American Economic History (3:3:0). Historical analysis and interpretation of growth and change in the United States economy, with emphasis on ideas and institutions in business and agriculture.


5322. Studies in United States Diplomatic History (3:3:0). American diplomacy and foreign policy with emphasis on either pre-1900 or post-1900 periods. Stress on the literature of United States diplomatic history.

5323. Studies in the History of Science and Technology (3:3:0). Topics vary to include major works covering the social, political, and cultural implications of American religious history. Topics may vary.


5329. Studies in Ancient Greek History (3:3:0). Studies of selected topics in the political or intellectual history of ancient Greece based upon a study of sources, in translation if advisable.

5330. Studies in Ancient Roman History (3:3:0). Studies of selected topics in the political or intellectual history of ancient Rome based upon a study of sources, in translation if advisable.

5331. Studies in Medieval History (3:3:0). Study of selected topics in the intellectual history of the early and high middle ages. Individual reports discussed in a seminar situation.

5332. Studies in Renaissance and Reformation History (3:3:0). Study of selected topics in the intellectual or religious history of the Renaissance or the Reformation. Individual reports discussed in a seminar situation.


5334. Readings in European Nationalism (3:3:0). Takes a cross-disciplinary approach to the study of European nationalism. Emphasizes historians’ contribution to this field. May be repeated for credit.


5336. Studies in Modern European History (3:3:0). Examines the social, cultural, and political history of Europe from 1815 to the present.

5337. Studies in British History (3:3:0). An organized studies course covering selected topics in British history. Topics vary according to the students’ needs.

5338. Studies in Roman Law (3:3:0). Topics in the historical development of classical Roman law. Designed to meet the needs of both law and graduate students.

5339. Readings in Modern East Central European History (3:3:0). The history and historiography of modern East Central Europe from the Revolutions of 1848 to the collapse of Communism in 1989. May be repeated twice for credit.


5341. Slavery in a World Perspective (3:3:0). An examination of the main areas and epochs in which slavery institutions were central: Antiquity, Medieval Europe, Pre-Colonial Africa, the West Indies, and Southern U.S.


5344. Studies in National Latin American History (3:3:0). Examines the history of the areas since independence with emphasis on modernization. Includes consideration of Latin America as a civilization while revealing unique characteristics of the individual countries.


6000. Master’s Thesis (V1-6).

6301. Research Methods Seminar (3:3:0). Prerequisite: HIST 5304. Continues advanced examination of historical methods, emphasizing particular approaches to historical investigation and the writing of an ambitious piece of original work.

6304. Seminar in American History (3:3:0). A research course featuring formal papers on selected topics. Topics chosen in consultation with the instructor.

6305. Seminar in European History (3:3:0). Research seminar, with stress on methodology, types of research materials available in our library in European history, delivery of reports, and submission of an extensive term paper.

7000. Research (V1-12).

8000. Doctor’s Dissertation (V1-12).
Department of Mathematics and Statistics

Faculty

Lawrence E. Schovanec, Ph.D., Chairperson

Honors Professors: C. Martin, Ruymgaart

Dick and Martha Brooks Regents Professor: Ghosh

Professors: E. Allen, L. Allen, Barnard, Bennett, D. Gilliam, Harris, Ibragimov, Lewis, Mansouri, Pearce, Schovanec, Smith, Strauss, Victory, Wang

Associate Professors: Byerly, Drager, Gelca, Hadjicostas, Iyer, Kirby, Korchagin, Lee, Neusel, Paige, Seaquist, Seshaiyer, Solyzin, Surles, Trindade, Weinberg, Williams

Assistant Professors: Aulisa, Christensen, Dwyer, Juan, Ledet, Manservisi, Monico, Roeger, Seo, Toda

Instructors: X. Gilliam, Temple

About the Program

This department supervises the following degree programs:

- Bachelor of Arts in Mathematics
- Bachelor of Science in Mathematics
- Master of Arts in Mathematics
- Master of Science in Statistics
- Doctor of Philosophy in Mathematics

In addition, the department supervises programs leading to minors in mathematics and to teacher certification in mathematics at the elementary and secondary levels.

Undergraduate Program

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 Texas Tech mathematics graduates have been employed by companies in aerospace (NASA, defense), electronics (computers, telecommunications), engineering, finance (banks, brokerage, insurance), government (federal agencies, offices, laboratories), petroleum (geophysical, oil), security, entertainment, and education. 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, 3310, 3354, 3360, 4350 and at least one of MATH 4343, 4351, 4354, and 4360 for the B.A. degree. In addition, candidates for the B.A. degree must take at least 3 additional hours of approved electives in mathematics at the 3000 level and above, while candidates for the B.S. degree must take at least 9 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 laboratory science (biology, botany, chemistry, geosciences, microbiology, physical geography, physics, or zoology) outside their minor area.

Dual Degree. 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 that culminates in a B.S. degree with a major in mathematics and a minor in computer science from the College of Arts and Sciences as well as 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. See the Department of Computer Science catalog section for curriculum information.

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, 1352, 2350, 2360, 3430, and 4331
- One of MATH 2300, 3342, or 4342
- One of MATH 3354 or 3360
- One of MATH 3430 or 4371

Mathematics Placement. Placement for students into entry-level mathematics courses (0301-2345) 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
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 1300, 1320, 1330, or 1550.
- MATH 1300 Contemporary Mathematics
- 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

Only one course from among MATH 1300, 1320, and 1420 can be counted towards the mathematics and logical reasoning core curriculum requirement.

NOTE: Satisfactory score on the placement exam is required for entrance to all above courses. TSI students who have not passed the mathematics section of the TSI test may not enroll in MATH 1320 or 1321 until they have successfully completed their prescribed program of TSI mathematics skills development. See course listings for descriptions and prerequisites for the courses listed above.

Mathematics (MATH)

(To interpret course descriptions, see page 8.)

**Developmental Courses**

**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 TSI math skills development provided the student has met with an advisor in the TSI 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 TSI math skills development provided the student has met with an advisor in the TSI Skills Development Office in 72 Holden Hall.

**Undergraduate Level Courses**

**1300.** [MATH 1332] Contemporary Mathematics (3:3:0). Prerequisite: Score on mathematics placement examination 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. MATH 1300 and 1320 cannot both be counted towards the mathematical and logical reasoning core requirements.

**1320.** [MATH 1314] 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 1300 and 1320 cannot both be counted towards the mathematical and logical reasoning core requirements.

**1321.** [MATH 1316] Trigonometry (3:3:0). Prerequisite: Score on the mathematics placement examination of 4 or higher or 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.

Graduate Program

Students seeking an advanced degree in mathematics or statistics should consult with the Graduate Director of the department before enrolling in any courses. The department offers a number of graduate courses that are suitable for students who wish to complete a minor in mathematics or statistics.

The department does not have a foreign language requirement for the master's degree. Any foreign language requirement for the Ph.D. degree will be at the discretion of the student's dissertation advisor.

The M.A. degree in mathematics consists of 36 hours of graduate work, including 3 hours of credit for a departmental report. The student must complete three sequences chosen from algebra, analysis, geometry, probability and statistics, modeling and applications, and computer literacy. This degree is offered primarily for those students who wish to teach mathematics at the secondary level or at a junior/community college.

The M.S. degree in mathematics consists of 36 hours of graduate work, including 3 hours of credit for a departmental report, or 30 hours of graduate work including 6 hours of credit for the master's thesis. The student must complete at least two of the core sequences listed on the Ph.D. program for the 36-hour plan and at least one of the core sequences for the 30-hour plan. In the 36-hour plan a minor of 9 hours is permitted and in the 30-hour plan a minor of 6 hours is permitted. In each case the minor must be approved by the graduate advisor.

A master's degree in mathematics with an emphasis in computer science is also offered. The degree consists of 36 hours with 3 hours of credit for a departmental report. This plan calls for 18 to 21 hours of graduate coursework in mathematics and 12 to 15 hours of graduate coursework in computer science. Of the 18 to 21 hours of mathematics coursework, at least two sequences from the list in the departmental handbook must be completed. The 12 to 15 hours of computer science coursework constitute adjacent requirements and must be approved by the graduate advisor.

The M.S. degree in statistics consists of 36 hours of graduate work including 3 hours of credit for a departmental report or 6 hours of credit for the master's thesis. Up to 3 hours of graduate work are permitted in other areas such as agriculture, biology, business, economics, engineering, psychology, sociology, or fields as approved by the graduate advisor.

Each doctoral student will undergo a preliminary examination as early as possible during graduate training. The examinations will be administered annually in May and the results evaluated by the Graduate Programs and Policies Committee of the department. Details concerning the preliminary examinations can be found in the departmental handbook. Each doctoral student must also pass a qualifying examination in a specialty area and have a degree plan that has been approved by the graduate advisor.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1340, 2312, 2412</td>
<td>Analytical Geometry</td>
<td>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.</td>
</tr>
<tr>
<td>MATH 1350, 2343, 2517</td>
<td>Calculus 1 (3:3:0)</td>
<td>Score on the mathematics placement examination of 7, MATH 1350, 1550, or score on MEP of 5 and MATH 1321. Differentiation of algebraic and transcendental functions, applications of the derivative, differentials, indefinite integrals, definite integrals. (Honors section offered.)</td>
</tr>
<tr>
<td>MATH 1414</td>
<td>College Algebra With Review</td>
<td>Score on the MEP of 3 or higher or a grade of A in MATH 0302. Topics from college algebra, trigonometry, and analytical geometry that are necessary prerequisites for calculus I.</td>
</tr>
<tr>
<td>MATH 1341, 2342, 2345, 2342, 2442</td>
<td>Statistical Methods</td>
<td>Score on MPE of 4 or higher, MATH 1300, 1320, or equivalent. Methods of analyzing data, statistical concepts and models, estimation, tests of significance, introduction to analysis of variance, linear regression, and correlation.</td>
</tr>
<tr>
<td>MATH 1340, 2414, 2419, 2519</td>
<td>Calculus II (3:3:0)</td>
<td>Prerequisite: Score on MPE of 5 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.</td>
</tr>
<tr>
<td>MATH 1352, 2412</td>
<td>Precalculus</td>
<td>Prerequisite: Score on the MPE of 3 or higher or a grade of A in MATH 0302. Topics from college algebra, trigonometry, and analytical geometry that are necessary prerequisites for calculus I.</td>
</tr>
<tr>
<td>MATH 1342, 2342, 2345, 2342</td>
<td>Statistical Methods</td>
<td>Score on MPE of 4 or higher, MATH 1300, 1320, or equivalent. Methods of analyzing data, statistical concepts and models, estimation, tests of significance, introduction to analysis of variance, linear regression, and correlation.</td>
</tr>
<tr>
<td>MATH 1342, 2345</td>
<td>Calculus III (3:3:0)</td>
<td>Prerequisite: MATH 1350 or 1352. Partial differentiation, functions of several variables, multiple integrals, line integrals, surface integrals, Stokes Theorem. (Honors section offered.)</td>
</tr>
<tr>
<td>MATH 2318, 2418</td>
<td>Linear Algebra</td>
<td>Prerequisite: MATH 1352. Finite-dimensional vector spaces, linear transformations and matrices, eigenvalues and eigenvectors.</td>
</tr>
<tr>
<td>MATH 1340</td>
<td>Elementary Analysis I (3:3:0)</td>
<td>Prerequisite: MATH 1320, and sophomore standing. Analytic geometry and the real number system with applications. Not for engineering, science, or mathematics majors.</td>
</tr>
<tr>
<td>MATH 1351</td>
<td>Elementary Analysis II (3:3:0)</td>
<td>Prerequisite: MATH 1350 or 2370. Elementary differential and integral calculus with applications. Not for engineering, science, or mathematics majors.</td>
</tr>
<tr>
<td>MATH 2315, 2415</td>
<td>Calculus III (3:3:0)</td>
<td>Prerequisite: MATH 1352. Partial differentiation, functions of several variables, multiple integrals, line integrals, surface integrals, Stokes Theorem. (Honors section offered.)</td>
</tr>
<tr>
<td>MATH 2322</td>
<td>Calculus for Engineering Technology II (3:3:0)</td>
<td>Prerequisite: MATH 2322. This course is a continuation of MATH 2322.</td>
</tr>
<tr>
<td>MATH 2300, 2342, 2343, 2442</td>
<td>Mathematical Statistics</td>
<td>Prerequisite: MATH 3350 or 3354, including an elementary knowledge of programming or consent of instructor. Interpolation, approximations, numerical integration, and differentiation.</td>
</tr>
<tr>
<td>MATH 2360</td>
<td>Mathematical Computing</td>
<td>Prerequisite: Consent of the Director of Undergraduate Programs, Department of Mathematics and Statistics. Topics from computational mathematics and programming.</td>
</tr>
<tr>
<td>MATH 2351, 2352</td>
<td>Complex Variables</td>
<td>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)</td>
</tr>
<tr>
<td>MATH 2350</td>
<td>Differential Equations II (3:3:0)</td>
<td>Prerequisite: MATH 3354 or 3350. Partial differential equations and boundary value problems. MATH 4354 and 3551 may not both be counted toward a mathematics major or minor.</td>
</tr>
<tr>
<td>MATH 2351</td>
<td>Advanced Calculus (3:3:0 each)</td>
<td>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)</td>
</tr>
<tr>
<td>MATH 2354</td>
<td>Functions of Complex Variables (3:3:0)</td>
<td>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)</td>
</tr>
<tr>
<td>MATH 2350, 2354</td>
<td>Functions of Complex Variables (3:3:0)</td>
<td>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)</td>
</tr>
<tr>
<td>MATH 2351</td>
<td>Advanced Calculus (3:3:0 each)</td>
<td>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)</td>
</tr>
<tr>
<td>MATH 2354</td>
<td>Functions of Complex Variables (3:3:0)</td>
<td>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)</td>
</tr>
<tr>
<td>MATH 2350</td>
<td>Differential Equations II (3:3:0)</td>
<td>Prerequisite: MATH 3354 or 3350. Partial differential equations and boundary value problems. MATH 4354 and 3551 may not both be counted toward a mathematics major or minor.</td>
</tr>
<tr>
<td>MATH 2351</td>
<td>Advanced Calculus (3:3:0 each)</td>
<td>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)</td>
</tr>
</tbody>
</table>
Graduate Courses

5101. Seminar in Algebra (1:1:0). Discussion of current research and topics of interest in algebra. Must be taken pass-fail. May be repeated for credit.

5102. Seminar in Analysis (1:1:0). Discussion of current research and topics of interest in analysis. Must be taken pass-fail. May be repeated for credit.

5103. Seminar in Control Theory (1:1:0). Discussion of current research and topics of interest in control theory. Must be taken pass-fail. May be repeated for credit.

5104. Seminar in Statistics (1:1:0). Discussion of current research and topics of interest in statistics. Must be taken pass-fail. May be repeated for credit.

5105. Seminar in Topology (1:1:0). Discussion of current research and topics of interest in topology. Must be taken pass-fail. May be repeated for credit.

5106. Seminar in Applied Mathematics (1:1:0). Discussion of current research and topics of interest in applied mathematics. Must be taken pass-fail. May be repeated for credit.

5107. Seminar in Biomathematics (1:1:0). Discussion of current research and topics of interest in biomathematics. May be repeated for credit.


5312. Control Theory I (3:3:0). Prerequisite: MATH 2360, 3354, 4351, or consent of instructor. Linear dynamical systems, stability, frequency response and Laplace transform, feedback, state-space description, and geometric theory of linear systems. (M E 5312)

5313. Control Theory II (3:3:0). Prerequisite: MATH 5312, 5316, 5318, or consent of instructor. Quadratic regulator for linear systems, Kalman filtering, non-linear systems, stability, local controllability, and geometric theory of non-linear systems. (M E 5313)


5318, 5319. Intermediate Analysis I, II (3:3:0 each). The real number system, introduction to metric spaces, sequences, continuity, differentiation, Riemann integration, power series, functions of several variables, and differential forms.

5320, 5321. Functions of a Complex Variable I, II (3:3:0 each). Prerequisite: MATH 4350 or 4356. Analytic functions as mappings, Cauchy theorems, Laurent series, maximum modulus theorems and ramifications, normal families, Riemann mapping theorem, Weierstrass factorization theorem, Mittag-Leffler theory, analytic continuation, and harmonic functions.

5322, 5323. Functions of a Real Variable I, II (3:3:0 each). Prerequisite: MATH 5319 or equivalent. General measure and integration theory, Lp theory, differentiation theory, and basic functional analysis.

5324, 5325. Topology I, II (3:3:0 each). Prerequisite: MATH 4350 or consent of instructor. Point set theory, introduction to combinatorial topology and homology theory.

5326, 5327. Modern Algebra I, II (3:3:0 each). Prerequisite: MATH 3360 or consent of instructor. Groups, rings, fields, linear algebra, Galois theory.

5330, 5331. Theory of Ordinary Differential Equations I, II (3:3:0 each). Prerequisite: MATH 4351, 4354, or consent of instructor. Existence and uniqueness results, continuation of solutions, continuous dependence on data, linear equations, oscillation and comparison theorems, boundary value problems, and stability analysis.

5332. Partial Differential Equations I (3:3:0). Prerequisite: MATH 4351, 4354, or consent of instructor. Topics include first order equations, method of characteristics, parabolic, hyperbolic and elliptic equations, variational and Hilbert space methods.


5340, 5341. Functional Analysis I, II (3:3:0 each). Prerequisite: MATH 5322. Hilbert and Banach space theory, linear operator theory, the closed graph theorem, the open mapping theorem, the principle of uniform boundedness, linear functionals, dual spaces and weak topologies, distribution theory, topological vector spaces, spectral theory of compact and unbounded self-adjoint and unitary operators, and semigroup theory.

5342, 5343. Advanced Topics in Analysis I, II (3:3:0 each). Prerequisite: Consent of instructor. Current topics in analysis. May be repeated for credit.

5344, 5345. Topics in Numerical Analysis I, II (3:3:0 each). Prerequisite: MATH 5335. Current advanced topics in numerical analysis, research work using computers. May be repeated for credit.

5346. Advanced Topics in Applied Mathematics I (3:3:0). Prerequisite: Consent of instructor. Current topics in applied mathematics. May be repeated for credit.


5354. Biomathematics I (3:3:0). Prerequisite: Differential equations and linear algebra or consent of instructor. Qualitative and quantitative behavior of deterministic biological models are studied.

5355. Biomathematics II (3:3:0). Prerequisite: Statistics, differential equations, and linear algebra or consent of instructor. Qualitative and quantitative behavior of stochastic biological models are studied.

5356. Topics in Biomathematics (3:3:0). Prerequisite: Biomathematics I or consent of instructor. Current topics in biomathematics are studied such as biomechanics, mathematical epidemiology, mathematical neurology, mathematical ophthalmology, and image processing. May be repeated for credit.

5360, 5361. Advanced Mathematics for Teachers I, II (3:3:0 each). Prerequisite: Consent of instructor. Selected topics in mathematics. May be repeated for credit.

5362. Theory of Numbers (3:3:0). Prerequisite: MATH 4362. Diophantine equations, binary quadratic forms, algebraic numbers, theory of number-theoretic functions, partitions, the prime number theorem.

5364, 5365. Computer Literacy and Programming I, II (3:3:0 each). Development of computer literacy and programming ability, algorithms and data structures, and recursion.

5382, 5383. Advanced Probability I, II (3:3:0 each). Prerequisite: MATH 5319 or consent of instructor. Measure and integration, axiomatic foundations of probability theory, random variables, distributions and their characteristic functions, stable and infinitely divisible laws, limit theorems for sums of independent random variables, conditioning, Martingales.

5399. Advanced Problems (3). Prerequisite: Graduate standing in mathematics. May be repeated for credit.

6000. Master’s Thesis (V1-6).

6310. Master’s Report (3).

7000. Research (V1-12).

8000. Doctor’s Dissertation (V1-12).

Statistics (STAT)
(To interpret course descriptions, see page 8.)

Graduate Courses

5302, 5303. Applied Statistics I, II (3:3:0 each). Prerequisite: Consent of instructor. Graphical presentation of data, histograms, confidence intervals for binomial probabilities, one-sample and two-sample t-test, regression and correlation with two variables, hypothesis testing and confidence intervals, multivariate regression and correlation, partial correlation coefficients, analysis of variance and covariance, multiple comparison procedures. Emphasis on analysis of research data. Not for mathematics, statistics, engineering, or physical science majors; these students should take STAT 5384, 5385.

5326. Statistical Analysis (3:3:0). Prerequisite: Calculus or consent of instructor. Descriptive statistics, testing and estimation in one- and
two-sample problems, analysis of variance, multiple comparisons, linear regression and correlation, nonparametric methods.

5328, 5329. Intermediate Mathematical Statistics I, II (3:3:0 each). Prerequisite: MATH 2350 or consent of instructor. Probability space, special families of distribution functions, expectations, conditional distributions, sampling distributions, point and interval estimation, hypothesis testing, distribution of functions of random variables, regression, nonparametric techniques.

5370. Decision Theory (3:3:0). Prerequisite: MATH 4343 or STAT 5329 or consent of instructor. Game theory, statistical decision, Bayesian statistics.


5372. Nonparametric Statistical Inference (3:3:0). Prerequisite: MATH 4343 or STAT 5329 or consent of instructor. Statistical inference, rank order statistics, chi-square and slippage tests, Kolmogorov and Smirnov type tests, confidence intervals and bands, runs tests, applications.

5373. Design of Experiments (3:3:0). Prerequisite: MATH 4343 or STAT 5329. Principles of design and analysis of experiments, Latin squares, split plots, incomplete block designs, efficiency.

5374. Theory of Linear Statistical Models (3:3:0). Prerequisite: MATH 4343 or STAT 5329. Multivariate normal distribution and operations, distribution of quadratic forms, general linear hypothesis of full and non-full rank, specific linear models.

5375. Statistical Multivariate Analysis (3:3:0). Prerequisite: STAT 5329 or consent of instructor. Multivariate normal distribution, estimation of the mean vector and covariance matrix, distribution of sample correlation coefficients, the generalized T2 statistic, classification, distribution of the sample covariance matrix.

5376. Advanced Statistical Methods (3:3:0). Prerequisite: MATH 4343 or STAT 5329 or consent of instructor. Applied regression analysis, cluster analysis, factor analysis, modeling, special topics in designs, sensitivity analysis, non-linear estimation. May be repeated for credit.

5377. Statistical Sampling Theory (3:3:0). Prerequisite: MATH 4343 or STAT 5329. Theory of simple random sampling, stratified random sampling, cluster sampling, ratio estimates, regression estimates, other sampling methods.


5379. Time Series Analysis (3:3:0). Prerequisite: STAT 5329 or consent of instructor. Stationary and nonstationary time series, finite linear models, identification, filtering, and diagnostic checks of such models, spectral analysis of time series data, forecasting and control.

5380, 5381. Advanced Mathematical Statistics I, II (3:3:0 each). Prerequisite: STAT 5329; STAT 5380 is prerequisite for STAT 5381. Theory of estimation and tests of statistical hypotheses, sequential analysis.

5384. Statistics for Engineers and Scientists I (3:3:0). Prerequisite: MATH 2350 or consent of instructor. Probability, descriptive statistics, distributions, estimation, hypothesis testing, nonparametric statistics, data analysis using the computers. Not for mathematics or statistics majors.

5385. Statistics for Engineers and Scientists II (3:3:0). Prerequisite: STAT 5384 or consent of instructor. Continuation of STAT 5384; simple and multiple regression analysis, analysis of variance, nonparametric statistics, categorical data analysis, quality control, reliability, data analysis using the computer. Not for mathematics or statistics majors.

5386. Statistical Computing and Simulation (3:3:0). Prerequisite: Consent of instructor. Methods of approximating functions and probabilities; computational methods in linear algebra, introduction to theory and applications of random number generation, testing generators.

6000. Master’s Thesis (V1-6).

6310. Master’s Report (3).

7000. Research (V1-12).

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**Department of Philosophy**

**Faculty**

**Peder George Christiansen, Ph.D., Chairperson**

**Professors:** Christiansen, Curzer  
**Associate Professors:** Nathan, Schaller, Webb  
**Assistant Professors:** Di Poppa, Hazlett, Kim, Ribeiro, Weiner  
**Adjunct Faculty:** Suppe

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**About the Program**

This department supervises the following degree programs:

- Bachelor of Arts in Philosophy  
- Master of Arts in Philosophy

The department also participates in the natural history and humanities major as well as the humanities minor in the Honors College; the fine arts doctoral program in the College of Visual and Performing Arts; a minor in women's studies; and minors in European studies, environmental studies, and linguistics in the College or Arts and Sciences.

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**Undergraduate Program**

Education in philosophy develops the ability to think critically, increases understanding of normative issues, provides a unique interdisciplinary perspective on the place of human beings 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 increases one's ability to understand and communicate with others effectively. 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 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 graduate and professional school admission examinations and in their high rate of 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 30 disciplines on the law school admission test (LSAT). Additionally, philosophy majors have been more likely than almost any other major 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 to campus 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, at least 6 of which must be at the 3000 or 4000 level. 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 satisfy major or minor requirements. Many students combine a philosophy major with a second major.
### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 2303</td>
<td>Reasoning</td>
<td>3:0</td>
<td>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.</td>
</tr>
<tr>
<td>PHIL 1301</td>
<td>Beginning Philosophy</td>
<td>3:0</td>
<td>An introduction to philosophical thinkers, ideas, and methods.</td>
</tr>
<tr>
<td>PHIL 330</td>
<td>Logic</td>
<td>3:0</td>
<td>Development of formal methods for evaluating deductive reasoning. Additional topics may include uses of language, definition, nonmonotonic inference. Satisfies the Core Curriculum mathematics requirement. (in conjunction with a mathematics course).</td>
</tr>
<tr>
<td>PHIL 3323</td>
<td>Introduction to Ethics</td>
<td>3:0</td>
<td>Discussion of moral problems and theories of morality. Includes the application of philosophical techniques to issues of contemporary moral concern.</td>
</tr>
<tr>
<td>PHIL 3304</td>
<td>World Religions and Philosophy</td>
<td>3:0</td>
<td>Philosophical study of the doctrines and practices of the major world religions, including Hinduism, Buddhism, Christianity, Judaism, and Islam.</td>
</tr>
<tr>
<td>PHIL 3301</td>
<td>Classical Greek Philosophy</td>
<td>3:0</td>
<td>Study of the major philosophical ideas as originally developed in the Western world by thinkers such as Socrates, Plato, Aristotle, and others. Satisfies the Core Curriculum multicultural requirement. (Writing Intensive)</td>
</tr>
<tr>
<td>PHIL 3302</td>
<td>Asian Philosophy</td>
<td>3:0</td>
<td>Study of the major philosophical ideas originating in India and China, and developed generally in Asia. Satisfies the Core Curriculum multicultural requirement.</td>
</tr>
<tr>
<td>PHIL 3303</td>
<td>Modern European Philosophy</td>
<td>3:0</td>
<td>Study of the major philosophical ideas as they developed in Great Britain and on the European continent since the Renaissance, covering such figures as Descartes, Hume, and Kant. (Writing Intensive)</td>
</tr>
<tr>
<td>PHIL 3304</td>
<td>Existentialism and Phenomenology</td>
<td>3:0</td>
<td>Consideration of the meaning of human existence through study of thinkers such as Nietzsche, Heidegger, Husserl, Merleau-Ponty, Sartre, and others.</td>
</tr>
<tr>
<td>PHIL 3320</td>
<td>Introduction to Political Philosophy</td>
<td>3:0</td>
<td>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)</td>
</tr>
<tr>
<td>PHIL 3321</td>
<td>Philosophy of Law</td>
<td>3:0</td>
<td>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. Satisfies the Core Curriculum social and behavioral sciences requirement. (Writing Intensive)</td>
</tr>
<tr>
<td>PHIL 3322</td>
<td>Biomedical Ethics</td>
<td>3:0</td>
<td>Discussion of conceptual and moral problems surrounding such issues as abortion, euthanasia, genetic research, behavior control, allocation of medical resources, health, and disease.</td>
</tr>
<tr>
<td>PHIL 3323</td>
<td>Business Ethics</td>
<td>3:0</td>
<td>Discusses theories of justice and morality, particularly as they relate to business. Concentrates on application to issues that arise in the conduct of business.</td>
</tr>
<tr>
<td>PHIL 3324</td>
<td>Philosophy of Religion</td>
<td>3:0</td>
<td>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.</td>
</tr>
<tr>
<td>PHIL 3325</td>
<td>Philosophy of Science</td>
<td>3:0</td>
<td>Inquiry into the nature of science including the examination of basic scientific concepts and the foundational scientific reasoning. Satisfies the Core Curriculum technology and applied science requirement.</td>
</tr>
<tr>
<td>PHIL 3330</td>
<td>Philosophy of Social and Human Sciences</td>
<td>3:0</td>
<td>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. Satisfies the Core Curriculum social and behavioral sciences requirements.</td>
</tr>
<tr>
<td>PHIL 3332</td>
<td>Feminism and Philosophy</td>
<td>3:0</td>
<td>Feminist philosophical perspectives on issues in such areas as ethics, legal theory, epistemology, and the study of race, gender, and sexuality.</td>
</tr>
<tr>
<td>PHIL 4300</td>
<td>Philosophical Problems</td>
<td>3:0</td>
<td>Prerequisite: Previous coursework in philosophy and consent of instructor. Directed individual studies or conferences on selected advanced topics. May be repeated for credit.</td>
</tr>
<tr>
<td>PHIL 4301</td>
<td>Seminar in Ancient Philosophy</td>
<td>3:0</td>
<td>Prerequisite: Previous coursework in philosophy or consent of instructor. Directed individual studies or conferences on selected advanced topics. May be repeated for credit.</td>
</tr>
<tr>
<td>PHIL 4320</td>
<td>Ethics</td>
<td>3:0</td>
<td>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. Satisfies the Core Curriculum mathematics requirement. (in conjunction with a mathematics course).</td>
</tr>
<tr>
<td>PHIL 4334</td>
<td>Philosophy of Biology</td>
<td>3:0</td>
<td>Study of the nature and scope of biological theories. Topics may include evolution and creation, natural selection and design, sociobiology, or genetic engineering.</td>
</tr>
<tr>
<td>PHIL 4335</td>
<td>Philosophy of Technology</td>
<td>3:0</td>
<td>Prerequisite: Previous coursework in philosophy or consent of instructor. Directed individual studies or conferences on selected advanced topics. May be repeated for credit.</td>
</tr>
<tr>
<td>PHIL 4336</td>
<td>Philosophy of Language</td>
<td>3:0</td>
<td>Prerequisite: Previous coursework in philosophy or consent of instructor. Directed individual studies or conferences on selected advanced topics. May be repeated for credit.</td>
</tr>
</tbody>
</table>

### Graduate Program

The master’s degree program is aimed at providing a broad background in philosophy while encouraging complementary work in an approved minor field of study. The student may choose to complete 24 hours of graduate coursework plus 6 hours of thesis research. Alternatively, the student may complete 33 hours of graduate coursework and then take an oral exit examination over a significant research paper. Up to one third (but no more than 9 hours) of the student's coursework may consist of graduate courses in disciplines other than philosophy, subject to the approval of the departmental graduate advisor.

For specific information on admission to the program, prospective students should contact the Department of Philosophy and the Graduate School. Students from fields other than philosophy are encouraged to apply, although they may be required to complete a certain amount of philosophy leveling work during their first year of enrollment.
Department of Physics

Faculty

Lynn L. Hatfield, Ph.D., Chairperson

Horn Professor: Estreicher
Bucy Professor: Wigmans

Professors: Borst, Cheng, Hatfield, Holtz, Lichti, Lodhi, Myles, Quade
Associate Professors: Achurin, Gilson, Glab, Huang, Lamp, Thacker
Assistant Professors: Grave De Peralta, Lee, Sanati, Volobouev, Wilhelm

Adjunct Faculty: Gangopadhyay, Papadimitriou, Scully

Joint Faculty: Dallas, Kristiansen, Krompholz, Poirier, Quitevis, Temkin

About the Program

This department supervises the following degree programs:

- Bachelor of Science in Physics
- Master of Science in Physics
- Master of Science in Applied Physics
- Doctor of Philosophy in Physics

The department also supervises an applied physics option leading to the Ph.D. degree. The B.S.E.E.P. program in engineering physics is listed under the College of Engineering. These interdisciplinary options afford flexibility in coursework and area of research concentration. Specializations in chemical physics (in cooperation with the Department of Chemistry) and biophysics (in cooperation with the Health Sciences Center and the University Medical Center) are also available. An M.S. degree involving industry internships is available to selected graduate students. The department also offers the B.S. with an emphasis in medical physics. This curriculum prepares the student to enter the postgraduate program leading to a doctoral-level degree and certification by the American Board of Radiology.

Undergraduate Program

A typical sequence of courses in physics begins with PHYS 1305, 1408, 2401, and 2402, totalling 15 hours at the introductory level. These are followed by the intermediate and advanced sequences: PHYS 3304, 3401, 3305, 3306, 4302, 4304, and 4307. The department recommends 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, undergraduate 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 120. Credit for transferred physics hours will be handled by the department 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, biophysics, astro physics, and physics education. Applied physics is pursued in fluorescence spectroscopy, 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 mathemat-
### Physics Curriculum

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>PHYS 1408, Prin. of Phys. I.</td>
<td>CHEM 1307, Prin. of Chem. I</td>
</tr>
<tr>
<td>MATH 1361, Calculus I</td>
<td>CHEM 1107, Prin. of Chem. I Lab.</td>
</tr>
<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
<td>MATH 1352, Calculus II</td>
</tr>
<tr>
<td>Health and Physical Fitness</td>
<td>ENGL 1302, Adv. Coll. Rhetoric</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
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<tr>
<td></td>
<td>Health and Physical Fitness</td>
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<td>TOTAL 14</td>
<td>15</td>
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**SECOND YEAR**

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<th>Spring</th>
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<tbody>
<tr>
<td>CHEM 1108, Prin. Chem. II Lab.</td>
<td>English</td>
</tr>
<tr>
<td>POLS 1301, Amer. Govt., Org.</td>
<td>Foreign Language</td>
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<td>Foreign Lang.</td>
<td>Social or Behavioral Science</td>
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**THIRD YEAR**

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<tr>
<th>Fall</th>
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<tbody>
<tr>
<td>PHYS 3305, Elect. &amp; Magnet.†</td>
<td>COMS 2300, Public Speaking</td>
</tr>
<tr>
<td>PHYS 3401, Optics</td>
<td>PHYS 3308, Elect. &amp; Magnet.†</td>
</tr>
<tr>
<td>HIST 2300, History of U.S. to 1877</td>
<td>Electives</td>
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<td>English</td>
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**FOURTH YEAR**

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<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>PHYS 4307, Quant. Mechanics</td>
<td>PHYS 4301, Comp. Phys.†</td>
</tr>
<tr>
<td>Adv. Electives†</td>
<td>PHYS 4304, Mechanics†</td>
</tr>
<tr>
<td>PHYS 3900</td>
<td>Adv. Electives*</td>
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<tr>
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</tbody>
</table>

Total program hours—120

Select from Arts and Sciences General Degree requirements. See English requirements.

† Offered in alternating years. Check with undergraduate advisor.

* Computer language and advanced physics courses recommended.

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**Astronomy (ASTR)**

(To interpret course descriptions, see page 8.)

### Undergraduate Courses

1400. [PHYS 1411] Solar System Astronomy (4:3:2). This course covers the sun, planets, moons, asteroids, comets, gravitation, and formation. (Honors section offered.)

1401. [PHYS 1412] Stellar Astronomy (4:3:2). This course covers stars, star formation, galaxies, and cosmology models. (Honors section offered.)

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**Graduate Program / Physics**

A core curriculum consisting of PHYS 5301, 5303, 5305, and 5306 forms the nucleus of the Master’s and Ph.D. programs and is the basis for the master’s final examination and the Ph.D. qualifying examination. A student selecting any of the degree options may designate a minor consisting of a minimum of 6 hours of course credit in a related area and satisfy any additional requirements of the minor department. These 6 hours may be taken in the Physics Department. Full-time study towards the master’s degree should be completed in about two years.

All graduate students must enroll in PHYS 5101 for the first four semesters and PHYS 5104 whenever on a teaching assistantship. PHYS 5312, 5322, and 5307 are tools courses that develop necessary skills for use in other courses and in research. They should be taken early.

**M.S. Degree in Physics, Thesis Option:** A minimum of 24 hours of course credit plus 6 hours of thesis research with a minimum of 18 hours in the department. The thesis is defended in a final oral examination.

**M.S. Degree in Applied Physics, Thesis Option:** A minimum of 24 hours of course credit plus 6 hours of thesis research with a minimum of 9 hours in a specified applied area. This may be in a subfield of physics or in a related discipline, with the master’s thesis from that area. The thesis is defended in a final oral examination.

**M.S. Degree in Applied Physics, Internship Option:** 24 hours of course credit with a separate course sequence as discussed with the graduate advisor, plus two semesters of internship in a regional industry or research laboratory arranged through the department. A report is written following each internship period and defended in an oral examination. Twelve hours of internship or report credit is required beyond the coursework.

**M.S. Degree in Physics, Nonthesis Option:** 36 hours of course credit with a minimum of 24 hours in the department, plus passing a comprehensive master’s qualifying examination.

**Ph.D. Degree in Physics:** The core courses for the Ph.D. degree are the same as those for the M.S. degree, plus PHYS 5302 and 6306. Further selections should be made from PHYS 5304, 5307, 5311, 5322, 7304, and 5300 (which may be repeated in different topics).

Students seeking the Ph.D. degree must pass a preliminary examination and a qualifying examination as described in the departmental Graduate Booklet and in accordance with Graduate School requirements. The examination topics are from general undergraduate physics and graduate core courses. Students perform Ph.D. thesis research. After completing the research, the candidate prepares the dissertation and makes a public oral defense before the dissertation committee.

Students are encouraged to get involved in research early by taking PHYS 7000, which may count toward the degree. Thesis hours in PHYS 6000 (6 hours for the M.S. with thesis option) and 12 hours of PHYS 8000 (for the Ph.D.) should be taken as early as possible. Students must maintain a B average in the core courses in addition to the overall B average required by the Graduate School.
**Physics (PHYS)**

### Undergraduate Courses

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.

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.

1401. **[PHYS 1410] Physics for Non-Science Majors (4:3:2).** This covers the basic laws and vocabulary of science using a minimum of mathematics and counts toward fulfillment of the natural science requirement in A&S.

1403. **[PHYS 1401] General Physics I (4:3:2).** Prerequisite: MATH 1320 and 1321 or 1550. This course is non-calculus introductory physics covering mechanics, heat, and sound, thus providing background for study in science-related areas.

1404. **[PHYS 1402] General Physics II (4:3:2).** Prerequisite: PHYS 1403. This course is non-calculus introductory physics covering electricity, magnetism, light, and modern physics, thus providing background for study in science-related areas.

1406. **Physics of Sound and Music (4:3:3).** 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.

1408. **[PHYS 2425] Principles of Physics I (4:3:2).** Prerequisite or corequisite: MATH 1351. This course is calculus-based introductory physics covering mechanics, kinematics, energy, momentum, and thermodynamics. (Honors section offered)

2401. **[PHYS 2426] Principles of Physics II (4:3:2).** Prerequisite: PHYS 1408; prerequisite or corequisite: MATH 1352. This course is calculus-based introductory physics covering electric and magnetic fields, electromagnetic waves, and optics. (Honors section offered)


3000. **Undergraduate Research (V1-6).** Individual and/or group research projects in basic or applied physics, under the guidance of a faculty member.

3302. **Cosmophysics: The Universe as a Physics Lab (3:3:0).** Prerequisite: PHYS 2402. This course deals with topics from astrophysics, cosmology, and cosmic ray physics of interest to all physicists.

3304. **Modern Physics Laboratory (3:0:6).** Prerequisite: PHYS 2402. Laboratory course on advanced physical principles, including experiments in optics, atomic, molecular, solid state, and nuclear physics.

3305, 3306. **Electricity and Magnetism (3:3:0 each).** Prerequisite: PHYS 2401 and adequate mathematical background. Electric and magnetic fields, electrostatics, magnetostatics, electrodynamics, electromagnetic waves and radiation, special relativity, and Maxwell’s equations throughout both courses.

3400. **Fundamentals of Physics (4:3:3).** Prerequisite: MATH 1320. This course teaches the fundamentals of physics and strategies for teaching these fundamentals. This course is not open to engineering, science, or mathematics majors.

3401. **Optics (4:3:3).** Prerequisite: PHYS 1408 and 2401. This course covers geometrical and physical optics, waves, refraction, scattering, polarization, interference, diffraction, modern optics, and optical instrumentation. (Writing Intensive)

4000. **Independent Study (V1–4).** Prerequisite: Approval of advisor. Study of advanced topics of current interest under direct supervision of a faculty member.


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 1408, 2401, 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. (Writing Intensive)


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. This course is dealing with modern nuclear physics covering such topics as nuclear structure models, radioactivity, nuclear reactions, elementary particles, nuclear conservation, forces, and symmetry.

### Graduate Courses

5000. **Independent Study (V1-3).** This course is to offer independent study under the direct supervision of a faculty member. This course is not to be used for thesis or dissertation research or writing.

5001. **Master’s Internship (V1-12).** Internship in an industrial or research laboratory setting. Arranged through the department and directly related to degree program with approval of Internship Coordinator.

5101. **Seminar (1:1:0).** Must be taken by every graduate student for at least the first four semesters. Taken pass-fail.

5104. **Instructional Laboratory Techniques in Physics (1:1:0).** Laboratory organization and instructional techniques. Does not count toward the minimum requirement of a graduate degree. Must be taken pass-fail by all teaching assistants when on appointment.

5300. **Special Topics (3:3:0).** Prerequisite: Approval of graduate advisor. Topics in semiconductor, plasma, surface, particle physics, spectroscopy, and others. May be repeated in different areas.

5301. **Quantum Mechanics I (3:3:0).** Experimental basis and history, wave equation, Schrödinger equation, harmonic oscillator; piecewise constant potentials, WKB approximation, central forces and angular momentum, hydrogen atom, spin, two-level systems, and scattering. M.S. and Ph.D. core course.

5302. **Quantum Mechanics II (3:3:0).** Prerequisite: PHYS 5301 or equivalent. Quantum dynamics, rotations, bound-state and time-dependent perturbation theory, identical particles, atomic and molecular structure, electromagnetic interactions, and formal scattering theory. Ph.D. core course.

5303. **Electromagnetic Theory (3:3:0).** Electrostatics and magnetostatics, time varying fields, Maxwell’s equations and conservation laws, electromagnetic waves in materials and in waveguides. M.S. and Ph.D. core course.

5304. **Solid State Physics (3:3:0).** Prerequisite: PHYS 5301 or equivalent. A survey of the microscopic properties of crystalline solids. Major topics include lattice structures, vibrational properties, electronic band structure, and electronic transport.

5305. **Statistical Physics (3:3:0).** Elements of probability theory and statistics; foundations of kinetic theory. Gibbs’s statistical mechanics, the method of Darwin and Fowler, derivation of the laws of macroscopic thermodynamics from statistical
Department of Political Science

Faculty

Philip Howard Marshall, Ph.D., Chairperson

Professors: Cochran, Dometrius, Khan, Lee, Marshall, Mayer

Associate Professors: Barkdull, Collins, Longoria, Patterson

Assistant Professors: Allen, Biglaiser, Goodman, Kim, McKenzie, Murray, Nokken, Opp, Prins, Thames

About the Program

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 coursework within the department. Political science majors are required to take POLS 1301. Although POLS 2302 is required, students who received an A or B in POLS 1301 may substitute another approved POLS course. All majors are required to take POLS 3310, 3361, 3371, and 15 hours of upper-level POLS courses (must include 6 hours of writing intensive courses).

The requirement for a minor in political science is 18 hours, including PALS 1301 and 2302. Students who receive an A or B in PALS 1301 may substitute another approved POLS course for PALS 2302. Political science minors are also required to take either PALS 3361 or 3371 plus 9 hours of upper-level POLS courses.

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 essential to students interested in careers in business.

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Joint Bachelor's and Master's Degree Program. Undergraduate political science majors may apply for admission to the political science master's program during their junior year. If accepted, they will begin taking graduate courses during their senior year. Nine hours of graduate coursework taken during the senior year will count toward both undergraduate and graduate degree requirements. For more information, contact the graduate advisor at polsgrad@ttu.edu or visit the department.

Political Science (POLS)  
*(To interpret course descriptions, see page 8.)*

### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2302</td>
<td>[GOVT 2302, 2306] 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.</td>
</tr>
<tr>
<td>3300</td>
<td>Selected Topics in Political Science (3:3:0). Topics of contemporary interest, varying from semester to semester. Consult the department for current topics. Open to all students. May be repeated for credit with changing topics.</td>
</tr>
<tr>
<td>3310</td>
<td>Introduction to Political Analysis (3:3:0). Survey of reasons and approaches to the study of politics and their underlying assumptions as they apply to the major concepts of the discipline.</td>
</tr>
<tr>
<td>3311</td>
<td>Political Data (3:3:0). Prerequisite: Consent of instructor. An introduction to political data sources, their strengths and weaknesses and their uses in research.</td>
</tr>
<tr>
<td>3323</td>
<td>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.</td>
</tr>
<tr>
<td>3325</td>
<td>Political Parties (3:3:0). Party history, functions, organization, finance, nominations, campaign methods, and elections.</td>
</tr>
<tr>
<td>3326</td>
<td>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)</td>
</tr>
<tr>
<td>3327</td>
<td>The American Presidency (3:3:0). The presidency, its constitutional basis, structure, powers, functions, and responsibilities.</td>
</tr>
<tr>
<td>3330</td>
<td>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.</td>
</tr>
<tr>
<td>3331</td>
<td>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)</td>
</tr>
<tr>
<td>3332</td>
<td>Modern Political Theory (3:3:0). Major political thinkers starting with Machiavelli and Hobbes and movements such as liberalism, conservatism, utilitarianism, socialism, and communism.</td>
</tr>
<tr>
<td>3333</td>
<td>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.</td>
</tr>
<tr>
<td>3339</td>
<td>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.</td>
</tr>
<tr>
<td>3340</td>
<td>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.</td>
</tr>
<tr>
<td>3346</td>
<td>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.</td>
</tr>
<tr>
<td>3350</td>
<td>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.</td>
</tr>
<tr>
<td>3351</td>
<td>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.</td>
</tr>
</tbody>
</table>

* 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. Permission of the instructor may be required for such substitution.

### Graduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>3352</td>
<td>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.</td>
</tr>
<tr>
<td>3353</td>
<td>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.</td>
</tr>
<tr>
<td>3360</td>
<td>United States Foreign Policy (3:3:0). Examines the patterns and processes that shape U.S. foreign policy.</td>
</tr>
<tr>
<td>3361</td>
<td>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.</td>
</tr>
<tr>
<td>3364</td>
<td>Comparative Foreign Policy (3:3:0). Surveys theories that connect domestic politics with foreign policy and applies them to a variety of countries.</td>
</tr>
<tr>
<td>3365</td>
<td>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?</td>
</tr>
<tr>
<td>3366</td>
<td>International Political Economy (3:3:0). Explores interaction of politics and economics in trade, investment, finance, and development.</td>
</tr>
<tr>
<td>3371</td>
<td>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.</td>
</tr>
<tr>
<td>3372</td>
<td>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.</td>
</tr>
<tr>
<td>3373</td>
<td>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.</td>
</tr>
<tr>
<td>3374</td>
<td>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.</td>
</tr>
<tr>
<td>3375</td>
<td>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 terrorisms.</td>
</tr>
<tr>
<td>3376</td>
<td>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.</td>
</tr>
<tr>
<td>3378</td>
<td>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.</td>
</tr>
<tr>
<td>4397</td>
<td>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.)</td>
</tr>
<tr>
<td>4399</td>
<td>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.)</td>
</tr>
</tbody>
</table>
Graduate Program / Political Science

For the M.A. and Ph.D. degrees, the department emphasizes and encourages specialization in the following areas of political science: American institutions and behavior, comparative politics, and international relations. In addition, the department offers graduate courses in political theory, methodology, public policy, and public administration.

To be admitted to the M.A. or Ph.D. program, the student must submit a department application form along with three letters of reference. In addition, the student must complete the Graduate School admission process, including the Graduate School application form, submission of GRE scores, and submission of official transcripts showing prior graduate and undergraduate work. Students applying to any of these programs should have an overall GPA of at least 3.0 in undergraduate and graduate work. M.A. and Ph.D. students must develop their courses of study in consultation with the department's director of political science graduate programs.

Master's Programs

Master's degree work may follow either of two plans: 24 hours of coursework plus a thesis or 36 hours of coursework without a thesis. M.A. students are required to take POLS 5381 and 5482. The M.P.A. program requires 36 hours of coursework and an internship assignment. Courses are scheduled so that the M.P.A. degree may be obtained in evening study.

Master of Public Administration. The program for the Master of Public Administration degree is designed to prepare students to assume administrative positions in government and nonprofit agencies with particular emphasis on municipal government and specialty tracks associated with it. Persons already employed in government can be prepared to assume more advanced positions. Applicants to the M.P.A. program should complete the Graduate School application process and submit two letters of reference if they wish to be considered for a teaching assistantship.

Students are required to take 36 hours of graduate courses, including a specified core curriculum of 18 hours of public administration courses. All degree candidates lacking substantial prior administrative experience must also register for 6 hours of internship credit and complete internship responsibilities in a government or non-profit agency. Students will not be allowed to graduate with less than a B grade in any core course. A core course may be retaken only once. There are no foreign language or thesis requirements. M.P.A. students must develop their courses of study in consultation with the department's M.P.A. director. Comprehensive examinations are given during the last semester of the candidate's coursework.

Specialty tracks include public management, fiscal administration, policy analysis, health administration, health policy and planning, and nonprofit management.

Doctoral Programs

The doctoral degree requires a minimum of 60 semester hours of graduate work beyond the bachelor's degree, exclusive of credit for the dissertation. A minimum tool requirement for all Ph.D. students is the successful completion of POLS 5381 and 5382 (or their equivalents) plus POLS 5383. Additional language or tool requirements may be imposed at the time of the student's preliminary examination and will be tailored to the student's field of specialization. Students may be admitted directly into the doctoral program without first having completed a master's degree.

Students are required to complete coursework in one major field and two minor fields, one of which may be taken outside the department. For the qualifying examination, the student will select one major field and one minor field, and will be tested in those fields only. However, if the student chooses to take a minor outside the department, the outside field will automatically be counted as the second minor field and will be exempted from examination.

Additional information and application materials for these programs can be found at www.depts.ttu.edu/politicalscience. Interested students may also address questions and information requests to polgrad@ttu.edu for the M.A. and Ph.D. programs and to mpa@ttu.edu for the M.P.A. program. A brochure providing additional information may also be obtained by writing to the department.

Joint Programs

Master of Public Administration—Master of Arts in Economics. The Department of Political Science and the Department of Economics and Geography, both in the College of Arts and Sciences, offer a 54–hour joint degree program leading to the Master of Public Administration and Master of Arts in Economics degrees. The program is designed primarily for students who wish to complement their administrative skills with knowledge of economics. The joint M.P.A.—M.A. in Economics degree program will be particularly helpful to students intending to specialize in areas such as fiscal administration, health administration, and policy analysis.

Students wishing to pursue this dual degree program must apply to and be accepted by both the M.P.A. program in the Department of Political Science and the Department of Economics and Geography. To fulfill the requirements of the dual-degree program, the student must take 18 hours of core courses in public administration, 18 hours of core courses in economics, and 12 hours of approved elective courses in public administration, economics, or in a related field, plus 6 hours of internship in public administration for a total of 54 hours. The first two years of study will consist entirely of the core courses in public administration and economics. The third year will consist of the balance of coursework in specialized areas in public administration or economics.

Doctor of Jurisprudence—Master of Public Administration. The Department of Political Science, in association with the School of Law, offers a program which enables the student to earn both the J.D. and M.P.A. degrees in approximately four years of full-time study. Both degrees can be completed with 102 hours of public administration and law courses (plus 6 hours of internship) instead of the 129 hours plus internship required if pursued separately. Application must be made and approved by both the School of Law and the Graduate School. No student may complete the M.P.A. program in less than 12 months.

5200. Teaching College Political Science (2:2:0). Prerequisite: Consent of instructor. Strategies and innovations in teaching political science at the college level, including supervised teaching. May be repeated and taken as independent study. Credit-no credit. Does not count toward minimum degree requirements.

5321. Seminar in Political Behavior (3:3:0). Current research on mass political behavior, including public opinion, political socialization, and voting behavior. Topics vary each semester. May be repeated for credit.

5322. Pro-Seminar in American Politics (3:3:0). Advanced study in subjects relevant to an understanding of how the political process is affected by the environment of politics.


5325. The United States Congress (3:3:0). An examination of the Congress, from formal organization, member recruitment, and theories of representation, to Congressional reform, policy-making, and interbranch relations.

5330. 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 in the 16th century.

5335. Modern Political Theory (3:3:0). Major political thinkers beginning with the 16th century and ending with Fascism.

5339. Seminar in Political Theory (3:3:0). Examination of ideas and concepts such as liberty, authority, justice, equality, and nationalism.


5360. Pro-Seminar in International Relations (3:3:0). Survey of contending theories of world politics, focusing on those that emphasize the role of power and interest in shaping state behavior.

5361. Interdependence and World Order (3:3:0). Survey of contending theories of world politics focusing on those that emphasize interdependence, democratization, transnationalism, non-stage actors, and the potential for system transformation.

5363. International Organization (3:3:0). Theoretical examination of the rise of global, regional, and functional international organizations and their role in the solution of economic, social, environmental, and political problems.

5365. Special Topics in International Relations (3:3:0). Intensive research on topics in international relations. Subjects vary.

5367. International Political Economy (3:3:0). An exploration of the interaction of international politics and international economic trends. The course surveys the theories in the field, particularly as they relate to the political economy of trade, foreign investment, finance, and development.

5369. International Security Studies (3:3:0). This course examines how states maintain their security in a dangerous world.

5370. Pro-Seminar in Comparative Politics (3:3:0). Critical survey of the major theories and literature in comparative politics, the logic of cross-national and cross-cultural inquiry, and the major concepts and approaches.

5371. Area Studies in Comparative Politics (3:3:0). The culture and political system of a major geographical area like Western Europe, Latin America, or Asia. Topics vary each semester. May be repeated for credit.

5376. Selected Topics in Comparative Government (3:3:0). Studies in comparative politics, with topics varying from semester to semester.


5380. Data Management (3:3:0). This course covers locating and using data, including creating, accessing, and merging data files, preparing data for analysis, and dealing with data problems. Graded credit/no credit.

5381. Research Design (3:3:0). Design and execution of political research.

5382. Data Analysis (3:3:0). Techniques of analyzing political data, including descriptive and inferential statistics and computer applications. Concurrent registration in 5482 lab required.

5383. Advanced Quantitative Research Methods in Political Science (3:3:0). Prerequisite: POLS 5382 or equivalent. Extensions of the least squares model to such techniques as regression and diagnostics, structural equations, factor analysis and/or time series, and computer programs applicable to political data.

5384. Advanced Political Analysis (3:3:0). Prerequisite: Consent of instructor. Examination of contemporary methods for investigating selected political topics. Topics may vary from semester to semester. May be repeated for credit.

5396. Research Practicum in International Relations (3:3:0). Prerequisite: Consent of instructor. Organized professional research on major issues in international relations. May be repeated twice for credit.

5397. Research Practicum in Comparative Politics (3:3:0). Prerequisite: Consent of instructor. Organized professional research on major issues in comparative politics. May be repeated twice for credit.

5400. Master’s Thesis (V1-6).

7000. Research (V1-12).

8000. Doctor’s Dissertation (V1-12).

Public Administration (PUAD)

To interpret course descriptions, see page 8.

Graduate Courses

5100. Colloquium in Public Administration (1:1:0). Prerequisite: Consent of instructor. Discussion of current issues in public administration led by department and visiting faculty. Credit-no credit.

5220. Program Evaluation and Quantitative Analysis (3:3:0). Prerequisite: Consent of instructor. Introduction to the design, logic, and politics of research methods appropriate for the evaluation of policies and programs before, during, and after their implementation.

5321. Advanced Quantitative Methods in Public Policy and Administration (3:3:0). Prerequisite: Consent of the instructor. Quantitative methods and approaches for analyzing public policy questions and data, including inferential statistics and the use of computer-based statistical programs.

5326. Information Technology in Public Administration (3:3:0). The role of information and communication systems are examined as well as applications used by public administrators. Emphasis is placed on understanding the systemic issues facing the application of information technology in the public sector.


5333. Environmental Policy and Administration (3:3:0). Analysis of the formulation, implementation, and evaluation of environmental and natural resources policy, emphasizing theoretical foundations, political contexts, and principles of administering environmental policies.

5334. Healthcare Policy and Administration (3:3:0). Prerequisite: Consent of instructor. Analysis of the formulation, implementation, and evaluation of healthcare policy and service delivery, emphasizing skills and knowledge in policy-making, management, and decision-making.

5335. Management of Nonprofit Organizations (3:3:0). Study of the third sector and the administration of nonprofits, including laws, boards, personnel, volunteers, finances, grant writing, fundraising, marketing, and planning.

5337. Public Organization Theory (3:3:0). The major political and administrative theories applicable to public sector organizations are examined. Contemporary trends in organization theory and public management are emphasized.

5340. Seminar in Public Administration (3:3:0). Prerequisite: Consent of instructor. Critical survey of the field of public administration.


5342. City Management (3:3:0). The political implications and administrative functions of city government are examined. Contemporary issues of municipal management are emphasized.

5343. Public Personnel Administration (3:3:0). Prerequisite: Consent of instructor. Description and analysis of the personnel function in public administration.

5344. Public Budgeting (3:3:0). Political aspects of the budgetary process as the central mechanism for public resource allocation and executive planning.

5345. Administrative Ethics (3:3:0). Prerequisite: Consent of instructor. Considers applications of ethical systems and thinking in public organizations. Particular emphasis on the ethical dilemmas caused by administrative discretion and defining the public interest.

5346. Public Financial Management (3:3:0). Prerequisite: PUAD 5344 or consent of instructor. An in-depth study of government finance function with emphasis on fund structure, financial reporting, and related management practices including cash, debt, risk, and inventory management.

5347. Internship in Public Administration (3:3:0). Prerequisite: Consent of instructor. Service assignment in a public agency to enhance professional skills for students in the Masters in Public Administration program. Graded pass-fail and may be repeated for credit.

5348. Selected Topics in Public Administration (3:3:0). Special studies on subjects in public administration. Topics will vary from semester to semester.

5352. Public Policy Analysis (3:3:0). Introduction to analytic tools for evaluating public policies; examines policy choices given resources and informational constraints. Topics include risk assessment, cost-benefit analysis, and market failures.
Department of Psychology

Faculty

M. David Rudd, Ph.D., Chairperson
Horn Professor: C. Hendrick, S. Hendrick
Professors: Clopton, Cogan, Delucia, Durso, R. Maki, W. Maki, Marshall, McGlynn, Richards, Rudd, Taraban, Winer, Young
Associate Professors: Borrego, Cohen, Cook, Epkins, Garos, Harter, Morgan, Mumma, Reich, Robitschek
Assistant Professors: Bleckley, Cukrowicz, Hardin, Jones, Larsen,

About the Program

This department supervises the following degree programs:

• Bachelor of Arts in Psychology
• Master of Arts in Experimental Psychology
• Doctor of Philosophy in Clinical Psychology
• Doctor of Philosophy in Counseling Psychology
• Doctor of Philosophy in Experimental Psychology

The advanced degree programs in experimental psychology offer concentrations in cognitive/applied cognitive psychology, human factors, and social psychology. The clinical and counseling doctoral programs are fully accredited by the American Psychological Association. The Human Factors program is accredited by the Human Factors and Ergonomics Society. 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.

Undergraduate Program

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, 3401, and 3400 or MATH 2300. All majors also must select at least one course from each of five areas:

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, 4302, 4320, 4321, 4326, 4327, 4334, 4342, 4343, or 4380.
5. Additional Topics in Psychology: PSY 2301, 2305, 3301, 3310, 3398, 4000, 4300, 4316, 4322, 4325, 4331, 4336, 4344, or 4384.

The required number of hours for the major is 34, including two writing intensive courses in psychology (PSY 3317, 3401, 4320, 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 who are majoring in some field other than psychology and wish to 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 College of Education section of this catalog for teacher certification requirements.

Grades below C in psychology courses will not be acceptable for fulfilling major, minor, or teacher certification requirements.

In addition to offering regularly structured courses, the department provides opportunities 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 (PSY)

(To interpret course descriptions, see page 8.)

Undergraduate Courses

1300. [PSYC 2301] General Psychology (3:3:1). Introduction to fundamental concepts in psychology. Emphasis on the physiological, social, emotional, and environmental determinants of behavior. (Honors section offered)

1201. [PSYC 2308, 2309, 2310] 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.

2305. [PSYC 2307, 2313] 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.


Psychology Curriculum

| FIRST YEAR |  |
|-----------|  |
| PSY 1300, General Psychology | 3 |
| ENGL 1301, Ess. Coll. Rhetoric | 3 |
| MATH 1300 (or above) | 3 |
| HIST 2300, History of U.S. to 1877 | 3 |
| POLS 1301, Amer. Govt., Org. | 3 |
| TOTAL | 15 |
| ENGL 1302, Adv. Coll. Rhetoric | 3 |
| Oral Communication | 3 |
| HIST 2301, History of Since 1877 | 3 |
| POLS 2302, Amer. Pub. Policy | 3 |
| Technology & Applied Science | 3 |
| TOTAL | 15 |

| SECOND YEAR |  |
|-------------|  |
| Minor Elective | 3 |
| Foreign Language | 5 |
| Minor Elective | 3 |
| Natural Science | 4 |
| MATH 2300, Statistical Methods | 3 |
| Health & Physical Fitness† | 3 |
| Psychology Elective | 3 |
| TOTAL | 16 |
| TOTAL | 18 |

| THIRD YEAR |  |
|-------------|  |
| Foreign Language | 3 |
| PSY 3401, Research Methods | 3 |
| English Literature | 3 |
| PSY-Group 3 (O) | 3 |
| Minor Elective | 3 |
| Humanities† | 3 |
| TOTAL | 16 |
| TOTAL | 15 |

| FOURTH YEAR |  |
|--------------|  |
| Psychology Elective | 3 |
| PSY-Group 4 (App.) | 3 |
| PSY-Group 5 (Addl.) | 3 |
| Minor Elective | 3 |
| Humanities† | 3 |
| Health & Physical Fitness† | 1 |
| Visual and Performing Arts | 3 |
| 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 also count toward the multicultural requirement.
Graduate Program

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. Both are based on a scientist-practitioner model. The experimental program offers master’s and doctoral degrees. Students may concentrate in social, cognitive/applied cognitive, or human factors. The human factors specialty is accredited by the Human Factors and Ergonomics Society and offers a combined B.A.–M.A. degree in addition to the M.A. and Ph.D.

Admission to a graduate program in psychology requires the recommendation of the department as well as the approval of the graduate dean. Admission to degree programs is competitive and decisions on admission normally are made each spring for the following fall semester. Application instructions may be obtained by contacting the department or viewing www.psychology.ttu.edu. Students who are not officially approved for a degree program may not enroll in courses with a practicum component. Students may not take courses with a practicum component toward a minor in psychology without approval of the instructor.

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. (Writing Intensive)

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. Social Psychology (3:3:0). Prerequisite: PSY 1300. Focus is on the psychosocial aspects that impact the four predominant ethnic minority populations in the United States. This course may be used to fulfill the multicultural requirement. (Writing Intensive)

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.

3401. Research Methods (4:3:2). Prerequisite: PSY 1300; corequisite: EPSY 3400 or MATH 2300. 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 (VI-6). Prerequisite: PSY 1300 and consent of instructor. 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. (Writing Intensive)

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.

4302. Service Learning in Psychology (3:1:8). Prerequisite: Consent of instructor. Provides undergraduate psychology majors with an opportunity to earn credit doing supervised service in the community. May be repeated one time for credit toward overall degree requirements.

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.

4306. Constructivist and Narrative Psychologies (3:3:0). Prerequisite: PSY 3401 or consent of instructor. Introduction to theories, research, and applications of meaning-making psychologies, including constructivist, social constructionist, and feminist approaches. (Writing Intensive)

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.


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 psychoanalysts. Topics will vary. (Writing Intensive)

4321. Interpreting 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.

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.


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.

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.

4331. Social Psychology of Groups (3:3:0). Prerequisite: PSY 3304. Social psychological theory and research on topics in group dynamics, including group structure, influence, conflict, performance, decision making, and leadership.

4332. Health Psychology (3:3:0). Prerequisite: PSY 3401. Introduces students to the contributions of psychology as a discipline to the understanding of health and illness.

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 or MATH 2300; PSY 3401 and junior standing. Design, execution, and write-up of an individual research project in personality and social psychology. Discussion of research methods specific to these areas. (Writing Intensive)

4343. Language and Literacy Research and Applications (3:2:2). Prerequisite: PSY 1300. Integration of the study of language, reading, and comprehension with research and tutoring experiences.

4344. Cognitive Science and Contemporary Culture (3:3:0). Prerequisite: PSY 1300. Introduction to topics in the cognitive sciences, including language, intelligence, memory, and consciousness with connections to contemporary culture and artifacts.

4384. Forensic Psychology (3:3:0). Prerequisite: PSY 3401 and 4305. Introduces students to the interface of psychology and law with a focus on forensic psychology (e.g., forensic psychological assessment, expert testimony).
Graduate Courses

5001. Problems in Psychology (V1-6). Prerequisite: 12 advanced hours of psychology and prior permission of instructor. Independent work with an individual guidance of a staff member.

5002. Advanced Practicum in Counseling and Clinical Psychology (V1-6). Prerequisite: PSY 5316 or PSY 5318 and prior permission of instructor. Supervised practice in psychodiagnostics and psychotherapy with selected cases. Emphasis on a wide variety of topics. May be repeated for credit.

5003. Practicum in Human Factors (V3-6). Prerequisite: PSY 5370, 5372, 5380, and prior consent of the human factors program coordinator. Supervised practice in the profession of human factors with selected sites on or off campus. Emphasis is on real-world settings. May be repeated for credit.

5004. Doctoral Internship in Counseling and Clinical Psychology (V1-6). Prerequisite: By arrangement with department chairperson. Full-time supervised internship in an appropriate facility. Enrollment required four times to complete one calendar year.


5303. Developmental Psychopathology (3:3:0). Prerequisite: Consent of instructor. An examination of psychopathology in children, with consideration of the developmental course of various psychopathological disorders through childhood and adolescence.

5304. Practicum in Intelligence Testing (3:3:0). Prerequisite: Consent of instructor. A review of the historical and theoretical bases of intelligence testing in addition to instruction and supervised practice in scoring, interpreting, and reporting results from individual intelligence tests.

5306. Seminar in Contemporary Professional Issues (3:3:0). Prerequisite: Consent of instructor. A survey of the employment practices and prevailing legal and ethical standards in contemporary professional psychology.

5308. Vocational Psychology (3:3:0). Prerequisite: Consent of instructor. Review of theories, assessment tools, and interventions in vocational psychology including the integration of vocational issues into psychotherapy.

5309. Clinical Neuropsychology (3:3:0). Prerequisite: PSY 5304, 5338, and doctoral standing in psychology. Foundational course in brain-behavior relationships, neuropsychology for neuropsychologists, neuropsychological assessment, and other clinical applications.

5310. Seminar in Child Assessment (3:3:0). Prerequisite: PSY 5303 and consent of instructor. A review of the procedures used in a comprehensive child assessment and the integration of this information for diagnosis and report writing.

5311. Introduction to Psychotherapeutic Intervention and Management (3:3:0). Prerequisite: Consent of instructor. Didactic introduction to psychotherapy procedures plus a practicum element.

5312. Introduction to Child and Adolescent Psychopathological Treatment (3:3:0). Prerequisite: Consent of instructor. Introduction to empirically-based treatment approaches pertaining to children, adolescents, and families, with a focus on case formulation and treatment planning.

5314. Projective Testing (3:3:0). Prerequisite: Second-year graduate status in clinical-counseling psychology or consent of instructor. A survey of projective assessment with emphasis on administration, scoring, and interpretation of the Rorschach.

5315. Objective Personality Assessment (3:3:0). Prerequisite: Graduate standing in the department, permission of instructor, and PSY 5358. Survey of objective personality and psychodiagnostic assessment including supervised practicum experience and methodological, empirical, theoretical, cultural, and ethical issues.

5316. Introduction to Counseling Psychology (3:3:0). Prerequisite: Admission to counseling psychology doctoral program or consent of instructor. Professional identity, research themes and strategies, and ethical standards of counseling psychology. Exploration of theories and techniques of counseling.


5318. Introduction to Clinical Psychology (3:3:0). Prerequisite: Admission to clinical psychology doctoral program. Supervised experience in interviewing. A study of different approaches to psychotherapy with adults.

5321. Nonparametric Statistical Analysis Techniques for Psychological Research (3:3:0). Includes one, two, and k sample designs plus measures of association. Some coverage of single case studies.

5322. Family Psychology (3:3:0). Prerequisite: PSY 5002 or 5311. An introduction to the field of family psychology and therapy. Ideas and techniques of the major approaches to family psychology and therapy.

5323. Group Counseling and Psychotherapy (3:3:0). Prerequisite: Prior permission of instructor. Designed to provide theories of approaches to group work and a personal experience with group processes. Various points of view will be studied.

5326. Human Motivation: A Social Psychological Approach (3:3:0). Prerequisite: Consent of instructor. Examination of motivation from a social psychological perspective. Includes consideration of theoretical frameworks of motivation and application to a wide variety of research areas.

5327. Seminar in Social Cognition (3:3:0). An examination of research and theory on the mental activities that underlie social information processing and behavior.

5328. Seminar in Social Psychology (3:3:0). Prerequisite: PSY 3304. Contemporary attitude theory and research; systems approach to social psychology. Includes consideration of the major concepts of psychological intervention approaches derived from contemporary learning and cognitive theory.


5336. Child and Adolescent Development (3:3:0). Prerequisite: Consent of instructor. Comprehensive study of the development of children and adolescents, with an emphasis on the effects of age on the development of cognitive, social, emotional, and moral domains.

5348. Advanced Multivariate Analysis for Psychologists (3:3:2) Prerequisite: PSY 5347. Survey of methods and applications of multivariate techniques in psychology and related fields. Focus on MANOVA, profile analysis, discriminant analysis, logistic regression, and time series analysis.
College of Arts and Sciences

About the Programs

Department of Sociology, Anthropology, and Social Work

Faculty

Jeffrey P. Williams, Ph.D., Chairperson

Professors: Dennis, D.F. Johnson, E. Johnson, Peek, Roberts, Tsai, Schneider, Smither, Walter

Associate Professors: Dunham, Elbow, Hall, Koch, Paine, Williams

Instructor: Phelps

Adjunct Faculty: Stein, Way

Bachelor of Arts in Sociology

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 120 hours.

Undergraduate Programs

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:

1. SOC 1301, 3391, 3392, and 4395.
2. 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 and receive the notation “Criminology Concentration” on their transcripts are required to complete five three-hour courses (15 hours) with a grade of C or better from two groups of courses as specified below.

1. Three core courses as follows, all of which must be taken: SOC 3327, 3329, and 4325
2. Two alternate courses to be chosen from among the following: ANTH 2305, 4343, PSY 4384, SOC 3368, 3383, and 4327

The sociology major with a concentration in criminology requires a total of 36 hours.

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. All sociology courses except SOC 3391 provide credit in the individual or group behavior category of the university's social and behavioral sciences Core Curriculum requirements.

**Teacher Education.** Consult the College of Education section of this catalog for 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 support research in archaeology and physical anthropology. The Summer Field School in Archaeology and field trips in Texas and the surrounding region are highlights of the curriculum. Sociocultural anthropology includes special emphasis on the multicultural United States, Latin America, Caribbean, and Southeast Asia.

A student majoring in anthropology must complete 31 semester hours in anthropology, including ANTH 2100, 2300, 2301, 2302 (or 1301), 3304 or 4305, 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 fulfill their college and Core Curriculum requirements.

**Social Work Program**

The Bachelor of Arts degree in social work (usually referred to as a B.S.W.) at Texas Tech is accredited by the Council on Social Work Education. The program also offers a minor in social work. The curriculum is based on the generalist social work model which is intended to prepare graduates to work in a wide variety of social work settings with diverse populations. A graduate of the program should be prepared for several types of entry-level social work positions in public, private, and voluntary social agencies. The curriculum may also serve as a foundation for those interested in and qualified to continue their study toward a master's degree in social work (M.S.W.). Certain professional concentrations in social work require completion of the M.S.W., which is not currently offered at Texas Tech.

In addition to the Core Curriculum requirements of the university and endorsements by the College of Arts and Sciences, social work majors are expected to complete courses covering social services (SW 2301), human behavior and the social environment (SW 3311 and 3312), diverse populations (SW 3331), social work practice (SW 3332, 3333, and 3334), social work evaluation and research (SW 3339), social welfare policy (SW 4311), and an integrative seminar with a supervised field practicum (SW 4340 and 4611). A minimum of 4 hours in human biology is also required. SOC 1301 must be taken before or with SW 2301. MATH 2300 or SOC 3391 (both are statistics) must be taken before SW 3339.

Since most social work classes are sequential (that is, they build on the previous classes), students are strongly encouraged to visit with the program director as soon as they declare a major or minor in social work to plan their course sequencing. However, the following may be used as a guide.

Social work majors are expected to complete these courses first:

- SOC 1301 either before or with SW 2301
- SW 2301 with either SW 3311 or 3312
- SW 3331 with SW 3311 or 3312

After completion of the above courses, social work majors should take the following courses:

- SW 3332 and 3333 together before 3334
- SW 3334
- SW 3339 (after Math 2300 or SOC 3391)

Finally, social work majors should take SW 4311, 4340, and 4611 together in their last semester.

Due to the nature and scheduling of the field placement, it may not be possible to take classes other than SW 4611 and 4340 during the field placement semester. No other coursework should be attempted during this final semester. Therefore, students are encouraged to meet all other requirements listed by the College of Arts and Sciences for the B.A. degree prior to this field placement semester.

In addition to the above 36 social work hours and their prerequisites, all social work majors are required to declare an 18-hour minor in another field at the time their degree plan is filed. Social work majors frequently minor in sociology, anthropology or psychology; other fields considered as minors include foreign language, human sciences, business, or education. The department recommends that social work majors discuss their options for a minor with the social work program director.

**Requirements for Continuing as a Social Work Major**

- Successful completion of SW 2301, 3311, 3312, and 3331 (grade of C or better in each).
- A cumulative social work grade point average of 2.5. (Students with a social work GPA of 2.0 to 2.49 may continue provisionally but must have a social work GPA of 2.5 by the end of the following semester.)
- Demonstrate compatibility with the social work profession.
- Demonstrate potential for success in the social work profession.

**Social Work Minor.** Sometimes students majoring in other fields choose to enhance their programs by selecting a minor in social work. All Texas Tech students are encouraged to consider this option, especially those who may be working with diverse populations or in social service agencies. A minor in social work could be a helpful adjunct for nursing students, education majors, psychology majors, pre-med students, and students in several of the areas of other human sciences. Required courses for the minor in social work include social services (SW 2301), human behavior and the social environment (SW 3311 and 3312), diverse populations (SW 3331), social work evaluation and research (SW 3339), and social welfare policy (SW 4311).
Graduate Programs

The graduate degree programs are designed to provide broad training for students who wish to enter a Ph.D. program, prepare for undergraduate or community college teaching, or pursue a nonteaching career for which M.A.-level training in sociology or anthropology is appropriate and useful. Both programs emphasize training in basic theory and methods.

Students in the sociology program may select the thesis option or nonthesis option. The thesis option is strongly recommended for students who plan to continue their graduate studies by applying to a doctoral program. Students choosing the thesis plan in sociology are required to take 30 hours of coursework (including two required courses in theory and two in methods) plus 6 hours of thesis credit. They are also required to complete a thesis that is acceptable to the student's departmental thesis committee and demonstrate proficiency in a computer language. Students may petition the Graduate Committee to substitute another organized course from within the department for one of the required theory and/or methods courses. Students choosing the nonthesis plan are required to take 36 hours of coursework (including one course in theory, two courses in methods, and 3 hours of SOC 5331). They are also required to complete a paper on a topic related to their professional interests that is acceptable to the student's departmental committee.

The sociology program allows coursework specialization in such areas as family, criminology and deviance, social psychology, social change, minority relations, demography, urban problems, medical sociology, gerontology, and sociology of religion. Six of the 30 hours required may be taken as a minor outside the department. Selection of a minor requires approval of the graduate committee. In the sociology program, in lieu of a foreign language, each student is required to demonstrate proficiency in computer analysis of data. A grade of B or better is required for graduate credit.

The anthropology core curriculum requires courses in the following four basic subfields: archeology, biological anthropology, linguistics, and cultural anthropology. The minimum requirements are 30 hours of coursework plus 6 hours of thesis credit. Students in the anthropology program are encouraged to use the minor to develop an area of emphasis either within the department (such as linguistics or sociology) or outside (such as biology, Latin American and Iberian studies, or museum science). A grade of B or better is required for graduate credit.

In both the sociology program and the anthropology program, a final examination is required. In the sociology program the final examination in the thesis plan involves at least one of the various areas in sociology listed above. In the nonthesis plan the examination includes coursework taken, work experience outside the department, and the topic of the formal paper. In the anthropology program the final examination is related to the general area of the thesis topic.

Decisions on the program of study, specific courses, and thesis topics are made through consultation with the graduate advisor in each program and other faculty members as appropriate on the basis of the individual student's background, interests, and objectives. With departmental approval, requirements may be amended for individuals with exceptional qualifications, or additional courses may be required for applicants with inadequate undergraduate preparation.

General admission requirements are those established by the Graduate School. The best preparation is an undergraduate major in the same field, either sociology or anthropology, or equivalent. However, students from other fields are also encouraged to apply. More specific information regarding admission procedures or other aspects of the graduate programs may be obtained from either the sociology or the anthropology graduate advisor.

Due to course requirements, the department recommends that social work minors take these courses in the following order (although more than one may be taken at a time): SOC 1301, S W 2301, S W 3311, S W 3312, S W 3331, MATH 2300 or SOC 3391 (must be taken before S W 3339), S W 3339, and S W 4611.

For further information, contact the program director at 806.742.2401 ext. 244.

Anthropology (ANTH)

(To interpret course descriptions, see page 8.)

Undergraduate Courses

1301. Understanding Multicultural America (3:3:0). Cultural diversity in the U.S. as studied by anthropologists. Ethnographic descriptions of African-Americans, Hispanics, Native Americans and other groups. (Fulfills the state standard requirement in multicultural education for education majors.)

2100. [ANTH 2101] Physical Anthropology Laboratory (1:0:3). Corequisite: ANTH 2100. Study of human and nonhuman primate biodiversity via skeletal biology and evolution concepts. Topics include anthropometrics, diet surveys, genetics, and exercises designed to explore human biodiversity issues.

2300. [ANTH 2301] Physical Anthropology (3:3:0). Corequisite: ANTH 2100. Topics include human genetics, health, diet, and issues of human and nonhuman primate evolution. This course along with ANTH 2100 satisfies the College of Arts and Sciences Core Curriculum natural science requirement.

2301. [ANTH 2302] 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. [ANTH 2351] Cultural Anthropology (3:3:0). The rich complexity of peoples and cultures in the world as studied by anthropologists. Discussion of basic concepts such as ethnography, ethnocentrism, kinship systems, gender, and culture exchange. (Honors section and Spanish language section offered in some semesters.)

2305. Forensic Anthropology (3:3:0). An introductory lecture course covering forensic anthropology. Topics include skeletal biology, forensic archaeology, age/sex identification, DNA and bone trauma, and courtroom and ethical responsibilities of the forensic anthropologist.

2300. 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.


310. 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. (Writing Intensive)
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. (Writing Intensive)


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.


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. (Writing Intensive)

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. (Writing Intensive)

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. (Writing Intensive)

3340. Topics in Old World Archaeology (3:3:0). Through archaeology, examines the ancient civilizations of Egypt, Mesopotamia and the Indus Valley, and China in successive semesters. May be repeated twice when topics vary.

3341. Laboratory Archaeology (3:3:0). 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.

3342. Prehistory of the Southwest (3:3:0). Introduction to the prehistory of the Southwest beginning with the first humans to enter the area up to the period of Spanish colonization.

3343. Maya Archaeology (3:3:0). A survey of ancient Maya prehistory and archaeology with emphasis on religion, world view, iconography, and hieroglyphic writing.

3344. South American Archaeology (3:3:0). Covers the prehistory of South America from the earliest colonization to the development of civilizations with special emphasis on the Central and South Central Andes.

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 the art and 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.

3349. Archaeology of the Northern Spanish Frontier (3:3:0). This course will familiarize students with the history and archaeology of the Spanish occupation of the borderlands in the New World with particular emphasis on the Southwest U.S.

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. 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. (Writing Intensive)

4000. Individual Problems in Anthropology (V-3). Prerequisite: ANTH 1301, 2300, 2301, or 2302 plus advanced standing and consent of instructor prior to registration. May be repeated for credit.

4305. Doing Ethnography: Method and Theory (3:3:0). Prerequisite: ANTH 2302 or consent of instructor. The history of research in cultural anthropology, development of methodological and theoretical approaches, and the exploration of ethnographic fieldwork and writing.

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.


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. Culture and Culture of Mexico (3:3:0). Mesoamerican culture history, emphasizing Indians villagers, migrants to the cities, and other groups studied by anthropologists. Study of the cultural processes that have created modern Mexico. Taught in Spanish some semesters.

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.

5301. Exploring Human Diversity (3:3:0). Human evolution and prehistory, world languages, and cultural diversity in the postmodern world. A one-semester graduate Introduciton to the field for teachers and the general public.

5305. Doing Ethnography: Method and Theory (3:3:0). The history of research in cultural anthropology; development of methodological and theoretical approaches, and the exploration of ethnographic fieldwork and writing.


5311. Human Origins (3:2:3). A comprehensive examination of hominid evolution with emphasis on current discoveries, interpretations, and theories. Seminar on selected topics.

5312. Human Diversity (3:2:2). Survey of biological variation and the processes producing it in human populations and races; seminar in selected topics. Laboratory emphasizing research approaches to current problems.

5313. Human Skeletal Biology and Forensic Anthropology (3:3:0). Prerequisite: Graduate standing in anthropology, biology, museum science, or consent of instructor. Analysis of human skeletal remains for legal purposes. Methods of identification, techniques of recovery and examination, facial reconstruction, report writing, limits of inference, expert testimony.


5317. Anthropology, Epidemiology, and Global Health (3:3:0). Introduction to communicable-disease epidemiology; covers theory and methods, transmission, surveillance and control, Emerging infectious diseases.

5322. Social Anthropology (3:3:0). Seminar in contemporary social anthropology. Selected topics in kinship, social, and political organization; warfare and conflict resolution; and ritual and symbolism.
### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Title</th>
<th>Prerequisites/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>5323</td>
<td>Topics in Cultural Anthropology (3:3:0)</td>
<td>May be repeated for credit.</td>
</tr>
<tr>
<td>5341</td>
<td>Method and Theory in Archeology (3:2:2)</td>
<td>An intensive survey of the development and present status of method and theory in archeology.</td>
</tr>
<tr>
<td>5343</td>
<td>Topics in Anthropological Archeology (3:3:0)</td>
<td>Examination of either a currently important methodological topic in archeology or the archaeological knowledge extant from a site or geographic unit. May be repeated for credit. Also offered as a summer field course.</td>
</tr>
<tr>
<td>5345</td>
<td>Paleopathology (3:3:0)</td>
<td>Prerequisite: Consent of instructor. This course offers students an appreciation of the natural history of human bone as it relates to the health of prehistoric populations.</td>
</tr>
<tr>
<td>5347</td>
<td>Evolution Medicine (3:3:0)</td>
<td>Examines human evolutionary biology, biocultural context of health, illness, and medicine; and reservoir-vector studies of human infectious diseases.</td>
</tr>
<tr>
<td>5349</td>
<td>Field Studies on Infectious Disease Ecology, Surveillance, and Control (3:3:0)</td>
<td>Prerequisite: Consent of instructor. Summer session field school providing instruction and experience in the field of infectious diseases, emphasizing original research in the developing world.</td>
</tr>
<tr>
<td>5352</td>
<td>Ethnolinguistics (3:3:0)</td>
<td>Survey of the nature of the interrelationships between language and culture.</td>
</tr>
<tr>
<td>6000</td>
<td>Master's Thesis (V1-6)</td>
<td></td>
</tr>
<tr>
<td>7000</td>
<td>Research (V1-12)</td>
<td></td>
</tr>
</tbody>
</table>

### Social Work (S W)

**Social Work with Diverse Populations (3:3:0)**

Integrated approach to the theory values and skills of social work practice with culturally diverse populations. The emphasis is empowering vulnerable populations to fulfill their potential.

**Social Work Practice: Interaction Skills (3:3:0)**

Prerequisite: S W 2301, 3311, 3312 and 3331; corequisite: S W 3333. A foundation course in the theory and principles of interviewing and professional relationship-building skills for generalist social workers. Social work majors only.

**Social Work Practice: Macro Systems (3:3:0)**

Prerequisite: S W 2301, 3311, 3312 and 3331; 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.

**Social Work Practice: Micro Systems (3:3:0)**

Prerequisite: SW 3332 and 3333. An examination of the knowledge base and application of intervention skills for generalist social work practice with individuals, families, and small groups. Social work majors only.

**Social Work Research and Evaluation (3:3:0)**

Prerequisite: MATH 2300 or SOC 3391. An introduction to the scientific approach of social work knowledge. Emphasis is on evaluation of social welfare programs and social work practice.

**Independent Study in Social Work (3)**

Prerequisite: Consent of instructor and senior standing as a social work major or minor. Independent study in social work theory, practice, policy, research, or policy evaluation.

**Policy and Social Welfare Legislation (3:3:0)**

Prerequisite: S W 2301, 3311, and 3312. In-depth analysis of the process of social policy with emphasis on social welfare and social service delivery systems. (Writing Intensive.)

**Social Work: Field Placement Integrative Seminar (3:3:0)**

Prerequisite: S W 3334; corequisite: S W 4611 or S W 3339 with permission of instructors for both classes. A seminar designed to increase the integration of social work knowledge, skills, and values used in the student's individual practice of social work. Social work majors only.

### Sociology (SOC)

To interpret course descriptions, see page 8.

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Title</th>
<th>Prerequisites/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1301</td>
<td>Introduction to Sociology (3:3:0)</td>
<td>Human group behavior, influence on the individual, and relationships of individuals to each other as members of groups.</td>
</tr>
<tr>
<td>1320</td>
<td>Current Social Problems (3:3:0)</td>
<td>Problems in basic social institutions as marriage and the family, community, economy, government, education, health and welfare, recreation, etc.</td>
</tr>
<tr>
<td>2331</td>
<td>The Sociology of Marriage (3:3:0)</td>
<td>History, present status, and current problems of the marriage institution. (W S 2331)</td>
</tr>
<tr>
<td>3324</td>
<td>American Minority Problems (3:3:0)</td>
<td>Sociological analysis of the major racial and ethnic groups in the present United States.</td>
</tr>
<tr>
<td>3325</td>
<td>Gendered Lives (3:3:0)</td>
<td>Study of the gendered nature of society, emphasizing the experiences of women in such areas as family, health, and the economy. (W S 3325)</td>
</tr>
<tr>
<td>3327</td>
<td>Sociology of Law and Policing (3:3:0)</td>
<td>Examines social forces affecting the development and current operation of criminal law and policing. Special attention given to contemporary issues concerning each.</td>
</tr>
<tr>
<td>3329</td>
<td>Sociology of Corrections (3:3:0)</td>
<td>Introduction to U.S. corrections systems. Sociological examination of trends and issues in prisons, parole, probation, and community corrections. (Writing Intensive)</td>
</tr>
<tr>
<td>3331</td>
<td>Sociology of the Family (3:3:0)</td>
<td>Changing family styles, mate roles, parent-child relationships, adoption, abortion, population control, technical-industrial impact on American family unit. (W S 3331)</td>
</tr>
<tr>
<td>3332</td>
<td>Sociology of Bureaucracy (3:3:0)</td>
<td>Governmental, business, and industrial bureaucracies in international perspective with an emphasis on structural characteristics and their impacts on human behavior.</td>
</tr>
<tr>
<td>3335</td>
<td>Family Violence (3:3:0)</td>
<td>Surveys definitions, prevalence, and theories of family violence. Focuses on impact of variations in definition of violence. (Writing Intensive)</td>
</tr>
<tr>
<td>3337</td>
<td>Inequality in America (3:3:0)</td>
<td>Inequality as expressed in occupational, class, ethnic, and sexual hierarchies is examined from varying sociological perspectives. (W S 3337)</td>
</tr>
<tr>
<td>3348</td>
<td>Sociology of China and Japan (3:3:0)</td>
<td>A sociological approach to the peoples and institutions of China and Japan. Comparison of modern Chinese and Japanese ways of life vis-à-vis the American way of life.</td>
</tr>
<tr>
<td>3352</td>
<td>Technology and Society (3:3:0)</td>
<td>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.</td>
</tr>
<tr>
<td>3368</td>
<td>Sociology of Deviance (3:3:0)</td>
<td>Study of different forms of deviant behavior in Western societies, emphasizing the social relativity of deviance and theories that attempt to explain it. Examples of topics include tattooing, drug abuse, topless dancing, pedophilia, and mental illness.</td>
</tr>
<tr>
<td>3383</td>
<td>Alcohol, Drugs, and Society (3:3:0)</td>
<td>Analysis of social factors related to the use and abuse of alcohol and other drugs.</td>
</tr>
<tr>
<td>3391</td>
<td>Introduction to Social Research (3:3:0)</td>
<td>Nature of research process; elementary problems of design; data collection and analysis; interpretation of research.</td>
</tr>
<tr>
<td>3392</td>
<td>Introduction to Social Research II (3:3:0)</td>
<td>Nature of research process; elementary problems of design; data collection and analysis; interpretation of research.</td>
</tr>
<tr>
<td>3393</td>
<td>Development of Sociological Theory (3:3:0)</td>
<td>Emergence of systematic sociological theory out of social philosophy; evolution of sociology as a discipline in the late 19th century.</td>
</tr>
<tr>
<td>3394</td>
<td>Contemporary Sociological Theories (3:3:0)</td>
<td>Review of selected current perspectives on social behavior, such as functionalism and systems theory, conflict and critical theory, symbolic interactionism, rational choice, sociology of emotions, structuration theory, feminist theory, and postmodern perspec...</td>
</tr>
</tbody>
</table>
5307. Seminar in Sociology (3:3:0). Prerequisite: Consent of instructor and high scholastic achievement. Independent study. May be repeated for credit.

5311. 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.


5325. Criminology (3:3:0). Crime and deviant behavior as a social process and their regulation in a democratic society. (Writing Intensive)

5327. 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.

5331. Religion and Society (3:3:0). The sociological study of religious groups and beliefs. The reciprocal relationships between religious institutions and society.

5332. Cities and City Life (3:3:0). The modern city in its ecological, cultural, and social aspects.


5382. 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.

5395. Senior Seminar (3:3:0). Prerequisite: Senior standing. A capstone course for sociology majors that integrates, extends, synthesizes, and applies sociological knowledge. (Writing Intensive)

Graduate Courses

5303. Seminar in Contemporary Sociological Theory (3:3:0). Study of contemporary approaches to society, including conflict theory, functionalism, symbolic interaction, and ethnomethodology.

5308. Seminar in the Origins of Social Theory (3:3:0). Development of sociological theory in the nineteenth and early twentieth centuries. Topics may vary, but emphasis usually will be on the work of Marx, Durkheim, and Weber.

5311. Seminar in Criminology (3:3:0). Critical review of theory and research on selected topics in criminology.

5312. Seminar in Urban Problems (3:3:0). Extensive analysis of the process and consequences of urbanization, with emphasis upon causation and critiques of proposed solutions.

5313. Seminar in Minority Relations (3:3:0). American and world patterns of interethnic relations are covered with emphasis on recent and current trends.

5315. Seminar in Social Change (3:3:0). Linear and cyclical theories; analysis of the idea of progress, stage theories, dialectical materialism, and the lag hypothesis.

5316. Seminar in Social Gerontology (3:3:0). Theory and research on aging, covering demographic, sociocultural, economic, individual, and societal factors. Interdisciplinary aspects are stressed.

5320. Social Psychology: Symbolic Interactionism (3:3:0). Central ideas of social psychology are analyzed and integrated in a contemporary model of symbolic interactionism, with focus on affect.


5327. Seminar in Demography (3:3:0). Theory and skills of population analysis including use of census data in sociological and social science research.

5331. Field Research (3). Individual research project off campus, covering entire term or longer. Research plans must be approved in advance by the student’s major advisor. May be repeated for credit with permission.

5332. The Research Organization (3:3:0). Participation in campus-based organized research project. Required at least once of research assistants; open to other students.

5334. Quantitative Methods in Sociology (3:3:0). Prerequisite: Undergraduate introduction to quantitative methods. Decision making skills (from test selection to inferences from data) for quantitative analysis in sociology.


5336. Seminar in Family Change (3:3:0). Analysis of how the family institution has changed, in relation to other institutions and society in general. Family is treated as both a dependent and independent variable.

5381. Seminar in Medical Sociology (3:3:0). Theory and research on conceptions of health, illness, and medical care from the sociological perspective.

5382. Seminar in Psychiatric Sociology (3:3:0). An examination of theories of mental illness, the commitment process, mental hospitals, mental health professions, and alternative treatment programs.

5384. Seminar in the Sociology of Religion (3:3:0). Examination of the religious institution focusing on its sociological meaning, organizations, presence as a force in western society, and relationship to other social institutions.


6000. Master’s Thesis (V1-6).

7000. Research (V1-12).
About the College
The Rawls College of Business 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 AACSB International, the national accrediting organization for business and management programs.

Degree Programs
The college offers programs leading to the following degrees:

- Bachelor of Business Administration
- Master of Business Administration
- Master of Science with a major in Business Administration
- Master of Science in Accounting
- Master of Science with a major in Business Administration
- Doctor of Philosophy with a major in Business Administration

Dual-Degree/Joint Programs
- Bachelor of Business Administration/Bachelor of Science in Architecture
- Bachelor of Business Administration/Bachelor of Science in Agricultural and Applied Economics
- Bachelor of Science in Agribusiness
- Master of Business Administration/Master of Architecture
- Master of Business Administration/Master of Science in Environmental Toxicology
- Master of Business Administration/Master of Science in Personal Financial Planning
- Master of Business Administration/Doctor of Medicine
- Master of Business Administration/Master of Arts in Foreign Language
- Master of Business Administration/Doctor of Jurisprudence
- Master of Science in Accounting/Doctor of Jurisprudence
- Master of Science in Business Administration/Master of Science in Personal Financial Planning

At the undergraduate level, students may major in accounting, economics, finance, general business, international business, management, management information systems, marketing, and energy commerce. Joint majors with programs in other colleges include agribusiness, general business/agricultural and applied economics, and business/architecture.

Accelerated Program: Joint B.B.A. — Master’s
This is an accelerated program leading to a bachelor’s in business administration and a master’s in business administration or accounting. 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.

The accounting joint B.B.A.—M.S. in Accounting (M.S.A.) is a 150-hour program that is designed for students who plan to take the CPA exam and have a professional career in accounting.

Students should apply to the graduate component of the program during their junior year. Graduate coursework cannot be taken prior to acceptance. Application materials are available in the Rawls College of Business Graduate Services Center. Admitted students will combine undergraduate and graduate courses during the final semester of their undergraduate work.

Undergraduate Program
Honors College for Business Majors. Students from all areas of the Rawls College of Business may enter the Honors College. Students with high grade point averages are encouraged to apply for admittance into this prestigious program. Honors sections are usually offered in the following business courses: ACCT 2300, 2301, 3304, 3307, MGT 3370, 3373, 4373, 4374, 4377, 4378, 4379, MKT 3350, and FIN 4326.

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 (B A 1101, ENGL 1301, 1302, MATH 1330, 1331, 2345, ACCT 2300, 2301, ISQS 2340, and ECO 2301, 2302) with grades of C or higher and attainment of a minimum 2.75 adjusted cumulative 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 Rawls College of Business. Note that the minimum GPA for any major may increase due to limited space availability.

Faculty
Horn Professors: Conover, J. Hunt, S. Hunt, Westfall
Associate Professors: Arnett, Bremer, Buchheit, Cooney, Durrett, Ford, Gillan, Harrison, Jones, Kretting, Lin, Malone, Masseili, McDonald, Mercer, Ritchey, Short, Song, Wan
Assistant Professors: Carlson, Cashman, Coglisier, D. Davis, Delgadillo, Hansen, Lightner, T. Payne, Quinn-Trank, Roman, Romanus, Stegemoller, Wagner, Walden, Whitby
Mathematics Requirement. A mathematics course must be taken each enrollment until the requirement is fulfilled because 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.

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 Rawls College of Business.

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 the 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 the lower-division requirements, junior-senior level economics courses (except ECO 3323 and 4332), free electives, and 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 Rawls College of Business.

Students transferring from any institution must have at least a cumulative 2.75 GPA or higher on hours taken at any college or university (a minimum of 12). Transfer credit is not used in the calculation of a student’s Texas Tech grade point average. The Rawls College of Business has the authority for determining which transfer courses apply toward a B.B.A. degree program. Only free electives will be accepted as pass-fail. 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 2.75 adjusted cumulative 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 Rawls College of Business. 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 cumulative 2.75 GPA when the courses were taken and the B.B.A. lower-division business core was completed. No business administration minor course can be used in place of a major requirement.

The last 30 hours prior to graduation must be taken while enrolled in the Rawls College of Business.

General Standards and Requirements
Accreditation. The AACSB International prescribes that at least 50 percent of the total hours in the undergraduate program must be in General Education courses.

Catalog Selection. Students will use the catalog issued for the year in which they were first officially admitted to the Rawls College of Business 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 Rawls College of Business. For these purposes, a catalog expires after seven years.

Correspondence Courses. Free electives, ENGL 1301, 1302, and lower division non-business or non-economics courses may be taken by correspondence, up to a maximum of 18 hours. Lower-division business core, upper-division core, and major courses are excluded. A correspondence course should not be used for graduation when completed during the student’s last semester.

Course Load. The normal course load for a semester is 15 to 19 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. A grade of I (incomplete) must be removed at Texas Tech University, not by transfer credit.

Ineligible Registrations. The Rawls College of Business 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, including required GPAs. Courses taken ineligibly are not used in the degree program.

Laptop Computers. Freshmen admitted for fall 2007 should be aware that laptop computers may be required for junior-level and higher courses starting fall 2008. The specifications for these laptops will not be set until spring 2008.

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.
**Probation and Suspension.** See the Undergraduate Academics catalog section concerning probation and suspension policies.

**Requirements to Declare an Upper-Division Major.** The Rawls College of Business 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 majoring 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 2.75 adjusted cumulative 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. Students must be approved by the Undergraduate Services Center to seek a second degree and have at least a 2.75 GPA in their first degree. A second bachelor’s degree sought by a student who did not graduate from a public Texas university must include the required Core Curriculum.

**Study Abroad.** Students requesting permission to study abroad in business programs must have a minimum 2.75 adjusted Texas Tech GPA and lower-division core completed. Please check with the International Business programs office for specific program requirements.

**Summer Work.** Coursework to be taken at other institutions must be approved prior to enrollment by a Rawls College 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 BA building. 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.

Upper-division students should maintain contact with an advisor in the Undergraduate Services Center concerning degree requirements and with faculty advisors for help in selecting courses to achieve career objectives.

**Dual-Degree, Joint Programs**

**B.B.A. and B.S. in Architecture.** This dual-degree program is designed to provide a broad background for a variety of careers in business, government, architecture, and building-related industries with 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. A 2.75 Texas Tech GPA is required.

**B.B.A. and B.S. in Agricultural and Applied Economics.** This dual 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 dual-degree programs will have increased understanding of business management principles, concepts, and analytical capabilities as applied to agribusiness. See the College of Agricultural Sciences and Natural Resources section for a full discussion of the program. A 2.75 Texas Tech GPA is required.

**B.S. in Agribusiness.** This distinctive Bachelor of Science joint 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 Rawls College of Business. See the College of Agricultural Sciences and Natural Resources section of this catalog for a full program outline. A 2.75 Texas Tech GPA is required.

**Minors**

**Minor for Non-Business Students.** The requirements for a minor for students in other colleges are as follows:

- Must have a minimum 2.75 adjusted cumulative 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 must be taken at Texas Tech University.
- Correspondence courses cannot be used in the minor.

**General Business Minor—18 hours**

<table>
<thead>
<tr>
<th>Course</th>
<th>First Year</th>
<th>Second Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECO 2302, Principles of Economics II.</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>B A 3301, Fundamentals of Marketing (Prerequisite: ECO 2302 and a minimum 2.75 adjusted cumulative GPA)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>B A 3302, Financial and Managerial Accounting. (Prerequisite: minimum 2.75 adjusted cumulative GPA)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>B A 3303, Foundations of Finance. (Prerequisite: minimum 2.75 adjusted cumulative GPA and B A 3302)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>B A 3304, Operations Management. (Prerequisite: minimum 2.75 adjusted cumulative GPA)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>B A 3305, Organization Management. (Prerequisite: minimum 2.75 adjusted cumulative GPA)</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**Lower-Division Curriculum**

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1331, Intro. Math. Anal.</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>HIST 2301, Hist. U.S. Since 1877*</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Natural Science†</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(I B majors should substitute foreign language course)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Visual and Performing Arts†</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(Enrollment takes GEOL 1303 &amp; 1101)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>

**SECOND YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 2300, Fin. Acct.</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>ISDS 2340, Intro. Info. Sys. Bus.</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>ECO 2301, Prin. Economics I</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>POLS 1301, Amer. Govt., Org.*</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Multicultural course†</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

* Does not require a grade of C or higher.
† Choose from Core Curriculum requirements. Natural science must include both a lecture and a lab.
^ Accounting and finance majors must achieve A or B.
** Accounting majors must achieve A or B.
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 2.75 cumulative 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 Rawls College of Business. 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 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 2.75 adjusted cumulative Texas Tech GPA and an A or B in ACCT 2300, 2301, and 3304 are required to declare accounting as a major. Students should be aware that the undergraduate degree in accounting will not prepare them to sit for the CPA examination. The requirements to take the CPA examination in Texas include a bachelor’s degree, 30 hours of accounting beyond introductory courses, a minimum of 150 total hours, and a 3-hour approved course in ethics. The B.B.A. in accounting includes 18 hours of accounting beyond introductory. Accounting majors must also take ACCT 3101 as a prerequisite or corequisite to ACCT 3304 or 3305. Students who plan to take the CPA exam are encouraged to apply to the 150-hour M.S.A. program. Students in the 150-hour M.S.A. program should take the approved Business Ethics as a graduate class.

150-Hour Accounting B.B.A. / M.S.A. Major

The primary objective of the 150-hour program is to prepare students for careers in public accounting, consulting, industry, and other organizations and is strongly recommended for students who want to become certified public accountants. After admission to the 150-hour program, students must select a concentration from auditing-financial reporting 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.

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 3307, Income Tax Acct.</td>
<td>3 MKT 3350, Intro. to Marketing</td>
</tr>
<tr>
<td>Economics Course**</td>
<td>3 ACCT 3151, Acct. Systems</td>
</tr>
<tr>
<td>ISQS 3344, Intro. Prod. &amp; Oper.</td>
<td>3 FIN 3320, Financial Mgt.</td>
</tr>
<tr>
<td>MGT 3373, Managerial Comm.</td>
<td>3 MGT 3370, Organiz. &amp; Mgt.</td>
</tr>
<tr>
<td>ACCT 3101, Sem. in Prof. Practice</td>
<td>1 TOTAL</td>
</tr>
<tr>
<td>TOTAL</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 4301, Prin. of Auditing</td>
<td>3 Graduate Courses</td>
</tr>
<tr>
<td>Economics Course**</td>
<td>3 ENGL 3365, Prof. Rept. Writing</td>
</tr>
<tr>
<td>ACCT 3306, Prin. Cost &amp; Mgr. Acct.</td>
<td>3 Non-accounting elective*</td>
</tr>
<tr>
<td>Non-accounting electives*</td>
<td>6 TOTAL</td>
</tr>
<tr>
<td>TOTAL</td>
<td>15</td>
</tr>
</tbody>
</table>

Minimum hours required for graduation – 150. Elective hours may vary to meet requirements.

* These are the only courses not requiring a grade of C or higher. Courses may be business (except accounting) or non-business and can be taken pass/fail. If not already fulfilled, the multicultural requirement should be completed with an elective, but not taken pass/fail.

** Any upper-level economics course except ECO 3323 and 4332.

^ Must achieve A or B to declare accounting major.

Economics Major

10-Hour Accounting B.B.A. / M.S.A. Major

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLAW 3391, Business Law I</td>
<td>3 MGT 4380, Strategic Management</td>
</tr>
<tr>
<td>ENGL 3365, Prof. Rept. Writing*</td>
<td>3 Non-accounting Electives**†</td>
</tr>
<tr>
<td>or COMS 3358, Bus. &amp; Pro. Comm.</td>
<td>8 TOTAL</td>
</tr>
<tr>
<td>ACCT 3306, Prin. Cost &amp; Mgr. Acct.</td>
<td>3 TOTAL</td>
</tr>
<tr>
<td>ACCT 4301, Principles of Auditing</td>
<td>3 TOTAL</td>
</tr>
<tr>
<td>TOTAL</td>
<td>12</td>
</tr>
</tbody>
</table>

Minimum hours required for graduation – 120

* This course does not require a grade of C or higher.

** These are the only courses not requiring a grade of C or higher and may vary in number to meet 120-hour requirement.

† These are the only courses not requiring a grade of C or higher and may vary in number to meet 120-hour requirement.

^ Students going into the 150-hour program will have 18 hours of major courses and 8 hours of non-accounting electives. Elective hours may be adjusted to meet minimum hour requirement of 120.

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECO 4323, Monetary Theory</td>
<td>3 MGT 4380, Strategic Management</td>
</tr>
<tr>
<td>Group A**</td>
<td>3 Free Electives*</td>
</tr>
<tr>
<td>Group B†</td>
<td>6 TOTAL</td>
</tr>
<tr>
<td>Elective (Non B.A / Non Eco)*</td>
<td>3 TOTAL</td>
</tr>
</tbody>
</table>

Minimum hours required for graduation – 120

* These are the only courses not requiring a grade of C or higher. Courses may be business (except accounting) or non-business.

† Students going into the 150-hour program will have 18 hours of major courses and 8 hours of non-accounting electives. Elective hours may be adjusted to meet minimum hour requirement of 120.

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECO 3320, Interm. Macroec.</td>
<td>3 FIN 3323, Interm. Eco. Theory</td>
</tr>
<tr>
<td>FIN 3320, Financial Mgt.</td>
<td>3 MKT 3350, Prin. of Money, Bnk. &amp; Credit</td>
</tr>
<tr>
<td>MGT 3370, Organiz. &amp; Mgt.</td>
<td>3 FIN 3323, Intro. to Fin. Mkt. &amp; Inst.</td>
</tr>
<tr>
<td>FIN 3323, Intro. to Marketing</td>
<td>3 MGT 3373, Managerial Comm.</td>
</tr>
<tr>
<td>TOTAL</td>
<td>15 Group A**</td>
</tr>
<tr>
<td>TOTAL</td>
<td>15</td>
</tr>
</tbody>
</table>

Minimum hours required for graduation – 150. Elective hours may vary to meet requirements.

* These are the only courses not requiring a grade of C or higher. Courses may be business (except accounting) or non-business and can be taken pass/fail. If not already fulfilled, the multicultural requirement should be completed with an elective, but not taken pass/fail.

** Any upper-level economics course except ECO 3323 and 4332.

^ Must achieve A or B to declare accounting major.
### Accelerated Economics B.B.A. / Master’s

Upon admission to the graduate 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 graduate courses.

<table>
<thead>
<tr>
<th>THIRD YEAR</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
<td></td>
</tr>
<tr>
<td>ECO 3311, Interm. Macroecon.</td>
<td>3</td>
<td>BLAW 3391, Business Law I</td>
</tr>
<tr>
<td>FIN 3320, Financial Management</td>
<td>3</td>
<td>ECO 3312, Interm. Eco. Theory</td>
</tr>
<tr>
<td>MGT 3370, Organiz. &amp; Mgt.</td>
<td>3</td>
<td>ECO 3323, Prin. Money, Bank, &amp; Cr.</td>
</tr>
<tr>
<td>MGT 3370, Organiz. &amp; Mgt.</td>
<td>3</td>
<td>FIN 3332, Corp. Fin. I</td>
</tr>
<tr>
<td>ISQS 3344, Intro. Prod. &amp; Oper.</td>
<td>3</td>
<td>FIN 3332, Interm. Econ.</td>
</tr>
<tr>
<td>TOTAL</td>
<td>12</td>
<td>TOTAL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FOURTH YEAR</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
<td></td>
</tr>
<tr>
<td>ECO 4323, Monetary Theory</td>
<td>3</td>
<td>FIN 4385, Sr. Seminar</td>
</tr>
<tr>
<td>Group A*</td>
<td>3</td>
<td>Group B +</td>
</tr>
<tr>
<td>Group B (3 hours)</td>
<td>3</td>
<td>TOTAL</td>
</tr>
<tr>
<td>Group B (3 hours)</td>
<td>3</td>
<td>TOTAL</td>
</tr>
<tr>
<td>Elective</td>
<td>6</td>
<td>TOTAL</td>
</tr>
</tbody>
</table>

Students must make a B or better in ACCT 2300 and FIN 3320.

**These are the only courses not requiring a grade of C or higher.

** Group A – Choose two courses from ECO 3320, 4322 (or FIN 4328), FIN 4323, 4325, 4326, and 4329.

† Group B – Choose one course from ECO 3324, 3326, 3330, 3333, 3336, 4305, 4314, 4331, FIN 4372, or remaining Group A courses.

### Finance Major

The goal of this major is to enhance leadership potential by providing a high-quality and thorough education as preparation for careers in banking, business finance, investment management, and real estate. To declare a finance major, students must make a B or better in ACCT 2300 and FIN 3320.

<table>
<thead>
<tr>
<th>THIRD YEAR</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
<td></td>
</tr>
<tr>
<td>ACCT 3304, Intermed. Acct.</td>
<td>3</td>
<td>ECO Elective***</td>
</tr>
<tr>
<td>BLAW 3391, Business Law I</td>
<td>3</td>
<td>FIN 3321, Fin. Statement Anal.</td>
</tr>
<tr>
<td>FIN 3320, Financial Management</td>
<td>3</td>
<td>FIN 3322, Corp. Fin. I</td>
</tr>
<tr>
<td>MGT 3370, Organiz. &amp; Mgt.</td>
<td>3</td>
<td>FIN 3323, Interm. Fin. Mkt. &amp; Inst.</td>
</tr>
<tr>
<td>MGT 3350, Intro to Marketing</td>
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Minimum hours required for graduation – 120

* This is the only course not requiring a grade of C or higher. Elective hours may vary to meet 120-hour requirement.

** Group A – Choose three courses from FIN 3332, 3334, 3335, 3336, 4329, 4332, 4336, and 4383.

*** ECO Elective: choose two courses from ECO 3311, 3320, 3324, 3326.

### Finance – Investment Emphasis

The goal of the Investment Emphasis is to provide an understanding of the various phases of the investment area. Following completion of the core investment course, students will study their choice of portfolio analysis; derivatives, securities and markets; fixed income analysis; real estate investments; or participate in the student-managed investment fund.

<table>
<thead>
<tr>
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<td>Spring</td>
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Minimum hours for graduation – 120

* This is the only course not requiring a grade of C or higher. Elective hours may vary to meet 120-hour requirement.

** Group A – Choose three courses from the following: FIN 3332, 4325, 4326, 4329, 4335, 4336.

** ECO Electives – Choose two courses from ECO 3311, 3320, 3324, 3326.

+ Group B – Choose one course from the following: FIN 3334, 3336, 4323, 4328, 4333, 4336, 4382, or remaining Group A courses.

### Finance – Real Estate Emphasis

While all real estate courses and most other business courses offered at Texas Tech University can be used to satisfy in part the 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. Finance majors must make a B or better in FIN 3320.

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<td>FIN 3321, Fin. Statement Anal.</td>
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<td>FIN 3320, Fin. Mgt.</td>
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<td>FIN 3322, Corp. Fin. I</td>
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<tr>
<td>MGT 3370, Organiz. &amp; Mgt.</td>
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<td>FIN 3323, Interm. Fin. Mkt. &amp; Inst.</td>
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<td>MGT 3373, Managerial Comm.</td>
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Minimum hours required for graduation – 120

* This is the only course not requiring a grade of C or higher. Elective hours may vary to meet 120-hour requirement.

** Group A – Choose three courses from FIN 3332, 3334, 3335, 3336, 4329, 4332, 4336, and BLAW 3393.

*** ECO Elective – Choose 2 courses from ECO 3311, 3320, 3324, 3326.
Finance - Managerial Finance Emphasis

The Managerial Finance track provides a broad range of skills preparing students for careers in corporate financial management, commercial banking, investment banking, and financial analysis.

**THIRD YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>FIN 3320, Fin. Mgt.</td>
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**FOURTH YEAR**

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<td>FIN 4330, Corp Fin II</td>
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</table>

Minimum hours for graduation – 120

* Group A – Choose one course from FIN 3332, 4325, 4327 or 4383
** Eco Electives – Choose two courses from ECO 3311, 3320, 3322, 3324, 3326

Accelerated Finance B.B.A./Master's

Upon admission to the graduate 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 graduate courses.

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<tr>
<td>ECO Elective***</td>
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</table>

* This is the only course not requiring a grade of C or higher.
** Group A – Choose one course from FIN 3332, 3334, 3335, 3336, 4323, 4325, 4326, 4327, 4328, 4329, 4330, 4333, 4336, and 4383
*** ECO elective: Choose 2 courses from 3311, 3320, 3324, 3326.

General Business Major

**Project Management Emphasis**

**Required courses:**
- ISQS 3345 Object Oriented Systems
- ISQS 4350 Information Systems Project Management
- MGT 4376H Honors Entrepreneurship
- MKT 3356 Marketing Research and Analysis

**Take two of the following six courses:**
- FIN 3332 Real Estate Fundamentals
- FIN 3334 Real Estate Finance and Investments
- FIN 3335 Real Estate Investments
- BLAW 3393 Real Estate Law
- FIN 4333 Real Estate Appraisal
- FIN 4336 Urban Land Development

**General Business Major—Intelligence Emphasis**

**Required courses:**
- MKT 3356 Marketing Research and Analysis
- B A 4000 Data and Text Mining for Business Intelligence (currently taught as BA 7000/will be cross-listed)
- ISQS 3345 Object Oriented Systems

**Any three from the following business courses:**
- ISQS 3346 Internet Programming
- ISQS 3348 Data Base Management Systems
- ISQS 4361 Web Application Design
- B A 4000 Six Sigma (currently taught as BA 7000/will be cross-listed)

**Any six from the following non-business courses:**
- MATH 3342 Mathematical Statistics for Engineers and Scientists
- MATH 3371 Elements of Finite Mathematics
- MATH 4330 Mathematical Computing
- MATH 4342 Mathematical Statistics I
- MATH 4343 Mathematical Statistics II
- I E 3311 Operations Research I
- I E 3341 Engineering Statistics
- I E 3343 Quality Assurance in Engineering Statistics
- I E 4311 Operations Research II
- C S 3364 Design and Analysis of Algorithms
- C S 4354 Concepts of Data Base Systems
- GEOG 3300 Geographic Information Systems
- GEOG 4400 Topics in Geographic Information Systems

**General Business Major Operations Management Emphasis**

**Required courses:**
- MKT 3353 Marketing Channels and Distribution Systems
- ISQS 3345 Object Oriented Systems
- ISQS 4348 Systems Analysis
- ISQS 4361 Web Application Systems
- ISQS 4381 Individual Problems or ISQS 4382 Internship
- MGT 4376H Honors Entrepreneurship

**With industrial engineering technology minor (18 hours):**
- CTEC 1312 Construction Methods
- CTEC 2301 Surveying and Surveys
- CTEC 4321 Construction Contacts and Specifications
- CTEC 4341 Construction Management
- CTEC 4342 Cost Estimating
- CECE 4343 Construction: Safety and Health

**Minimum hours for graduation – 120**

* These are the only courses not requiring a grade of C or higher. Elective hours may vary to meet 120-hour requirement.
** Any upper-level economics course except ECO 3323 and 4332.

Minimum hours required for graduation – 120

* These are the only courses not requiring a grade of C or higher. Elective hours may vary to meet 120-hour requirement.
** Any upper-level economics course except ECO 3323 and 4332.

**Major Courses** – Choose 21 hours from at least three of the following areas if not used to fulfill another requirement: ACCT, ECO, FIN, ISQS, MGT, MKT. At least 9 hours must be senior-level courses.
General Business Major—Preprofessional

Health Emphasis (Includes Premedicine)

30 hours:
- 21 hours upper-division core
- 3 hours economics (upper-level requirement)

Two additional upper-division courses:
- Operations service course
- HOM undergraduate course
- ISQS 4361 Web Application Design
- MGT 4371 Health Organization Management

38 hours required for medical school (27 hours upper division, 11 hours lower division):
- 27 hours of upper-division science courses (science support area). Note: This could include a minor.
- 8 hours of lower-division science courses plus a 3-hour elective. Must coincide with specific preprofessional health program.

Accelerated General Business B.B.A./Master’s

Upon admission to the graduate 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 graduate courses.

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<th>THIRD YEAR</th>
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<tr>
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<td>FIN 3320, Financial Management</td>
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<td>MGT 3373, Managerial Comm.</td>
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- * These are the only courses not requiring a grade of C or higher.
- ** Any upper-level economics course except ECO 3323 and 4332.
- + Major Courses - Choose 18 hours from at least three of the following areas if not used to fulfill another requirement: ACC, ECO, FIN, ISQS, MGT, MKT. At least 9 hours must be senior-level courses.

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. Minimum 3.0 GPA and 14 hours in same foreign language.

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<td>BLAW 3391, Business Law I</td>
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<td>Should be taken prior to Study Abroad Semester</td>
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<td>Study Abroad Semester</td>
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<td>(May also be done in spring of 3rd year or fall of 4th year)</td>
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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.

- * Group A - Choose two courses from, GEOG 3358, 3363, 3364, 4305, HIST 3353, 3354, 3374, 3382, 3384, 4383, 4393, 4394, IB 3361, 3382, 3383, POLS 3361, 3363, 3366, 3373, 3374, 3375, 3376, 4364.
- ** Group B - Choose one course from ECO 3333 and 4331.
- + 1-hour course only for students participating in Study Abroad semester.

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 and depth in marketing and related subject areas.

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<tr>
<td>BLAW 3391, Business Law I</td>
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<td>FIN 3320, Financial Management</td>
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Minimum hours required for graduation – 120

- * 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, 4360, and 4383.
- ++Group B – Choose two additional junior- or senior-level business courses provided they are not used to fulfill another requirement.

Accelerated Marketing B.B.A./Master’s

Upon admission to the graduate 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 graduate courses.

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<td>FIN 3320, Financial Management</td>
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Minimum hours required for graduation – 125

- * 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, 4360, and 4383.
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 2.75 or higher adjusted cumulative Texas Tech GPA is required to declare management as a major.

THIRD YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tr>
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<td>MGT 3370, Organiz. &amp; Mgt.</td>
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<th>Course</th>
<th>Hours</th>
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<td>ISQS 3349, Intro. Data Comm. Sys.</td>
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<tr>
<td>ISQS 3348, Data Base Mgt. Sys.</td>
<td>3</td>
</tr>
<tr>
<td>ISQS 3345, Obj. Oriented Sys.</td>
<td>3</td>
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<tr>
<td>MGT 3373, Managerial Comm.</td>
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<tr>
<td>MGT 3370, Org. &amp; Mgt.</td>
<td>3</td>
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<td>TOTAL</td>
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</table>

Minimum hours required for graduation – 120

* These are the only courses not requiring a grade of C or higher. Elective hours may vary to meet 120-hour requirement.
** Any upper-level economics course except ECO 3323 and 4332.
++ Group A – Choose four courses from MGT 3374, 3375, 4370, 4371, 4372, 4375, 4376, 4386, and 4397.

Accelerated Management B.B.A./Master's

Upon admission to the graduate school 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 graduate courses.

THIRD YEAR

<table>
<thead>
<tr>
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<tr>
<td>Jr/Sr. Economics Course**</td>
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<tr>
<td>FIN 3320, Fin. Mgt.</td>
<td>3</td>
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<tr>
<td>MGT 3370, Organiz.&amp;Mgt.</td>
<td>3</td>
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<tr>
<td>MGT 3373, Managerial Comm.</td>
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</tr>
<tr>
<td>MKT 3350, Intro. to Mkt.</td>
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FOURTH YEAR

<table>
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<tr>
<td>Jr/Sr. Economics Course**</td>
<td>3</td>
</tr>
<tr>
<td>FIN 3320, Fin. Mgt.</td>
<td>3</td>
</tr>
<tr>
<td>MGT 3370, Organiz.&amp;Mgt.</td>
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<tr>
<td>MGT 3373, Managerial Comm.</td>
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<tr>
<td>Group A+</td>
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<tr>
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</table>

Minimum hours required for graduation – 120

* These are the only courses not requiring a grade of C or higher. Elective hours may vary to meet 120-hour requirement.
** Any upper-level economics course except ECO 3323 and 4332.
++ Group A – Choose four courses from MGT 3374, 3375, 4370, 4371, 4372, 4373, 4374, 4375, 4376, 4377, 4378, 4379, 4384, 4386, 4387, 4388, 4389, and 4397.

Joint Business/Engineering Certificate in Technology Entrepreneurship

The purpose of the Certificate in Technology Entrepreneurship (CTE) is to prepare students majoring in either engineering or business careers in technology-driven industries. The certificate program is designed for those students who would like to develop a cross-disciplinary perspective of technology using both engineering and business skills.

Undergraduate Certificate in Technology Entrepreneurship (coupled with a B.S. in Engineering or a Bachelor of Business Administration) — 9 total hours required

- Required Business Foundation Course for Engineering Students: B A 3302, Financial and Managerial Accounting................................. 3 hrs.
- Required Engineering Foundation Course for Business Students: I E 4320, Fundamentals of Systems ... 3 hrs.

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. MIS majors may choose one of the following tracks: Telecommunications / Networking Track or Web Application Design Track.

TELECOMMUNICATIONS / NETWORKING TRACK

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 3320, Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>ISQS 3349, Intro. Data Comm. Sys.</td>
<td>3</td>
</tr>
<tr>
<td>ISQS 3348, Data Base Mgt. Sys.</td>
<td>3</td>
</tr>
<tr>
<td>ISQS 3345, Obj. Oriented Sys.</td>
<td>3</td>
</tr>
<tr>
<td>MGT 3373, Managerial Comm.</td>
<td>3</td>
</tr>
<tr>
<td>Elective (Non BA / Non Eco.)*</td>
<td>6</td>
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<tr>
<td>TOTAL</td>
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FOURTH YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Jr/Sr. Economics or Comp. Sci.**</td>
<td>3</td>
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<tr>
<td>ISQS 4349, Info. Sys. Des.</td>
<td>3</td>
</tr>
<tr>
<td>ISQS 4348, Systems Anal.</td>
<td>3</td>
</tr>
<tr>
<td>MGT 3370, Org. &amp; Mgt.</td>
<td>3</td>
</tr>
<tr>
<td>Elective (Non BA / Non Eco.)*</td>
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WEB APPLICATION DESIGN TRACK

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>FIN 3320, Financial Management</td>
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</tr>
<tr>
<td>ISQS 3349, Intro. Data Comm. Sys.</td>
<td>3</td>
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<tr>
<td>ISQS 3346, Data Base Mgt. Sys.</td>
<td>3</td>
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<td>MGT 3373, Managerial Comm.</td>
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<tr>
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<tr>
<td>Elective (Non BA / Non Eco.)*</td>
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<tr>
<td>TOTAL</td>
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</table>

Minimum hours required for graduation – 120

* These are the only courses not requiring a grade of C or higher. Elective hours may vary to meet 120-hour requirement.
** Any upper-level economics course except ECO 3323 and 4332 or any upper-level computer science course.
† ISQS 4382 or other with written approval.
Accelerated Management Information Systems (MIS) B.B.A./Master’s

Upon admission to the graduate 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 graduate courses. MIS majors may choose one of the following tracks in their undergraduate work: Telecommunications / Networking Track or Web Application Design Track.

**TELECOMMUNICATIONS / NETWORKING TRACK**

<table>
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<tr>
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<td>FIN 3320, Financial Management</td>
<td>BLAW 3391, Business Law I</td>
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<td>MGT 3370, Organization/Mgt.</td>
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<tr>
<td>ISQS 3345, Object Oriented Sys.</td>
<td>MKT 3350, Intro to Marketing</td>
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<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td></td>
<td>FIN 3320, Financial Management</td>
<td>BLAW 3391, Business Law I</td>
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<tr>
<td>ISQS 3348, Systems Analysis</td>
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<tr>
<td>ISQS 3350, Intro. to Marketing</td>
<td>Group A*</td>
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**WEB APPLICATION DESIGN TRACK**

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<td>FIN 3320, Financial Management</td>
<td>BLAW 3391, Business Law I</td>
</tr>
<tr>
<td>ISQS 3345, Object Oriented Sys.</td>
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<td>ISQS 3348, Database MGT Sys.</td>
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<table>
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<th>Fall</th>
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<tbody>
<tr>
<td></td>
<td>FIN 3320, Financial Management</td>
<td>BLAW 3391, Business Law I</td>
</tr>
<tr>
<td>ISQS 3348, Systems Analysis</td>
<td>MGT 3370, Organization/Mgt.</td>
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<tr>
<td>ISQS 3350, Intro. to Marketing</td>
<td>Group A*</td>
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</tr>
<tr>
<td>ELECTIVE (Non BA / Non Eco)*</td>
<td>TOTAL 15</td>
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</table>

**ENERGY COMMERCIAL PROGRAM**

The goal of the undergraduate program in energy commerce is to enhance leadership potential by providing a high-quality and thorough educational experience in preparation for a business career in the energy industry. Primary skills involve obtaining the legal rights to explore for and produce natural resources and the responsibility for managing energy assets. Energy Commerce majors must take GEO 3303 and 1101 to fulfill one of their lower-division laboratory science requirements. ENCO 3301 (Energy Industry Fundamentals) must be taken at the lower division as it is a prerequisite to the upper-division ENCO courses. It may be taken concurrently with ENCO 3385. Requires a 3.25 GPA to declare an ENCO major.

**PETROLEUM LAND MANAGEMENT EMPHASIS**

<table>
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<tr>
<td></td>
<td>ENCO 3385, Petroleum Land Mgt. I</td>
<td>ENCO 3386, Petro. Land Mgt. II</td>
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<td>FIN 3320, Financial Management</td>
<td>ENCO 3343, Geo. Hydrocarbons</td>
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<td>MGT 3370, Organization/Mgt.</td>
<td>BLAW 3391, Business Law I</td>
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<td>MGT 3373, Managerial Comm.</td>
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**ENERGY ASSET MANAGEMENT EMPHASIS**

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<tbody>
<tr>
<td></td>
<td>ENCO 3365, Petroleum Land Mgt. I</td>
<td>ENCO 4325, Global Energy Future</td>
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<td>FIN 3320, Financial Management</td>
<td>MGT 3373, Managerial Comm.</td>
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<tr>
<td></td>
<td>ENCO 4363, Energy Alt.</td>
<td>ENCO 3360, Strategic Management</td>
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<tr>
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</table>

* Group A – Choose four courses from ENCO 3361, 3390, 4321, 4325, 4363, 4382, GEOG 3300, and ENGL 3365.

**Any upper-level economics course except ECO 3323 and 4332.**

**FOURTH YEAR**

ENERGY ASSET MANAGEMENT EMPHASIS

<table>
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<tr>
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<th>Fall</th>
<th>Spring</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>ISQS 3344, Prod. &amp; Oper. Mgt.</td>
<td>MGT 4380, Strategic Management</td>
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<tr>
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<td>ENGL 3365, Prof. Report Writing</td>
<td>BLAW 4396, Oil &amp; Gas Law II</td>
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* Group A – Choose four courses from ENCO 3361, 3390, 4321, 4325, 4363, 4382, POLS 3366 or 3378, ATMO 2301, GEOG 3337.

**Any upper-level economics course except ECO 3323 and 4332.**

**FOURTH YEAR**

ENERGY ASSET MANAGEMENT EMPHASIS

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<tbody>
<tr>
<td></td>
<td>ENCO 3365, Petroleum Land Mgt. I</td>
<td>ENCO 4325, Global Energy Future</td>
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<td></td>
<td>MKT 3350, Intro to Marketing</td>
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</table>

* Group A – Choose four courses from ENCO 3361, 3390, 4321, 4325, 4363, 4382, POLS 3366 or 3378, ATMO 2301, GEOG 3337.

**Any upper-level economics course except ECO 3323 and 4332.**
### Energy Commerce Undergraduate Certificate

The purpose of the certificate program is to prepare students majoring in other subjects for careers in the energy industry utilizing the skills attained through their degree program. The certificate program is an immersion in the energy industry to give students a distinction in the marketplace. The certificate is available at the undergraduate and graduate levels. A GPA of 3.5 is required.

**Undergraduate Certificate in Energy Commerce (coupled with accounting, finance or international business majors only)**

**Requires 5 Courses**

**Accounting Majors:**
- ENCO 3301, Energy Industry Fundamentals
- ENCO 3385, Petroleum Land Management I
- ENCO 3386, Petroleum Land Management II
- ACCT 4310, Petroleum Accounting
- ENCO 4361, Advanced Petroleum Practices or ENCO 3361, Natural Gas Transportation and Marketing

**Finance Majors:**
- ENCO 3301, Energy Industry Fundamentals
- ENCO 3385, Petroleum Land Management I
- ACCT 4310, Petroleum Accounting
- ENCO 4321, Energy Transaction Finance
- FIN 4327, Derivative Securities and Markets

**International Business Majors:**
- ENCO 3301, Energy Industry Fundamentals
- ENCO 4315, International Energy Policy and Law
- ENCO 4363, Energy Alternatives
- ENCO 4325, Global Energy Future
- ECO 4331, Economics of Multinational Enterprise or ECO 3333, International Economics

**Optional Internship:** The Energy Commerce program will assist with an internship as a noncertificate elective with approval of the energy commerce program director.

### ISQS Undergraduate Certificate in MIS

The purpose of the certificate program in MIS is for B.A students in non-MIS majors to expand their knowledge of information technology (IT) as applied in business and to increase understanding of everyday IT. The MIS certificate program will provide valuable IT knowledge and skills for success in today's fast-paced and dynamic marketplace. The initial prerequisites are a grade of C or better in ISQS 2340, a 2.75 GPA, and admission to the upper-division major. The certificate will consist of four courses chosen from the following list. Any four may be chosen, but prerequisites must be met prior to enroll in the course.

- ISQS 3345, Object Oriented Systems. Prerequisite: ISQS 2340 with a C or better
- ISQS 3346, Internet Programming. Prerequisite: ISQS 3345 and 3348
- ISQS 3348, Database MGT Systems. Prerequisite: ISQS 2340 with a C or better
- ISQS 3349, Introduction to Data Communication Systems. Prerequisite: ISQS 2340 with a C or better
- ISQS 3351, Telecommunications Security Using Linux. Prerequisite: ISQS 3349
- ISQS 3358, Business Intelligence. Prerequisite: ISQS 3345 and 3348
- ISQS 3360, Telecommunication Security Theory. Prerequisite: ISQS 3349
- ISQS 4361, Web Application Design. Prerequisite: ISQS 3346
- ISQS 4385, Strategic IT and Telecommunications Management. Prerequisite: ISQS 3351 and 3360

### Accounting (ACCT)

*(To interpret course descriptions, see page 8.)*

#### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2300</td>
<td>Financial Accounting (3:3:0)</td>
<td>2.75 adjusted cumulative GPA, sophomore standing, and a C or better in 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. Must make A or B to declare accounting or finance major.</td>
<td></td>
</tr>
<tr>
<td>2301</td>
<td>Managerial Accounting (3:3:0)</td>
<td>2.75 adjusted cumulative GPA and 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 changing environments. Must make A or B to declare accounting major.</td>
<td></td>
</tr>
<tr>
<td>3101</td>
<td>Seminar in Professional Practice (1:1:0)</td>
<td>Structure of the accounting profession, requirements for certification, qualification for and preparation for professional practice in industry, government, and/or public accounting.</td>
<td></td>
</tr>
<tr>
<td>3304</td>
<td>Intermediate Accounting I (3:3:1)</td>
<td>Grade of B or better in ACCT 2300. Net income concepts, corporations, current assets, and investments. Must make A or B to declare accounting major.</td>
<td></td>
</tr>
<tr>
<td>3305</td>
<td>Intermediate Accounting II (3:3:1)</td>
<td>Grade of B or better in ACCT 3304; prerequisite or corequisite: ACCT 3101 for accounting majors. 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.</td>
<td></td>
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<tr>
<td>3306</td>
<td>Principles of Cost and Managerial Accounting (3:3:1)</td>
<td>Grade of B or better in ACCT 2301. A study of principles and techniques of accounting information systems for organizations.</td>
<td></td>
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<tr>
<td>3307</td>
<td>Income Tax Accounting (3:3:0)</td>
<td>Grade of B or better 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. (Writing Intensive)</td>
<td></td>
</tr>
<tr>
<td>3315</td>
<td>Accounting Systems (3:3:1)</td>
<td>Grade of B or better in ACCT 3304. The theories, procedures, and techniques of accounting information systems for organizations.</td>
<td></td>
</tr>
<tr>
<td>4301</td>
<td>Principles of Auditing (3:3:1)</td>
<td>Grade of B or better in ACCT 3304 and completion of or concurrent enrollment in ACCT 3305 &amp; 3315. An introduction to the theory and practice of auditing, emphasizing auditor decision making through a cycle approach to an audit engagement.</td>
<td></td>
</tr>
<tr>
<td>4302</td>
<td>Public Sector Accounting (3:3:0)</td>
<td>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.</td>
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<tr>
<td>4310</td>
<td>Petroleum Accounting (3:3:0)</td>
<td>B or higher in ACCT 2300 and 2301. Accounting for the production, refining, and distribution of oil and gas with emphasis upon production.</td>
<td></td>
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<tr>
<td>4314</td>
<td>International Accounting (3:3:0)</td>
<td>ACCT 3304 or consent of instructor. Study of the accounting issues affecting organizations operating in a global economy. (Writing Intensive)</td>
<td></td>
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<tr>
<td>4381</td>
<td>Individual Problems in Accounting (3)</td>
<td>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.</td>
<td></td>
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<tr>
<td>4382</td>
<td>Internship in Accounting (3)</td>
<td>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.</td>
<td></td>
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</table>

#### Graduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>5302</td>
<td>Current Accounting Theory (3:3:0)</td>
<td>ACCT 3305. Examination of current accounting literature, such as announcements of the Financial Accounting Standards Board.</td>
<td></td>
</tr>
<tr>
<td>5303</td>
<td>Accounting Systems Management and Control (3:3:1)</td>
<td>ACCT 4301. A study of control implications and</td>
<td></td>
</tr>
</tbody>
</table>
Graduate Program / Business

Admission to graduate degree programs offered through the college is based on the undergraduate grade point average, test scores (e.g., GMAT), and individual profile. No thesis is required in any of our master’s degree programs. As part of the comprehensive evaluation process for graduation, a master’s student must successfully complete one of the following as approved by their specific area of concentration: A final comprehensive examination, a capstone course, or a project. These requirements must be completed in one of the last two semesters preceding graduation with a grade of B or better. Students may be directed to enroll in a specific section. The following graduate degree programs are available:

Master’s Programs

Master of Business Administration. The college’s M.B.A. program provides a broad background for multiple careers in business, government, and related activities with particular emphasis on developing managerial perspective, analytical tools, and skills. The program is sufficiently flexible to permit more depth in at least one academic area. M.B.A. students may expect to complete the program in 16 months. Students possessing any undergraduate degree are invited to apply. M.B.A. students are expected to complete their tool course requirements first.

A joint venture of the School of Medicine and the college offers a concentration in health organization management. This program is accredited by the Commission on Accreditation of Healthcare Management Education (CAHME) and includes a certificate in addition to the M.B.A. degree. The M.B.A. health organization management program prepares master’s students with varying levels and types of work experience for post-graduate managerial roles within the health care industry, especially within medical group practices and other ambulatory care organizations.

International Master of Business Administration. The I.M.B.A. is a broad-based program designed for training students in the dynamic global economy. In addition to M.B.A.-like classroom experiences, the program requires competence in a foreign language and experience abroad.

Master of Science in Accounting. This M.S.A. program is designed to prepare graduates for professional careers in the practice of accounting. Concentrations are available in auditing/financial reporting and taxation. Graduates are prepared for professional service in a variety of fields. Most accept entry-level positions in public accounting and private industry.

Master of Science with a Major in Business Administration. This degree produces specialists in one of the following areas of business: finance, management information systems, operations management, or business statistics. The student may take from 18 to 30 semester hours of coursework in a specialty area, up to 6 semester hours of tool and quantitative courses, and/or 9 to 12 semester hours of electives in a concentration from one of the other specialty areas. Normally the student may expect to complete the program within one to two years depending on prior preparation.

Joint Bachelor of Business Administration—Master’s Programs in Business Administration. These programs lead to a B.B.A. and a master’s degree (either an M.B.A., M.S., or M.S.A.); a maximum of 9 semester hours of graduate work may apply to the B.B.A. and the other master’s degrees. The total number of credit hours required for both degrees will vary depending on the program. The program is designed for academically outstanding undergraduate students who wish to complete a master’s degree while at Texas Tech.

Students should apply and be accepted to the graduate component of the program before the first semester of their senior year. Application materials are available in the Graduate Services Center (BA 252) of the college. Upon successful completion of the required undergraduate courses plus 6-9 hours of designated graduate work, the B.B.A. degree will be granted (except for the B.B.A. and M.S.Acct. program which grants both degrees simultaneously). The final portion of graduate work will be completed during the fifth year.

Joint Master of Science—Master of Business Administration. The college, in association with other colleges and schools, offers programs that enable students to obtain selected M.S. degrees and the M.B.A. Applications should be made through and approved by the respective colleges involved in these programs: the College of Human Sciences (M.S. in Personal Financial Planning) and the College of Arts and Sciences (M.S. in Environmental Toxicology). These joint programs require 22 to 24 fewer hours than if both degrees were pursued separately.

Joint Master of Architecture—Master of Business Administration. Students pursuing a M.Arch. degree may begin taking selected business courses once admitted into the graduate program in architecture. These courses become part of the M.Arch. degree and the M.B.A. degree. Application for this program is made through the college and the Graduate School.

Joint Master of Arts in Foreign Language—Master of Business Administration. The college in association with the College of Arts and Sciences offers a joint program in French, German, and Spanish. This program is designed to save 24 semester credit hours in comparison to the total credit hours if the degrees were pursued separately. Application must be made to and approved by both the College of Arts and Sciences and the Rawls College of Business.

Doctoral Programs

Doctor of Jurisprudence—Master of Business Administration. The college, in association with the School of Law, offers a program that enables the student to earn both the Doctor of Jurisprudence and M.B.A. degrees in approximately three years of full-time academic work. A student without a business background may complete both degrees with 112 hours of law and business courses (a net savings of 24 credit hours from the total hours necessary if the degree programs were pursued separately). The first year of study is taken in the School of Law. Application must be made to and approved by both the School of Law and the Rawls College of Business.

Doctor of Jurisprudence—Master of Science in Accounting. The college, in association with the School of Law, offers a program that enables students to earn simultaneously both the Doctor of Jurisprudence and Master of Science in Accounting degrees. In many cases, the student in this program will be able to save numerous semester credit hours in comparison to those needed to complete both degrees separately. Application must be made to and approved by both the School of Law and the Rawls College of Business.

Doctor of Medicine—Master of Business Administration. The college, in association with the School of Medicine in the Texas Tech University Health Sciences Center, offers a program that gives students the opportunity to earn both the M.D. and the M.B.A. Students must be admitted to both the School of Medicine and the M.B.A. program with a concentration in

(Continued on next page)
control integration into the systems analysis, design, and implementation process, emphasizing information technology.


5305. Accounting Research and Communication (3:3:1). Prerequisite: Student must be enrolled in M.B.A., M.S., or Ph.D. accounting program. Written and oral communication of the results of individual studies of selected accounting topics. (Writing Intensive)

5306. International Taxation (3:3:1). Study of taxation of individual and business entities operating outside the States and foreign entities operating in the States. (Writing Intensive)


5309. Special Entity-Ownership Accounting Issues (3:3:0). Prerequisite: ACCT 3305 or equivalent. A study of accounting reporting problems associated with selected entities or types of ownership, including partnerships and consolidated financial statements.

5310. Seminar in Public Sector Accounting (3:3:0). Prerequisite: A grade of C or higher in ACCT 3304. An advanced seminar in accounting-related problems of public sector entities such as federal, state, and local governments, hospitals, universities, and other public institutions.

5311. Individual Study in Accounting (3). Prerequisite: Consent of instructor. Directed individual study of advanced accounting problems varying with the need of each student. May be repeated for credit.

5314. Issues in Cost and Managerial Accounting (3:3:1). Prerequisite: ACCT 3306 or equivalent. Current issues in cost and managerial accounting. (Writing Intensive)
Business Administration (B A)

Undergraduate Courses

1101. Fundamentals of Business Professionalism (1:1:0). Prerequisite: 2.75 GPA. Integration of fundamental business principals from multiple disciplines and concepts of business professionalism and ethical behavior.

3301. Fundamentals of Marketing (3:3:0). Prerequisite: ECO 2302, and a minimum 2.75 adjusted cumulative GPA. Focuses on the process of marketing products and services to consumers. Topics include marketing structures and agencies; motives and buying habits; types of middlemen, marketing institutions, and channels; current marketing practices; marketing of industrial and consumer goods. May not be used to satisfy business major degree requirements.

3302. Financial and Managerial Accounting (3:3:0). Prerequisite: 2.75 GPA. Concepts and terminology of accounting and financial reporting for modern business enterprises and the relationships between accounting information and business activities. Additionally, the course covers 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 changing environments. May not be used to satisfy business major degree requirements.

3303. Foundations of Finance (3:3:0). Prerequisite: 2.75 GPA and BA 3302. Basic finance survey course for non-business majors. Covers financial markets, investment banking process, interest rates, time value of money, and security valuation. May not be used to satisfy business major degree requirements.

3304. Operations Management (3:3:0). Prerequisite: 2.75 GPA. Focuses on the formulation of business and operational strategies, how products and services are designed, and how products and services are produced. May not be used to satisfy business major degree requirements.

3305. Organization Management (3:3:0). Prerequisite: 2.75 GPA. Focuses on the management of people and organizations. Topics include leadership; team building; motivation groups; organizational design, and personnel management. May not be used to satisfy business major degree requirements.

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 and Dean of the College. 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 adjusted 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 by faculty internship advisor prior to registration) by internships toward a degree program.

4383. Special Topics in Business (3:3:0). Prerequisite: Determined by area. May be repeated once for credit by faculty approval only with no duplication of topic.

Graduate Courses

5380. Directed Experience (3:3:0). Prerequisite: Admission to the MBA program. Students enhance their classroom knowledge through the rigorous analysis of internships, global filled experiences, mentoring experiences, and other approved experiences. May be repeated for credit up to 9 hours if subject matter differs.

5382. Internship in Business Administration (3:3:0). Minimum standards determined by area. Written approval form required. This course permits students to enhance their knowledge within their field of specialization through application of concepts, principles, and techniques learned in the classroom. May be repeated for credit.

5395. Practicum in Higher Education for Business (3). Prerequisite: Consent of instructor: Supervised practice in teaching of business and administrative subjects.

7000. Research (V1-12).

8000. Doctor's Dissertation (V1-12).

Business Law (BLAW)

Undergraduate Courses


4395. Oil and Gas Law I (3:3:0). Case law based on the study of jurisprudence affecting the oil and gas industry. Emphasis is on the oil and gas titles, leases, and mineral ownership.

4396. Oil and Gas Law II (3:3:0). Prerequisite: BLAW 4395. Case law based on the study of jurisprudence affecting the oil and gas industry. Emphasis is on regulation of oil and gas industry and selected current issues in energy law.

Graduate Courses

5290. Legal, Regulatory, and Ethical Environment of Business (2:2:0). This course examines the legal, regulatory, and ethical issues that arise in the conduct of business to develop a capacity for recognizing and dealing with such issues.


Energy Commerce (ENCO)

Undergraduate Courses


3385. Petroleum Land Management I (3:3:0). Prerequisite: ENCO 3301, 3.25 adjusted cumulative GPA, or permission of the program director. Focuses on the fundamental knowledge and skills of the petroleum landman. Includes real property and contract law, land survey systems, and oil and gas leases.

3386. Petroleum Land Management II (3:3:0). Prerequisite: ENCO 3385. Examines agreements utilized by oil and gas companies, including joint operating, farmout, surface use and utilization. Also Federal and Indian leasing issues will be covered.

3390. Land Titles and Records (3:3:0). Prerequisite: ENCO 3386 and 3395 or permission of director. Practical skills training in tracing and chaining property titles. Combined classroom and courthouse experience. First Summer Session only


4321. Energy Transaction Finance (3:3:0). Prerequisite: ENCO 3385, 3386. Examines capital formation options available to energy
companies. Emphasis on aspects of finance unique to the energy industry as well as use of financial risk management tools.

4325. Global Energy Future (3:3:0). Examines supply and demand factors affecting the energy industry, such as U.S. and world demand trends and potential supply sources (e.g., solar, hydrogen, wind, and nuclear, oil and gas).

4361. Advanced Petroleum Practices (3:3:0). Prerequisite: ENCO 3385 and 3386. Study includes joint operating agreements, gas balancing, federal units, secondary recovery units, advanced well trades, working and net revenue interest calculation, due diligence, title opinions and title curatives.


4382. Energy Industry Internship (3). Prerequisite: ENCO majors and Energy Commerce certificate students only; with approval of the program director. Permits students to apply principles and concepts. Summers only.

**Finance (FIN)**

### Undergraduate Courses

3320. Financial Management (3:3:0). Prerequisite: ACCT 2300, 2301 ECO 2301, 2302, and MATH 2345 and a minimum 2.75 Texas Tech GPA. To declare a FIN major, student must make a B or better on first test. Survey course in finance introducing concepts in corporate finance investments and financial institutions.

3321. Financial Statement Analysis (3:3:1). Prerequisite: FIN 3320 with a grade of B 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.

3322. Corporation Finance I (3:3:0). Prerequisite: FIN 3320 with a minimum grade of A or B. Topics include financial analysis, capital budgeting and source of funds.

3323. Introduction to Financial Markets and Institutions (3:3:0). Prerequisite: FIN 3320 with B or better. Introduction to the US financial system covering various financial markets and institutions and key instruments.

3332. Real Estate Fundamentals (3:3:0). Prerequisite: FIN 3320 with a grade of B or higher. 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 (3:3:0). Prerequisite: FIN 3320 with a grade of B or higher. Mechanisms of real estate financing, sources of funds and financial institutions, and government agencies.

3336. Principles of Insurance (3:3:0). Prerequisite: FIN 3320 with grade of B or better. Fundamentals of insurance, including the nature and treatment of pure loss exposures; legal principles; and property, liability, life and health insurance.

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.


4324. Investments (3:3:0). Prerequisite: FIN 3320 with a grade of B or higher. Overview of various investment media (stocks, bonds), investment analysis (both fundamental and technical analysis), sources of information, and the efficient markets concept.

4325. Principles of Portfolio Management (3:3:0). Prerequisite: FIN 3321, 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 3321, 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.

4327. Derivative Securities and Markets (3:3:0). Prerequisite: FIN 3320 with a grade of B or better and FIN 3321. Course studies risk allocation function of derivative financial securities and markets from the perspective of market users. It includes hedging and trading strategies, pricing relationships, and the roles of government/private regulation.

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 international transactions.

4329. Fixed Income Analysis (3:3:0). Prerequisite: FIN 3320 with a B or better; FIN 3321 and 3323. Analysis of interest rates, fixed income valuation and fixed income risk management.

4330. Corporation Finance II (3:3:1). Prerequisite: FIN 3320 with a B or higher, FIN 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 or corequisite: FIN 3332 or 3334. Appraisal and valuation techniques applied to residential, commercial, and industrial property.

4335. Real Estate Investments (3:3:0). Prerequisite: FIN 3334. The framework for urban real estate investment decisions by individuals and institutional investors.

4336. Urban Land Development (3:3:0). Prerequisite or corequisite: 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.

4337. Individual Problems in Finance (3). Prerequisite: Senior standing, minimum 3.0 GPA in major, minimum overall adjusted cumulative GPA of 2.75, and consent of instructor. Independent problem research under guidance of a faculty member.

4382. Internship in Finance (3). Prerequisite: Faculty advisor approval, and 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.

4385. Senior Finance Seminar (3:3:0). Prerequisite: FIN 3320 with a B or better, senior standing, finance majors only. To be taken in the last semester. Integrative experience that brings together all areas of finance: corporate, investments, institutions, and real estate.

### Graduate Courses


5321. Financial Management Case Analysis (3:3:1). Prerequisite: FIN 5421 or equivalent. In-depth analysis of financial decision-making in areas of capital budgeting, risk, capital structure, financial analysis, dividend policy, mergers, financial failure. Case studies and computer financial models are used.

5325. Seminar in Security Analysis and Investments (3:3:1). Prerequisite: FIN 5421 or equivalent. Evaluation of various investment media (stocks, bonds), investment analysis (both fundamental and technical analysis), and the concept of efficient markets and market risk.


5327. Student-Managed Fund (3:3:0). Prerequisite: FIN 5325 or equivalent and consent of instructor. Advanced application of the process of selecting securities, and forming and managing a portfolio involving real money. Focus is on managing risk and return. May be repeated for credit.
### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>3328</td>
<td>Options and Futures (3:3:1)</td>
<td>Prerequisite: FIN 5421 or equivalent. Role of financial options and futures in hedging of financial risk. Develops relationships between options, futures, interest rates, and underlying assets.</td>
</tr>
<tr>
<td>3332</td>
<td>The U.S. Financial System in a Global Environment (3:3:0)</td>
<td>Prerequisite: ACCT 5401 or any 5000-level finance course. Introduction to operations, mechanics, and structure of the financial system. Financial institutions, money and capital markets, financial instruments, regulations, monetary policy, international financial system.</td>
</tr>
<tr>
<td>3334</td>
<td>Real Estate Finance (3:3:0)</td>
<td>This course covers primary and secondary mortgage markets, alternative mortgage instruments, creative financing, loan underwriting, and risk management.</td>
</tr>
<tr>
<td>3336</td>
<td>Individual Study in Finance (3)</td>
<td>Prerequisite: Consent of instructor. Directed individual study of advanced finance topics. May be repeated for credit.</td>
</tr>
<tr>
<td>3341</td>
<td>Business Computer Programming (3:3:1)</td>
<td>Prerequisite: ISQS 2340 and a 2.5 adjusted cumulative 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.</td>
</tr>
<tr>
<td>3342</td>
<td>Financial Management Concepts (4:4:0)</td>
<td>Prerequisite: FIN 5421 or equivalent. This course investigates issues in corporate financial management for multinational firms; including foreign exchange forecasting and risk management, multinational capital budgeting, multinational capital structure, and international financial markets.</td>
</tr>
<tr>
<td>3345</td>
<td>Real Estate Analysis (3:3:0)</td>
<td>A survey of the law, valuation, and financing of real estate, including secondary market analysis. Also, investigation into investment property ownership, feasibility, cash flow, and return calculations.</td>
</tr>
<tr>
<td>3346</td>
<td>Internship in Finance (3)</td>
<td>This course permits students to enhance their knowledge within their field of specialization through application of concepts, principles, and techniques learned in the classroom.</td>
</tr>
<tr>
<td>3347</td>
<td>Financial Management Concepts (4:4:0)</td>
<td>Prerequisite: ACCT 5401 or concurrent, ISQS 5345 or concurrent. Essential financial management concepts with applications to financial decision making in organizations. Special emphasis on cases and computer financial models.</td>
</tr>
<tr>
<td>3352</td>
<td>Business Intelligence (3:3:0)</td>
<td>Prerequisite: A 2.75 adjusted cumulative GPA or approval of advisor. Business intelligence principles and techniques. Examples of the application of computer and quantitative sciences. May be repeated once for credit.</td>
</tr>
<tr>
<td>3358</td>
<td>Business Intelligence (3:3:0)</td>
<td>Prerequisite: ISQS 3345 and ISQS 4318. Introductory course to a broad range of applications and technologies for gathering, storing, analyzing, and providing access to data to help make business decisions.</td>
</tr>
<tr>
<td>3361</td>
<td>Telecommunications Security Theory (3:3:0)</td>
<td>Prerequisite: ISQS 3335 and ISQS 3345. An advanced course on analyzing the basics of telecommunications theory. Best if taken concurrently with ISQS 3351.</td>
</tr>
<tr>
<td>3365</td>
<td>MIS Seminar (3:3:0)</td>
<td>Prerequisite: Minimum grade of C in ISQS 3348. Topics may include system maintenance, system security, intelligent systems, enterprise integration, and other contemporary topics. May be repeated once for credit.</td>
</tr>
<tr>
<td>3374</td>
<td>Systems Analysis (3:3:1)</td>
<td>Prerequisite: ISQS 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.</td>
</tr>
<tr>
<td>3375</td>
<td>Information Systems Design (3:3:1)</td>
<td>Prerequisite: ISQS 4348. Introduces the skills needed to develop a logical design and implement an operational system from the logical design of systems analysis.</td>
</tr>
<tr>
<td>3380</td>
<td>Information Systems Project Management (3:3:1)</td>
<td>Corequisite: ISQS 4348 if possible. Methods for management of software development projects; procurement and financial control; career and professional considerations.</td>
</tr>
<tr>
<td>3381</td>
<td>Web Application Design (3:3:0)</td>
<td>Prerequisite: ISQS 3346. The design and creation of web applications using a multi-tier internet technology such as Jakarta Struts and MySQL.</td>
</tr>
<tr>
<td>3382</td>
<td>Individual Problems in Information Systems and Quantitative Sciences (3)</td>
<td>Prerequisite: Consent of instructor. For students with high academic achievement who are interested in enhancing their degree programs by pursuing independent research or study under the guidance of an ISQS faculty member.</td>
</tr>
<tr>
<td>3383</td>
<td>Internship in Information Systems and Quantitative Sciences (3)</td>
<td>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.</td>
</tr>
<tr>
<td>3384</td>
<td>Special Topics in Information Systems and Quantitative Sciences (3:3:0)</td>
<td>Prerequisite: 2.5 GPA. Examines specialized problems relating to information systems and quantitative sciences. May be repeated once for credit as topic varies.</td>
</tr>
<tr>
<td>3385</td>
<td>Strategic IT and Telecommunications Management (3:3:0)</td>
<td>Prerequisite: Final semester or ISQS under advisor approval. The design, management, and maintenance of information systems to provide strategic organizational advantage.</td>
</tr>
</tbody>
</table>
Graduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>5230</td>
<td>Managerial Decision Theory (2:2:0). Corequisite: ISQS 5231. The course examines normative and behavioral theories of decision making in business.</td>
</tr>
<tr>
<td>5231</td>
<td>Information Technology for Managers (2:2:0). Prerequisite: Proficiency in computer skills. Corequisite: ISQS 5230. The course examines information technology in organizations and its use in improving business processes and decisions for sustainable competitive advantage.</td>
</tr>
<tr>
<td>5341</td>
<td>Business Problem Solving and Information Technology (3:3). Problem solving and decision making for business analysis, reengineering, and competitive advantage.</td>
</tr>
<tr>
<td>5345</td>
<td>Statistical Concepts for Business and Management (3:3:0). Statistical applications using the personal computer, with emphasis on presentation and interpretation of statistics in managerial settings. Topics include descriptive statistics, graphical methods, estimation, testing, regression, forecasting, and quality control.</td>
</tr>
<tr>
<td>5347</td>
<td>Advanced Statistical Methods (3:3:0). Prerequisite: ISQS 5345 or equivalent. Discrete and continuous probability distributions, maximum likelihood, statistical methods for learning, prediction, and decision making in business.</td>
</tr>
<tr>
<td>5348</td>
<td>Applied Distribution-Free Statistics in Business (3:3:0). Prerequisite: ISQS 5345 or consent of instructor. Distribution-free statistical techniques of inference from non-normal populations and tests of nonparametric hypotheses applied to business problems.</td>
</tr>
<tr>
<td>5349</td>
<td>Regression Analysis (3:3:0). Prerequisite: ISQS 5347 or equivalent. Foundations and major topics of regression analysis, model formulation, and methods to deal with standard and nonstandard regression applications in business.</td>
</tr>
<tr>
<td>5382</td>
<td>Internship in Information Systems and Quantitative Science (3). This course permits students to enhance their knowledge within their field of specialization through application of concepts, principles, and techniques learned in the classroom.</td>
</tr>
<tr>
<td>6337</td>
<td>Business Programming Languages (3:3:0). Prerequisite: ISQS 5341. Concepts of data structures and file processing as they relate to information systems. Emphasis on structured and object-oriented program design using JAVA.</td>
</tr>
<tr>
<td>6338</td>
<td>Database Concepts (3:3:0). Prerequisite: ISQS 5341 and ACCT 5401. Model organizational data and business rules; logical and physical designs of relational databases, data warehousing, data mining, and data administration.</td>
</tr>
<tr>
<td>6340</td>
<td>Decision Support Systems (3:3:0). Prerequisite: 6338. Theories of decision making, DSS software and design, artificial intelligence in DSS, executive information systems, and institutionalization and behavioral factors.</td>
</tr>
<tr>
<td>6341</td>
<td>Data Communications and Network Management (3:3:0). Prerequisite: ISQS 5341. Concepts and terminology of data communications, network design, client-server architecture, distributed information systems with focus on communication architecture, and management.</td>
</tr>
<tr>
<td>6342</td>
<td>Strategic Use of Information Systems Technology (3:3:0). The use of information technology for sustainable competitive advantage. IT in the global marketplace. Strategic use of information resources.</td>
</tr>
<tr>
<td>6343</td>
<td>Advanced Telecommunications Network Management (3:3:0). Prerequisite: ISQS 6341 or B.B.A. in MIS. Design and management of telecommunication network for security, efficiency, durability, and profitability.</td>
</tr>
<tr>
<td>6347</td>
<td>Data and Text Mining for Business Intelligence (3:3:0). Prerequisite: ISQS 5345 or consent of instructor. Examples and methods of data and text mining software. Use of data and text mining software.</td>
</tr>
<tr>
<td>6348</td>
<td>Applied Multivariate Analysis (3:3:0). Prerequisite: ISQS 5347 or consent of instructor. Multivariate methods for business research, including classification, visualization, testing, clustering, and latent structure.</td>
</tr>
</tbody>
</table>

International Business (I B)

Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>3100</td>
<td>Language Workshops (1:2:0). Prerequisite: Consent of director. Business language and cultural workshops taught in a foreign language. May be repeated for 3 credit hours.</td>
</tr>
<tr>
<td>3105</td>
<td>Cross-Cultural Management Skills (1:1:0). Prerequisite: Consent of instructor. Overview of essential management skills for successful international business enterprises. Includes cross-cultural business techniques, topics, current issues, and theories.</td>
</tr>
<tr>
<td>3361</td>
<td>International Commerce (3:3:0). Prerequisite: At least a C in MKT 3350. Develops a basic understanding of international trade as well as importing and exporting and the associated government regulations.</td>
</tr>
<tr>
<td>4382</td>
<td>Internship in International Business (3:3:0). Prerequisite: Consent of instructor. Internship permits students to enhance their knowledge within their field of specialization through application of concepts, principles, and techniques learned in the classroom.</td>
</tr>
<tr>
<td>4383</td>
<td>Special Topics in International Business (3:3:0). Prerequisite: Consent of instructor. Examines special issues related to international business such as exporting, international trade, etc. May be repeated once for credit as topic varies.</td>
</tr>
</tbody>
</table>

Management (MGT)

Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>3370</td>
<td>Organization and Management (3:3:0). Prerequisite: Minimum 2.75 adjusted cumulative GPA. The management function; basic principles, concepts, and practices in the operation of organizations.</td>
</tr>
<tr>
<td>3373</td>
<td>Managerial Communication (3:3:1). Prerequisite: Junior standing; ISQS 2340, a C or better in ENGL 1301 and 1302, and a 2.75 GPA. The course provides communication principles to manage verbal situations; audience analysis, simulation, and analysis of the communication process in the business environment.</td>
</tr>
<tr>
<td>3374</td>
<td>Personnel Administration (3:3:0). Prerequisite: MGT 3370 with a grade of C or higher. Principles and methods in general and specialized administrative work and force maintenance.</td>
</tr>
<tr>
<td>3375</td>
<td>Entrepreneurship I: New Value Creation (3:3:0). Introduces students to the knowledge and modes of thinking that are basic to new value creation.</td>
</tr>
</tbody>
</table>
3376. Organizational Behavior (3:3:0). Prerequisite: MGT 3370 with a grade of C or higher. 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 with a grade of C or higher. 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 Texas Tech GPA, FIN 3320, MKT 3350, MGT 3370, 3373, and BLAW 3391. Field Project in the Lubbock Community. Not an in-classroom class.

4371. Health Organization Management (3:3:0). Prerequisite: MGT 3370 with a grade of C or higher. 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 with a grade of C or higher. A study of labor union development, organization, leadership, and operational techniques. Consideration of collective bargaining issues and procedures.

4373. Leadership Ethics (3:3:0). Prerequisite: MGT 3370 with a grade of C or higher; 3.0 adjusted Texas Tech GPA; MGT or Honors College student. Alternative perspectives of leadership ethics are explored and applied to emergent ethical issues facing organizations.

4374. International Entrepreneurship (3:3:0). Prerequisite: MGT 3370 with a grade of C or higher; 3.0 adjusted Texas Tech GPA. 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 with a grade of C or higher or ECO 3333. Exploration of organization and management issues in international enterprise.

4376. Entrepreneurship II: Discovering Entrepreneurial Opportunities (3:3:0). Prerequisite: MGT 3375 or permission of instructor. Generates and refines entrepreneurial process, opportunity discovery, and entrepreneurial thinking skills; develops the knowledge base for entrepreneurial idea assessment and problem-solving skills required for application to the recognition of viable opportunities.

4377. Family Enterprise (3:3:0). Prerequisite: Permission of instructor or previous experience with or in a family business. 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 with a grade of C or higher; 3.0 adjusted Texas Tech GPA; MGT 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; MGT 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, MGT 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 with a grade of C or higher; 3.0 adjusted Texas Tech GPA; MGT major or Honors College student. Develop the skills necessary to manage organizational stakeholders effectively. Emphasizes negotiation skills.

4385. New Venture Creation (3:3:0). Prerequisite: MGT 4376 and permission of instructor. Students learn and apply due diligence, business planning, and venture creation skills needed to implement new business concepts.

4387. History of Management Thought: Honors Seminar in Management (3:3:0). Prerequisite: A 3.0 adjusted Texas Tech GPA; MGT major or Honors College student. Offers interdisciplinary perspective on development of management knowledge.

4388. Change and Innovation Processes (3:3:0). Prerequisite: MGT 3370 with a grade of C or higher; 3.0 adjusted Texas Tech GPA; MGT major or Honors College student. Focuses on understanding and managing innovation and change processes.

4389. Honors Senior Internship in Management (3:3:0). Prerequisite: Consent of instructor. Under joint faculty-employer supervision, the student will intensively interrelate an experiential workplace component with an integrative written thesis.

4390. Management and the Business Environment (3:3:0). Prerequisite: MGT 3370 with a grade of C or higher. Study and cases in social responsibility, business ethics, and other problems in the external environment of the business organization.

Graduate Courses


5301. HOM I: Introduction to Healthcare Systems (3:3:0). Prerequisite: Consent of instructor. Introduces the history and structure of the U.S. healthcare system. Students will learn policy analysis and managerial epidemiology competencies needed in future HOM courses.

5302. HOM II: Managed Care Organizations (3:3:0). Prerequisite: MGT 5306 or consent of instructor. Examines fundamental and contemporary issues in the organization and management of managed health care organizations.

5303. HOM III: Consumer-Driven Healthcare Design (3:3:0). Prerequisite: MGT 5307 or consent of instructor. A systems-based view of healthcare organizations emphasizing the safe provision of high quality care to populations.

5304. HOM IV: Integrated Healthcare Operations (3:3:0). Prerequisite: MGT 5308 or consent of instructor. Analyzes and examines core healthcare legal, operational, and management issues through the use of targeted cases and projects.

5371. Managing Organizational Behavior and Organizational Design (3). Examines management of individual, interpersonal, group and intergroup relations, organizational design, and the organization's role in a rapidly changing environmental and global context.

5372. Leadership and Team-Building Skills (3:3:1). Prerequisite: MGT 5371. Emphasizes cognitive, skill, and experiential-practicum learning applied to ongoing leadership and organizational problems.

5373. Entrepreneurship (3:3:0). Prerequisite: MGT 5376, ACCT 5401, and MKT 5360 or consent of instructor. Develops the new value creation skills and modes of thinking necessary for creating actionable opportunities in a variety of socioeconomic settings.

5374. Negotiation and Conflict Management Skills (3:3:1). Prerequisite: Consent of instructor. Emphasizes negotiation skills and strategy development for managing organizational stakeholders.

5375. Organization Theory (3:3:0). Prerequisite: MGT 5371. A study of basic organization theory concepts and application of these concepts to the analysis and structure of organizations.

5377. Human Resource Management (3:3:0). Prerequisite: MGT 5371. Examination of the principles and methodology of personnel administration with emphasis on manpower planning, selection, development, and evaluation.

5378. Managing the Family Enterprise (3:3:0). Prerequisite: Previous experience with or in a family business is encouraged; or with permission of instructor. Strategy, management, or business issues involved in running family firms. Emphasis is on entrepreneurial family firms.

5379. Entrepreneurial Discovery (3:3:0). Prerequisite: MGT 5373 or permission of instructor. Further develops opportunity creation skills through understanding the entrepreneurial discovery process, to prepare for real-world opportunity development.

5380. Managing Innovation and Change (3:3:0). Prerequisite: MGT 5371. This course focuses on understanding organization innovation and change and applying this knowledge to managing innovation and change processes.

5382. Internship in Management (3:3:0). This course permits students to enhance their knowledge within their field of specialization through application of concepts, principles, and techniques learned in the classroom.
<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>4359</td>
<td>International Management (3:3:0).</td>
<td>Prerequisite: MGT 5371. Comparative analysis of domestic, international, and multinational business operations, and the significance for organization and management.</td>
</tr>
<tr>
<td>4391</td>
<td>Strategic and Global Management (3:3:0).</td>
<td>Prerequisite: Completion of core and tool courses in M.B.A. or M.S.A. program. Global and local strategy formulation and implementation of corporate, business, and functional strategies. MBA/MSA capstone course.</td>
</tr>
<tr>
<td>5476</td>
<td>Executive Skills (4:2:4).</td>
<td>Prerequisite: Admission to the MBA program. Develop self-awareness of personal attributes and goals, enhance personal development, and impart skills needed to function as future executives.</td>
</tr>
<tr>
<td>6305</td>
<td>Individual Study in Management (3).</td>
<td>Prerequisite: Consent of instructor. Directed individual study of advanced management topics varying with the need of each student. May be repeated for credit.</td>
</tr>
<tr>
<td>6315</td>
<td>Current Management Issues (3).</td>
<td>Prerequisite: Consent of instructor. Study and integration of current management issues. May be repeated for credit.</td>
</tr>
<tr>
<td>6375</td>
<td>Advanced Organization Behavior (3:3:0).</td>
<td>Prerequisite: Doctoral student status or consent of instructor. A seminar which explores research and conceptual foundations of behavioral science and the role and contributions of microorganizational concepts in organization design and functioning.</td>
</tr>
<tr>
<td>6380</td>
<td>Colloquium in Management Research (3:3:0).</td>
<td>Prerequisite: Doctoral standing. Study of problems related to management for the individual student. Studies in selected areas of management research. May be repeated for credit.</td>
</tr>
<tr>
<td>6381</td>
<td>Seminar in Advanced Management Topics (3).</td>
<td>Organized seminar on specific advanced management topics in the areas of management of strategy, organizational studies, personnel and human resources management, or international business. May be repeated for credit.</td>
</tr>
<tr>
<td>6392</td>
<td>Advanced Organization Theory (3:3:0).</td>
<td>Prerequisite: Doctoral student status or consent of instructor. A seminar which explores the fundamental macro theories and concepts of organization design and functioning.</td>
</tr>
<tr>
<td>6395</td>
<td>Advanced Strategic Management (3:3:0).</td>
<td>Prerequisite: Doctoral student status or consent of instructor. A seminar which systematically examines the theoretical and empirical research literature on strategic management content and process.</td>
</tr>
</tbody>
</table>

**Marketing (MKT)**

### Undergraduate Courses

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>3350</td>
<td>Introduction to Marketing (3:3:0).</td>
<td>Prerequisite: ECO 2301 (AAEC 2305 or ECO 2305 for non-business majors) and minimum 2.75 GPA. Marketing structures and agencies; motives and buying habits; types of middlemen, marketing institutions, and models; current marketing practices; marketing of industrial and consumer goods.</td>
</tr>
<tr>
<td>3352</td>
<td>Consumer Behavior (3:3:0).</td>
<td>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.</td>
</tr>
<tr>
<td>3353</td>
<td>Supply Chain Management (3:3:0).</td>
<td>Prerequisite: At least a C in MKT 3350. An introduction to principles and practices used today in managing relationships among manufacturers, distributors, retailers, and consumers.</td>
</tr>
<tr>
<td>3356</td>
<td>Marketing Research and Analysis (3:3:1).</td>
<td>Prerequisite: At least a C in MKT 3360 and MATH 2245. Scenarios-market research methods; emphasis on collection, analysis, and interpretation of data as applied to the solution of marketing problems.</td>
</tr>
<tr>
<td>4351</td>
<td>Retail Marketing (3:3:0).</td>
<td>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.</td>
</tr>
<tr>
<td>4354</td>
<td>Market Promotion (3:3:0).</td>
<td>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.</td>
</tr>
<tr>
<td>4358</td>
<td>International Marketing (3:3:0).</td>
<td>Prerequisite: At least a C in MKT 3350. A survey of international marketing principles, cultural differences, world markets, and political constraints.</td>
</tr>
<tr>
<td>4359</td>
<td>Sales Management (3:3:0).</td>
<td>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.</td>
</tr>
</tbody>
</table>

### Graduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>4360</td>
<td>Marketing in E-Business Environments (3:3:0).</td>
<td>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.</td>
</tr>
<tr>
<td>4381</td>
<td>Individual Problems in Marketing (3).</td>
<td>Prerequisite: Consent of instructor. For students with high academic accomplishment who are interested in enhancing their degree program by pursuing individual research or study under the guidance of a marketing faculty member.</td>
</tr>
<tr>
<td>4382</td>
<td>Internship in Marketing (3).</td>
<td>Prerequisite: At least 6 hours of approved marketing coursework and approval of the Internship program. 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.</td>
</tr>
<tr>
<td>4383</td>
<td>Special Topics in Marketing (3:3:0).</td>
<td>Prerequisite: Consent of instructor. Examines specialized problems relating to marketing. May be repeated once for credit as topic varies.</td>
</tr>
<tr>
<td>5350</td>
<td>Marketing Foundations (3:3:0).</td>
<td>An examination of marketing functions and the institutions which perform them, choice of criteria for marketing strategy decisions, marketing structural relationships, and the role of marketing. May not be taken for credit after MKT 5360.</td>
</tr>
<tr>
<td>5355</td>
<td>Research Design (3:3:0).</td>
<td>Prerequisite: Consent of instructor. A survey of quantitative methods for and issues in the analysis of marketing data.</td>
</tr>
<tr>
<td>5356</td>
<td>Marketing Research for Decision Makers (3:3:1).</td>
<td>Prerequisite: ISQS 5345, MKT 5360. Marketing research methods with emphasis on data collection and analysis for solving marketing problems.</td>
</tr>
<tr>
<td>5358</td>
<td>Business-to-Business Marketing (3:3:0).</td>
<td>Prerequisite: MKT 5360. Designed to provide an overview of the many diverse facets of business-to-business marketing. Specific topics include selling to large businesses, buyer-seller relationships, supply-chain management, strategic alliances, and the role of the Internet on business-to-business marketing.</td>
</tr>
<tr>
<td>5359</td>
<td>Individual Study in Marketing I (3:3:2).</td>
<td>Prerequisite: Consent of instructor. Directed individual study of advanced marketing problems varying with the need of the particular student. Can be repeated for credit if subject matter is different.</td>
</tr>
<tr>
<td>5360</td>
<td>Marketing Concepts and Strategies (3:3:0).</td>
<td>This course examines marketing functions, the institutions which perform them, and the study of marketing planning, strategy, and tactics. Includes the organization, execution, and control of the marketing effort.</td>
</tr>
<tr>
<td>5361</td>
<td>Marketing Administration (3:3:0).</td>
<td>Prerequisite: MKT 5360 or equivalent. A study of marketing planning and strategic issues related to the marketing effort.</td>
</tr>
<tr>
<td>5362</td>
<td>Multinational Marketing (3:3:0).</td>
<td>Prerequisite: MKT 5360. A survey of international marketing principles, cultural differences, world markets, and political constraints.</td>
</tr>
<tr>
<td>5363</td>
<td>E-Marketing (3:3:0).</td>
<td>Prerequisite: MKT 5360 or equivalent. Use of the Internet and related technologies to enhance marketing functions and processes so that organizations can function more effectively in a digital, networked economy.</td>
</tr>
<tr>
<td>5367</td>
<td>Behavior in Markets (3:3:0).</td>
<td>Prerequisite: MKT 5360 or equivalent. A study of marketing management’s use of a broad range of behavioral information in establishing marketing policy and strategy.</td>
</tr>
<tr>
<td>5368</td>
<td>Macromarketing (3:3:0).</td>
<td>Prerequisite: MKT 5360 or equivalent. An examination of the various macro-environments within which the marketing manager works; the institutional environment, the social environment, the political-legal environment, and the cultural-behavioral environment.</td>
</tr>
<tr>
<td>5382</td>
<td>Internship in Marketing (3).</td>
<td>This course permits students to enhance their knowledge within their field of specialization through application of concepts, principles, and techniques learned in the classroom.</td>
</tr>
<tr>
<td>6352</td>
<td>Marketing Thought (3:3:0).</td>
<td>Prerequisite: Advanced graduate standing and consent of instructor. Evaluation of the contribution of marketing scholars to marketing thought, including the development of problems and principles.</td>
</tr>
<tr>
<td>6353</td>
<td>Marketing Theory (3:3:0).</td>
<td>Prerequisite: Advanced graduate standing and consent of instructor. A philosophy of science approach to the study of marketing theory and the components of marketing theory: hypotheses, law-like generalizations, empirical models, and scientific explanations.</td>
</tr>
<tr>
<td>6355</td>
<td>Theory Testing (3:3:0).</td>
<td>An in-depth examination of measure issues, including latent constructs and data-gathering procedures in marketing.</td>
</tr>
</tbody>
</table>
College of Education

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T 806.742.2377 | F 806.742.2179 | www.educ.ttu.edu

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About the College
The College of Education is devoted to promoting excellence and equity through scholarship, research, and reflective practice in education. The college provides degree and certification programs for both undergraduate and graduate students who plan careers in education. For many individuals, this means a future in teaching. College faculty work closely with public school personnel and practitioners in the field to design programs that will prepare leading educators for the 21st century.

The college prepares teachers who will become certified to teach in elementary schools (from the early childhood years to grade four), at the middle level (from grades four to eight), and in secondary schools (from grades eight to twelve). The college offers undergraduate degree programs leading to certificates in middle level education, bilingual education, special education, and science. In addition, a variety of advanced degrees and certificates are available.

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.

Programs in the college are housed in two departments. The Department of Curriculum and Instruction offers undergraduate programs leading to initial teaching certificates and graduate programs in bilingual education, curriculum and instruction, elementary education, language literacy, and secondary education. The Department of Educational Psychology and Leadership offers graduate programs in counselor education, educational leadership, educational psychology, higher education, instructional technology, and special education.

All students interested in becoming teachers or pursuing graduate programs in education should visit the college Web site for further information (www.educ.ttu.edu).

Educator Certification
The preparation of teachers and the provision of knowledge and skills for teachers seeking advanced certificates are important functions of Texas Tech University at both the undergraduate and graduate levels. The coordination of the educator certification programs is a responsibility of the College of Education.

Initial Teaching Certificates
Passing rates on licensing exams taken by students seeking initial teaching certificates are reported to the U.S. Department of Education. The certification rate for students taking their exams in 2004-2006 was 95 percent.

Certification at the Undergraduate Level
The College of Education prepares students for a variety of teaching certificates. For a list of available certificates, please see the college Web site (www.educ.ttu.edu/certification).

Students preparing to teach in secondary schools (grades eight to twelve) will generally complete an academic major within the Colleges of Agricultural Sciences and Natural Resources, Arts and Sciences, Visual and Performing Arts, Mass Communications 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 eight to twelve) may complete a multidisciplinary science major through the College of Education or an academic major in one of the science teaching fields. Students preparing to teach grades four to eight will complete a multidisciplinary studies major in the College of Education. Those who wish to become certified as teachers of children from early childhood to grade four (EC-4) with specializations in special education, English as a second language, or bilingual education will major in the College of Education. Students seeking certification in EC-4 with a specialization in early childhood will do so through a degree from the College of Human Sciences. See www.educ.ttu.edu for degree and certification information.

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. See www.educ.ttu.edu for additional information.

Degree and Teacher Certification Programs. Degree and teacher certification programs are two distinct programs. Freshmen or transfer students are admitted by an appropriate college to a degree program 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. 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 instructed adequately 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, all-level education, secondary education, and 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 ensure admission to an upper-division teacher certification program. Students seeking teacher certification may apply to a certification program through an admission process. Application forms are available at www.educ.ttu.edu. The middle-level program and special education program accept applications once a year in the spring for the fall semester. Students seeking all other certificates may apply twice a 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. Have a minimum of 60 semester hours (including current enrollment) with an acceptable scholastic GPA. Students seeking early childhood certification must have a 2.7 or better overall GPA. Students seeking all other certificates (middle-level, secondary, career and technology, and all-level) must have a 2.5 or better overall GPA.
2. Possess college-level skills in reading, oral and written communication, critical thinking, and mathematics.
3. Possess the personal and social qualities and the physical and mental health to indicate a fitness for the education profession.

Admission to upper-division teacher education programs will be 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 due to extenuating circumstances may also apply for admission to teacher education. The Admission Committee will review each request.

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

**Certification Plan.** Any undergraduate student working toward a teacher’s certificate should file a certification plan in the College of Education after 60 hours or, for transfer students, during the first semester of attendance at Texas Tech. The student’s advisors will assist in completing the certification plan. 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.** Completing 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 the majority of the student’s time during the semester, the student should plan to register only for student teaching and the required corequisite capstone education course. 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 all coursework prior to student teaching. Exceptions to this rule can be granted under some circumstances with permission from a College of Education advisor.
2. Each student—unless enrolled in agricultural science, family and consumer science, or art or music—must attend a student teaching information meeting and apply for student teaching through the Clinical Experience office during the semester preceding student teaching. Applications are due by April 1 for the fall semester and November 1 for the spring semester. Students in agricultural education, family and consumer sciences education, and art 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 and 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 and demonstrate 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.

**TexES and TOPT Exams.** All persons who have completed teacher training programs and 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. All candidates for initial teacher certification must pass a test on pedagogy and professional responsibilities 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. To be eligible to take the exams, a student must complete a registration process online. Students will find information about the exams and access to the registration process at www.educ.ttu.edu/certification/TExES. Students should also consult the Web site for exam testing dates, dates to take practice exams, and test preparation opportunities.

**Recommendation for Teacher Certification.** An individual who has maintained the levels of performance stated as prerequisites for admission to student teaching; who has demonstrated the knowledge, dispositions, and skills to teach; and who has completed student teaching or an internship successfully is eligible to apply for the appropriate teaching certificate. The student must apply online to the State Board for Educator Certification at www.sbec.state.tx.us. The state requires that applicants complete a fingerprint criminal background check before they may be certified. The state charges a fee for the certification process. Upon completing all requirements, including the appropriate TExES examinations, the College of Education recommends the student for certification. The TOPT also is 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 students seeking initial teaching certification at Texas Tech must complete an electronic professional portfolio based on the Texas Education Standards.
Post-Baccalaureate Certification Programs

Post-baccalaureate programs are available to meet initial certification requirements for teaching in early childhood, middle-level, and secondary schools. Students must have a bachelor’s degree. Those seeking a certificate to teach children from early childhood to grade four must have a 2.7 grade point average for their last 60 hours of undergraduate coursework. Those seeking all other certificates must have a 2.5 GPA in their last 60 hours. Although the professional certification programs require work at the graduate level, these programs are not concurrent with degree programs. The state-mandated TExES test is required for persons who complete certification programs. For guidance concerning professional certification, the student should consult with a certification advisor. Students wishing to pursue post-baccalaureate certification must also apply to the Texas Tech University Graduate School. Upon acceptance to the Graduate School, students will contact a graduate certification advisor in the College of Education and file a certification plan. The provisions in previous sections pertaining to admission to student teaching, TExES and TOPT exams, electronic professional portfolio, and recommendation for teacher certification also apply to post-baccalaureate candidates. Students should expect to complete field experiences as part of their program requirements. Information about all certification matters may be found at www.educ.ttu.edu.

Students who become certified on the graduate level sometimes complete an internship of one year rather than complete a semester of student teaching. To be eligible for an internship, a post-baccalaureate student must meet eligibility requirements for student teaching, become employed as a classroom teacher by a school district in Texas, and enroll in 6 credit hours in the fall (including a capstone class) and 3 credit hours in the spring semester. For more information, contact the college coordinator of field experiences or view www.educ.ttu.edu/clinicalexperiences.

Programs Offering Advanced Certification

Supplemental Certificates. Supplemental certificates are available for teachers holding an initial teaching certificate. Students may seek advanced certification in bilingual education, English as a second language, gifted and talented, generic special education, and visual impairment. Details are available on the college Web site under the appropriate program area. The bilingual and English-as-a-second-language certificates are available through the bilingual program area (www.educ.ttu.edu/edbl). Supplemental certificates in generic special education, visual impairment, and gifted and talented are available through the special education program area (www.educ.ttu.edu/eeds). Professional Certification Programs. The college offers professional certifications programs in the following areas: principal, superintendent, counselor, educational diagnostician, master reading teacher, and professional reading specialist. Some certificates may be combined with graduate programs leading to master’s degrees or doctoral degrees in the related program areas. Admission criteria for these certification programs are set by the program area faculty in which they are housed. For admission information and details about the programs, see the college Web site for the appropriate program area. The educational leadership program offers the principal and superintendent certificates, the counselor education program oversees counselor certification, the special education program offers the educational diagnostician certificate, and the language literacy program supervises the master reading teacher certificate and the professional reading specialist certificate.

Recommendation for Supplemental and Professional Certificates. Students seeking supplemental and professional certificates must pass the appropriate TExES exam. The registration process is explained online at www.educ.ttu.edu. After completing all requirements, students may apply for their certificate online from the State Board for Educator Certification (www.sbec.state.tx.us).

Graduate Programs

Interdisciplinary Science Program in Multidisciplinary Science

This interdisciplinary program leading to a Master of Science degree with a major in multidisciplinary science is administered by the associate dean of the College of Education with faculty and courses drawn from participating units throughout the university. The program is designed to meet the professional needs of K-12 teachers in science. The program requires the completion of 36 semester hours of graduate courses in the sciences, mathematics, and science education culminating with the completion of a special project.

Program Coordinator: Dr. Joe Claudet, associate professor of educational leadership and associate dean of the College of Education.

Program Courses

ATMO 5302 Weather, Climate, and Applications (3:3:0)
BIOL 5311 Ecology for Teachers (3:3:0)
BIOL 5312 Cellular Molecular Biology for Teachers (3:3:0)
CHEM 5360 Conceptual Chemistry for Teachers I (3:3:0)
CHEM 5361 Conceptual Chemistry for Teachers II (3:3:0)
EDSE 5377 Science Curriculum and Instruction (3:3:0)
GEOL 5340 Advances in Historical Geology (3:3:0)
IS 5301 The Nature of Science for Teachers (3:3:0)
MATH 5360 Advanced Mathematics for Teachers I (3:3:0)
MATH 5364 Computer Literacy and Programming I (3:3:0)
PHYS 5371 Conceptual Physics for Teachers (3:3:0)
PHYS 5372 Astronomy for Teachers (3:3:0)

Residency Requirements for Doctorate

The College of Education offers the Doctor of Education and Doctor of Philosophy degrees in various program areas. The specific requirements for the major, foundations core, and research core for each doctoral degree are specified by program and vary between programs. However, all doctoral programs in the College of Education require a period of residency for doctoral candidates to ensure that each has a time of concentrated study as a full-time student with minimal outside obligations. Such a period of coursework, reading, reflection, study, research, and interaction with peers and faculty without the distraction of major outside responsibilities is necessary and no one should contemplate doctoral candidacy who is unable or unwilling to spend a substantial portion of time as a full-time student. During the residency, the student should be free of other employment responsibilities, except as specified below. A candidate may satisfy the residency requirement in one of the following patterns:

- Two consecutive semesters of at least 12 semester hours each.
- Three consecutive summer sessions of at least 9 weeks each while earning at least 9 hours of graduate credit during the summer session.
- A full summer session of 12 weeks, earning 12 hours of graduate credit plus the completion of at least 12 hours of graduate credit during the adjacent spring or fall semester.
- A combination of 21 hours of graduate credit completed during a 12-month period plus at least 3 additional hours of graduate credit completed in an immediately preceding or subsequent full semester or summer session.
- Nine semester hours in each of the regular semesters and at least 6 hours in the preceding or subsequent summer (for students holding half-time graduate assistantships or students involved for no more than half-time in other work closely related to doctoral study).

The proposal for doctoral study (degree plan), including the plan for meeting the residency requirements, should be submitted to the Graduate School well in advance of the proposed residency period.
Department of Curriculum and Instruction

Faculty
Margaret Johnson, Chairperson
Professors: Benavides, Santos, Simpson, Smith
Associate Professors: Agnello, Aguirre-Muñoz, Button, Cooper, Farley, Geer, Gonida, Hovey, Janisch, Johnson, McMillan, Midobuche, Morgan-Fleming, Muñoz, Price, Sheets, Thomas
Assistant Professors: Akrofi, Anderson, Furgerson, Halsey, Hamman, Lesley, Myers, Narayan, Salazar, Saldana, Todd, Watson, Wilhelm
Instructors: Craig, Dennis, Duke, Fehr, Lupton, McLaren, Mitchell, Pratt, Sawder, Stocks, Talkmirt

About the Program
This department supervises the following degree programs:
- Bachelor of Science in Multidisciplinary Studies
- Bachelor of Science in Multidisciplinary Science
- Master of Education in Bilingual Education
- Master of Education in Curriculum and Instruction
- Master of Education in Elementary Education
- Master of Education in Language Literacy Education
- Master of Education in Secondary Education
- Doctor of Philosophy in Curriculum and Instruction

Undergraduate Program

Multidisciplinary Studies

Middle-Level Education. This degree is designed primarily for individuals seeking teacher certification in grades four to eight. Students may choose certification in English language arts, English language arts/social studies, and math/science. Students should consult with an advisor in the college to determine which degree plan best suits their career aspirations. Degree plans leading to the different certificates will include subject area coursework and a sequence of four semesters of professional education courses (including the student teaching semester). Courses in middle-level education include field experiences scheduled outside of class time.

Bilingual Education. This degree is designed to prepare those who wish to be certified as an early childhood generalist and as a bilingual generalist teacher of children from early childhood to grade four. The degree includes coursework in Spanish and certification requires passing the Texas Oral Proficiency Test in Spanish as well as TExES exams. Students complete four semesters of professional education work that includes field experiences in elementary and in bilingual settings in area schools.

Special Education. Students wishing to become certified as an early childhood generalist (early childhood to grade four) and as an all-level special education teacher for children from early childhood to grade twelve will seek a degree with a specialization in special education. Students complete four semesters of professional education work with field experiences in elementary and in special education settings.

English as a Second Language. Students wishing to become certified as an early childhood generalist (EC-4) with additional certification in English as a second language (ESL), will seek a degree with a specialization in ESL. Students complete four semesters of professional education work with field experience in elementary and ESL classrooms.

Multidisciplinary Science

Secondary Science Education. The multidisciplinary science major is administered in this department. Individuals completing this major—both the baccalaureate requirements and the certification requirements—are eligible for certification to teach all sciences grades eight to twelve in Texas. This major requires 57 to 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, ATM 1300, ASTR 1300, and 1100. Students will choose an area of emphasis from among the sciences (biology, chemistry, geosciences, physics or life and earth sciences) and complete additional coursework. 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.

Program Requirements

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 Undergraduate Academics section of the catalog.

Advisory Program. The advisory program is designed to provide aid to each student in planning and completing the appropriate degree and teacher certification program.

The academic advisor is responsible for (1) assisting the student in planning a program and in updating degree plans, (2) helping the student in selecting the proper areas of certification and/or teaching fields, and (3) advising the student in meeting admission and retention standards of teacher education and student teaching.

Admission to the Bachelor of Science Degree Program and Admission to the Teacher Certification (Education) Program. The college seeks to maintain rigorous academic programs to produce outstanding educators for Texas and the nation. Admission to college 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 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 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. Please see “Educator Certification” on the previous pages to read about admission requirements for the teacher certification program, information on the Texas Examinations for Educators Standards (TExES), recommendations for teacher certification, admission to student teaching, and transferability.

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
Bilingual Education (EDBL)

(To interpret course descriptions, see page 8.)

Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>3205</td>
<td>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. Field experience required.</td>
</tr>
<tr>
<td>3332</td>
<td>Foundations of Bilingual Studies (3:3:0). Overview of history, philosophy, assessment processes, research, and legal aspects related to bilingual education.</td>
</tr>
<tr>
<td>3333</td>
<td>Dual Language and Cognitive Development in Bilingual Programs (3:3:0). Skills, attitudes, psycholinguistic knowledge related to first and second language acquisition. Field experience required.</td>
</tr>
<tr>
<td>3336</td>
<td>Instruction and Management in Bilingual and Multilingual Settings (3:3:0). Developing instruction and management skills in bilingual and multilingual classrooms.</td>
</tr>
<tr>
<td>3337</td>
<td>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.</td>
</tr>
<tr>
<td>3338</td>
<td>Methods for Teaching English Language Learners (3:3:0). Rationale, theories, and goals of a comprehensive curriculum program for English language learners.</td>
</tr>
<tr>
<td>4321</td>
<td>Teaching Literacy/Biliteracy in Elementary Dual Language Programs (3:3:0). Emphasizes the current perspective of the biliteracy process, English literacy, native-language literacy, biliteracy, and the impact of educational policies and programs for English language learners.</td>
</tr>
</tbody>
</table>

Graduate Courses


5333. Teaching the Multicultural-Multilingual Student (3:3:0). Strategies and techniques for teaching and working with the multicultural-multilingual student.

5334. First and Second Language Acquisition (3:3:0). First and second language acquisition and development as related to bilingual education and the teaching of English as a second language.


5337. Teaching Strategies for ESL and Content-Area Teachers of Limited English Proficient Students (3:3:0). Provides an instructional framework for material development and teaching approaches to limited English proficient students.

5338. Methods of Teaching English as a Second Language to PreK-12 Students (3:3:0). Study of rationale, theories, and goals of a comprehensive ESL curriculum program in compliance with public school needs and standards of the State of Texas.

5393. Internship in Bilingual Education (3). Experience in various roles in bilingual education.

7000          | Research (V1-12). |

8000          | Doctor's Dissertation (V1-12). |

Educational Curriculum and Instruction (EDCI)

Undergraduate Courses

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. Field experience required.

3325. Honors Seminar: Trends and Issues in Educational Policy and Practice (3:3:0). A seminar course that involves the analysis and synthesis of current trends in educational policy and practices.

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. Field experience required.

3370. Teaching Mathematics at the Middle Level (3:3:0). This course emphasizes the content, learning and instruction, assessment, and professional development in teaching middle-school mathematics. Field experience required.

3375. Teaching Science at the Middle Level (3:3:0). Prerequisite: Junior standing. A field-based course emphasizing teaching methods and techniques, lesson organization, assessment, and classroom management. Field experience required.

3425. Classroom Organization and Management for the Middle Level (3:3:0). This course emphasizes theories of teaching and learning with a focus on classroom organization and management techniques for grades 4-8. Accompanies student teaching. (Writing Intensive)

4362. Interdisciplinary Language Arts and Social Studies Methods at the Middle Level (3:3:0). Content, instructional strategies, and technologies for middle school English language arts and social studies with emphasis on integration through interdisciplinary projects. Field experience required.

4370. Middle-Level Mathematics: Knowledge, Practice, and Theory (3:3:0). This course emphasizes the content, instruc-
Graduate Program / Education

Post-Baccalaureate Initial Teaching Certification. Post-baccalaureate programs designed to meet initial certification requirements for teaching in early childhood (early childhood to grade four), middle level (grades four to eight), and secondary schools (grades eight to twelve) are available. The state-mandated TExES test is required for persons who complete certification programs. For guidance concerning professional certification, students should consult with an advisor or the university certification officer and the coordinators of the various programs. Information on post-baccalaureate programs leading to certification is available online at www.educ.ttu.edu. Although post-baccalaureate certification coursework may be applied to master's degrees in elementary education and secondary education, gaining admission to degree programs requires an additional admissions process. Additional information on post-baccalaureate certification may be found on the college Web site.

Bilingual Education. A master's degree in this program area is available with a concentration in either bilingual education or English as a second language (ESL). Students may choose a 36-semester-hour plan that includes core courses and specialty concentrations and features a choice among offerings in language literacy, linguistics, anthropology, and English. The 30-semester-hour plan includes core and specialty courses, electives from a range of selections, and a 6-hour thesis. Students may select supplemental certificates in bilingual education or English as a second language within requirements for the master's degree. More information and application forms are available at www.educ.ttu.edu/edbl.

Curriculum and Instruction. The program area of curriculum and instruction offers a master's degree and a doctor of philosophy degree. The master's degree is designed to meet the diverse needs of professional educators in elementary, secondary, and post-secondary education. Thesis and non-thesis options are available. The doctor of philosophy (Ph.D.) degree may be completed with support areas in bilingual education, curriculum and instruction, elementary education, language literacy, and secondary education. Students also may focus on other areas of interest such as curriculum studies, social studies education, and diversification strategies, and mathematical processes in teaching middle-school mathematics. Field experience required.

5371. Curriculum and Instruction in Sciences and Math Education (3:3:0). This course guides exploration of science and mathematics curricula: what it is, who writes it, who makes decisions about it, who field tests it, what content should be learned, and how teachers can prepare for proper enactment.


5373. Designing Project-Enhanced Environments for Science and Mathematics (3:3:0). Introduces interdisciplinary pedagogies, technological tools, instructional strategies, and appropriate assessments for designing and developing project-enhanced environments in science and mathematics classrooms.

5380. Action Research I (3:3:0). Fundamentals of quantitative and qualitative design. Students write a literature review and design an original action research project.

5381. Action Research II (3:3:0). Prerequisite: EDCI 5380 and consent of instructor. Fundamentals of quantitative and qualitative design. Students implement an action research project, collect data, and report results.

6000. Master's Thesis (V1-12).

6306. Advanced Seminar in Curriculum and Instruction (3:3:0). Critical analysis and design of research in selected curriculum areas. May be repeated for credit.

College of Education


6393. Advanced Practicum in Curriculum and Instruction (3:3:0). A supervised laboratory or field experience in a curricular area; includes assessment, planning, instruction, and evaluation. May be repeated for credit.

7000. Research (V1-12).

8000. Doctor's Dissertation (V1-12).

**Elementary Education (EDEL)**

### Undergraduate Courses

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.


3099. Independent Study (V1-3). Prerequisite: Junior standing and consent of instructor. Independent study of special topics or projects of elementary education. May be repeated for up to 3 hours credit.

4000. Student Teaching in the Elementary School (V1-12). Prerequisite: Admission 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. (Writing Intensive)

4360. Teaching Social Studies (3:3:0). The design and organization of content, materials, and instructional strategies for social studies programs in elementary schools. Field-based course.


4375. Teaching Science (3:3:0). The methodology of teaching appropriate science learning experiences to elementary school children. Field-based course.

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.

### Graduate Courses

5002. Advanced Education Workshops in Elementary Education (V1-6). A maximum total of 6 hours of credit may be earned either simultaneously or in different semesters.

5360. Developing Social Studies Programs in Elementary Education (3:3:0). Objectives, patterns, and principles of organization of social studies in the elementary schools.

5370. Developing Mathematics Programs in Elementary Education (3:3:0). The development of arithmetic and its educative function in the elementary school curriculum.

5375. Developing Science Programs in the Elementary School (3:3:0). Methods and materials for helping children develop an understanding of their natural and physical environments.


6360. Studies in Social Studies Education (3:3:0). Prerequisite: EDEL 3360 or 5360. In-depth studies of research and instructional practices pertaining to social studies education. May be repeated for credit.

6370. Studies in Mathematics Education (3:3:0). Prerequisite: EDEL 4370 or 5370. In-depth studies of research and instructional practices pertaining to mathematics education. May be repeated for credit.

6375. Studies in Science Education (3:3:0). Prerequisite: EDEL 4375 or 5375. In-depth studies of research and instructional practices pertaining to science education. May be repeated for credit.

7000. Research (V1-12).

8000. Doctor's Dissertation (V1-12).

**Language Literacy (EDLL)**

### Undergraduate Courses


3351. Foundations of Reading Instruction (3:3:0). Prerequisite: Junior standing. Overview of reading development, methods of reading instruction, scope and sequence of programs. Field-based course. (Writing Intensive)

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. Field-based course. (Writing Intensive)

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. Field experiences required.

3354. Reading Processes and Practices at the Middle Level (3:3:0). Overview of reading development, methods of reading instruction, and scope and sequence of instruction for the middle-level classroom.


4350. Linguistics for the Classroom (3:3:0). Students in this course will explore language development from a linguistic perspective that recognizes implications for professional teaching practice.

4351. Foundations in Reading for English Language Learners (3:3:0). Evaluation and reflections of second-language literacy by examining its philosophy, theory, and examples of classroom-based practices.

4380. Literacy in the Content Areas (3:3:0). Understanding literacy in the content areas and planning instruction to promote content learning. Field experiences required. (Writing Intensive)

4381. Literacy in the Content Areas for Middle Level (3:3:0). Understanding literacy in the content areas and planning instruction to promote learning of students in grades 4-8. (Writing Intensive)

4382. Reading and Writing in the Secondary Classroom (3:3:0). Developing literacy practices to learn in content area disciplines aimed at grades 8-12. (Writing Intensive)

### Graduate Courses

5340. Foundations of Reading Instruction (3:3:0). Prerequisite: EDDL 5351 or concurrent enrollment. Psychological and research bases of reading instruction. A foundations course.

5341. Literacy in Secondary Content Area Classrooms (3:3:0). Reading and writing to learn in content area disciplines intended for secondary students in grades 8-12.

5342. Assessment in Reading (3:3:0). Prerequisite: EDDL 5340, 5344, 5351, or consent of instructor. Examines the use of both formal and informal assessment measures as a means to provide information useful for evaluating student performance and planning instruction.

5343. Practicum in Language Literacy (3:3:0). Prerequisite: EDDL 5340, 5344 and 5351 or consent of instructor. Must be taken concurrently with EDDL 5342. Provides an opportunity to work in instructional settings to assist children in their reading development. Student achievement is considered through instructional strategies and assessment procedures.

5344. Content Area Literacy (3:3:0). Prerequisite: EDDL 5340, under-graduate equivalent, or consent of instructor. Theoretical and research bases, issues, strategies, and methods related to learning from print in all content fields.

5345. Early Literacy (3:3:0). Theoretical bases, procedures, techniques, and materials for early literacy instruction.

5346. Understanding, Valuing, and Assessing Language Learners (3:3:0). Examines a constructivist framework as a foundation for understanding language and literacy development in elementary classrooms.

5348. Applied Linguistics and the Teaching of Literacy (3:3:0). Prerequisite: Previous reading courses or consent of instructor. A study of reading as communication with applications of linguistics to the reading classroom.
5350. Developing Language Arts Programs in Elementary Education (3:3:0). Applications of research findings and modern theory to teaching and organizing the language arts in the elementary school.

5351. Children’s Literature for Teachers and Librarians (3:3:0). Literature for children in elementary and middle school; selection, use and organization. Includes nonprint media. Appropriate for English or language arts majors.

5352. Portfolio Assessment in Reflective Teaching (3:3:0). Theory and technique for student portfolio assessment (observation, anecdotes, tests, reading and writing samples). Must have access to classroom students K-12.

5353. Reading and the Middle-Level Student (3:3:0). Selection of materials and methods for understanding and developing reading requirements/strategies/skills of middle school/level students in grades 4-8.

5355. Developing Writing Programs in K-12 Classrooms (3:3:0). Application of in-depth studies of research and instructional practices in the teaching of writing to guide development of effective writing programs.


5357. Early Detection in Reading (3:3:0). Assessment of and intervention with children during daily literacy lessons. (First of two courses).

5358. Early Literacy Intervention (3:3:0). Assessment of young children and initial intervention based on ongoing reading and writing assessment.

5393. Internship in Language Literacy Education (3). Prerequisite: Advanced graduate classification in education. Experiences in the various roles of language literacy education.

6000. Master’s Thesis (V1-6).

6341. Problems, Trends, and Issues in Literacy Teaching and Learning (3:3:0). Study of selected problems, trends, and issues related to literacy teaching and learning. Topics will vary. May be repeated for credit as topic varies.


6347. Research Seminar in Literacy (3:3:0). In-depth analysis and synthesis of contemporary research in literacy development and instruction.

6349. Adolescent Literature (3:3:0). Study of current literature for middle and secondary level students (grades 7-12); selection of material and strategies appropriate for adolescents.

6350. Studies in Language Arts (3:3:0). Prerequisite: EDLL 3352 or 5350. In-depth studies of research and instructional practices pertaining to elementary language arts. May be repeated for credit.

6351. Studies in Literature for Children or Adolescents (3:3:0). Prerequisite: EDLL 3350 or 5351. In-depth studies of research and instructional practices pertaining to children’s literature. May be repeated for credit.

6353. Investigations in Literacy (3:3:0). Theoretical bases and research perspectives on literacy learning and instruction. An in-depth analysis of historically important research.

7000. Research (V1-12).

8000. Doctor’s Dissertation (V1-12).

### Secondary Education (EDSE)

#### Undergraduate Courses

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.


4000. Student Teaching in the Secondary School (V1-12). Prerequisite: Meet admission standards to student teaching. Supervised teaching involving a period of major responsibil-

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. Field experiences required.


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. Field-based course.

4330. Capstone for Secondary Students (3:3:0). This course is taught with student teaching and focuses on instructional management, organization for teaching, student assessment, and political and ethical dimensions. (Writing Intensive)


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.

### Graduate Courses


5322. Managing Secondary School Learning Environments (3:3:0). Planning, organization, and implementation of social and academic systems in the classroom. The course is designed to examine critically research-based perspectives on conditions that must be created in order to develop a culturally responsive classroom learning environment.

5331. Improvement of Instruction in the Secondary School (3:3:0). A study of teaching behaviors, styles, and strategies. Instructional theories and various models of teaching are examined.

5377. Science Curriculum and Instruction (3:3:0). A study of evolving science curriculum with emphasis on innovative practices, methodology, organization for instruction, and evaluation.

6000. Master’s Thesis (V1-6).

7000. Research (V1-12).

8000. Doctor’s Dissertation (V1-12).
Department of Educational Psychology and Leadership

Faculty

Fred Hartmeister, Chairperson
Horn Professor: Bradley
Professors: Hartmeister, Lan, Murray, Olivarez, Parr, Rodriguez, Runnels
Associate Professors: Burley, Claudet, Crooks, Davidson, Duemer, Griffin-Shirley, Kelley, Layton, Lock, Marbley, Maushak, Mendez-Morse, Pogrund, Shonrock
Assistant Professors: Banda, Hendricks, Klinker, Lechtenberger, Reutebuch, Rudd, Shen, Siwatu, Stevens

About the Program

The Department of Educational Psychology and Leadership offers coursework at the undergraduate level in educational psychology and special education. The department offers study in the following graduate degree programs:

- Master of Education in Counselor Education
- Master of Education in Educational Leadership
- Master of Education in Educational Psychology
- Master of Education in Higher Education
- Master of Education in Instructional Technology
- Master of Education in Special Education
- Doctor of Education in Educational Leadership
- Doctor of Education in Higher Education
- Doctor of Education in Instructional Technology
- Doctor of Education in Special Education
- Doctor of Philosophy in Counselor Education
- Doctor of Philosophy in Educational Psychology
- Doctor of Philosophy in Higher Education

Graduate Program

The department offers programs leading to professional certificates and associated supplemental certificates. Information on admission standards, program requirements, and other matters concerning graduate programs in the department may be obtained from the department office, the Office of Graduate Education in the College of Education, and online at www.educ.ttu.edu.

Counselor Education. The college offers both a master’s and a doctoral program in counselor education. The master’s program consists of 48 semester hours and offers two tracks or majors: school counseling and agency counseling. The doctoral program offers one major in counselor education. The master’s and doctoral programs are approved by the Council for Accreditation of Counseling and Related Educational Programs. Applicants must complete the Counselor Education Application Packet available at www.educ.ttu.edu.

Students desiring to obtain only the professional certificate in school counseling must have a master’s degree in education from an accredited university and be admitted to the Graduate School and the counselor education program. A maximum of 18 graduate semester hours may be accepted for transfer credit toward certification provided the courses are no more than six years old and are equivalent to courses taught at Texas Tech. No transfer hours will be allowed for practica (EPCE 5360), internship (EPCE 5094), or techniques (EPCE 5357). In addition to completing the program successfully, the applicant must have two years teaching experience, have a valid teaching certificate, and pass a TExES examination administered by the State Board for Educator Certification. Additional information is available at www.educ.ttu.edu/epce and in the department office.

Educational Leadership. The Educational Leadership Program offers a Master of Education (M.Ed.) and a Doctor of Education (Ed.D.) degree in educational leadership. Graduate programs are also offered for principal and superintendent professional certificates. Degree programs and certification programs have different requirements, but many courses will apply to both and are explained online at www.educ.ttu.edu/eld.

Educational Psychology. Students enrolled in the educational psychology program earn a master’s and/or doctoral degree with a variety of areas of emphasis (i.e., history and/or philosophy of education; learning and motivation; human development; multicultural education; and research, measurement, and statistics). A minimum of 36 semester credit hours is required for the Master of Education degree. Students pursuing a master’s degree can do so with or without a thesis. A minimum of 93 semester credit hours is required for the Doctor of Philosophy degree. Applicants to either program must first apply to and be cleared by the Graduate School before being reviewed and approved by the educational psychology faculty. Admission to a master’s program does not constitute later admission to a doctoral program. Applicants without a strong background in psychology may be required to complete leveling courses before unconditional admission to the program. For more information, see the program Web site at www.educ.ttu.edu/epasy.

Higher Education. Higher education students come from a variety of fields and types of higher education institutions. To prepare leaders for the higher education enterprise, the program delivers teaching, research, and professional development services to students, institutions of higher education, and other academic disciplines. Students working on a master’s degree may pursue either nonthesis or thesis options. The master’s program consists of two tracks or majors: higher education administration (36 semester hours) and student affairs (39 semester hours). The Higher Education Program offers two doctoral degrees. The Doctor of Education (Ed.D.) is designed for the advanced student who wishes to achieve a superior level of competency in his or her professional field with emphasis on practice and leadership. Under the direction of their advisor, students may select a focus in community college leadership, university administration, or student affairs. The Doctor of Philosophy (Ph.D.) is designed for the advanced student who wants to acquire the ability to contribute to the knowledge base of teaching, education, and leadership through a thorough grounding in the conduct of research. The Ph.D. will prepare students for professional careers as institutional researchers and planners; administrators with an orientation towards research, sponsored programs, or grant proposal writing; program assessment-evaluation specialists; research associates; and faculty members.

Both doctoral degrees require the completion of 93 credit hours beyond the baccalaureate. As part of the credit hour requirements, candidates for both the Ed.D. and the Ph.D. are required to demonstrate proficiency in independent research in higher education, culminating in the completion of a dissertation. For further information, see the program Web site at www.educ.ttu.edu/edhe.

Instructional Technology. The instructional technology program offers both master’s and doctoral degrees. The goal of the program is to prepare specialists in the field of instructional design and technology. Instructional technology students come from a variety of backgrounds, including public school education, higher education, and the private sector. Graduate programs include a foundation of educational research and educational psychology as well as an in-depth study of instructional design and educational technology applications. Several online courses are offered and an online master’s degree is available.

The doctoral program requires 83 credit hours plus a dissertation beyond a bachelor’s degree. Doctoral program graduates often enter the field of higher education as professors, instructional designers, and technology specialists.

The master’s program requires 39 credit hours beyond a bachelor’s degree. Two areas of emphasis are available: educational computing and distance education. Graduates often accept posi-
tions as technology specialists in public education, as consultants or developers of instructional materials in the private sector, or as community college instructors or technology specialists. For more information, see www.educ.ttu.edu/edit.

**Special Education.** In conjunction with the state of Texas, the special education program provides for coursework in the certification areas of generic special education, educational diagnostician, visual impairment, and deaf education. An additional certification in orientation and mobility is also available. Students in the graduate special education program are prepared to work with individuals with disabilities in a variety of settings, including the public schools, higher education, and the private sector. A post-baccalaureate degree to obtain generic special education certification is also available. To be certified in the state of Texas, students must pass the TExEs examination for their area.

A minimum of 36 hours is required for the master’s degree. Additional hours are required for certain certificates, including educational diagnostician. Students may select to write a thesis or complete the non-thesis route. The Doctor of Education degree requires a minimum of 93 graduate hours.

Specific areas of interest within the Special Education Program include autism, emotional disturbance, learning disabilities, mental retardation, orientation and mobility, visual impairment, and deaf education.

A majority of the courses in the master’s program in special education are available online. A few of the educational diagnostician courses are offered through two-way interactive television (ITV) and require the student to make arrangements through the College of Education and the university’s digital video network to secure end-point site approval. When locations do not have adequate technological capability, students will not be able to obtain permission to enroll in those courses. Students living within a one-hour commute of the Texas Tech Lubbock campus will be required to attend these courses on campus and no ITV connection will be provided.

Courses in the doctoral core are generally available in the summer sessions to accommodate those employed in the public school system. These 15 hours are traditional on-campus classes. The remainder of the program can be completed through distance education with a residency requirement.

Special Education Program applicants for the post-baccalaureate, certification, or master’s program must complete an application found in the Special Education Program Handbook. Acceptance to the master’s program does not guarantee later acceptance to the doctoral program. Doctoral applicants must complete a separate application that also appears in the handbook. For additional information, see www.educ.ttu.edu. For information about the undergraduate Bachelor of Science degree in multidisciplinary studies leading to a special education certificate, refer to the Department of Curriculum and Instruction section.

**Counselor Education (EPCE)**

*(To interpret course descriptions, see page 8.)*

**Graduate Courses**

5001. **Advanced Workshop in Counseling (V1-6).** Prerequisite: Consent of instructor. Workshop and field experience assignments in counseling-related activities. A maximum of 6 hours of credit may be earned.

5094. **Internship in Counseling (V1-3).** Prerequisite: Admission to the EPCE program and completion of EPCE 5360. Students cannot enroll in more than 3 semester hours of EPCE 5094.

5352. **Child Counseling (3-3-0).** Prerequisite: EPCE 5364, admission to the counselor education program, or consent of instructor. Philosophy, principles, and practices of counseling children and young adolescents in school and community settings.

5353. **Introduction to Community Counseling (3-3-0).** Overview of the activities of community counseling, nature of specific populations, program development and evaluation, planning for client services, and public policy issues.

5354. **Group Counseling (3-3-0).** An overview of the principles, practices, and approaches to group counseling in school and community settings.

5355. **Introduction to Career Counseling (3-3-0).** Overview of career theories, assessment procedures, techniques, and counseling processes used with adolescents and adults in school and community settings.

5357. **Techniques of Counseling (3-3-0).** Prerequisite: Admission to the EPCE program and completion of EPCE 5364 and 5353 or 5358. Theory, simulation, and practice of counseling techniques used in school and community agency settings.

5358. **Introduction to School Counseling (3-3-0).** Prerequisite: Admission to the counselor education program or consent of instructor. This course is designed to equip participants with skills and knowledge to develop, implement, manage, and assess components of a comprehensive developmental school counseling program.

5360. **Practicum in Counseling (3).** Prerequisite: Admission to Graduate School, admission to the EPCE program, and completion of EPCE 5353 or 5358, 5352 or 5366, 5354, 5357, 5364, 5367, 5370, 5371, and EPSY 5356. Assignment in a school or community agency setting. Dual majors must enroll in 6 hours of EPCE 5360.

5364. **Theories of Counseling (3-3-0).** Overview of theories and paradigms of counseling.

5366. **Dysfunctional Behavior (3-3-0).** Prerequisite: EPCE 5364 and 5353 or 5358, or consent of instructor. Overview of dysfunctional behavior, analysis of dysfunctional behavior in educational and counseling settings.

5367. **Family Counseling Applied to School Settings (3-3-0).** Prerequisite: EPCE 5364 and 5353 or 5358, or consent of instructor. Family counseling applied to school settings. Theory, simulation, and practice of techniques used in family counseling applied to school and community agencies.

5369. **Seminar in Counseling (3-3-0).** Prerequisite: Departmental approval required. A critical investigation of counseling topics related to school and community agencies. May be repeated as topic varies.

5370. **Ethical and Legal Issues in Counseling (3-3-0).** Prerequisite: EPCE 5364 and 5353 or 5358. An investigation of legal and ethical issues in the counseling profession. Focus on schools and community agencies.

5371. **Counseling Diverse Populations for Licensed Professional Counselor (3-3-0).** Prerequisite: EPCE 5364 and 5353 or 5358. The course provides an overview of counseling theory as it applies to diverse groups including gender, geriatric, racial, ethnic, and exceptionality issues.

5372. **Addictions: An Overview for School and Community Counselors (3-3-0).** This basic course provides an overview of addictions theory, issues, and practice. The course’s focus is on community and school counseling.

5373. **Advanced Addictions Counseling (3-3-0).** Prerequisite: EPCE 5366 and 5372. Screening, assessment, diagnosis, and counseling techniques used in treatment of co-occurring mental health and substance use disorders for counselors in school and community agencies.

5374. **Applied Principles and Practices of Play Therapy-Counseling I (3-3-0).** Prerequisite: EPCE 5357, 5364, EPSY 5331 strongly recommended. This course includes an overview of essential elements and principles of play therapy including theories, techniques, modalities, and environments. The course features a practicum element during which students conduct play therapy sessions under supervision of the instructor.

5375. **Applied Principles and Practices of Play Therapy-Counseling II (3-3-0).** Prerequisite: EPCE 5374 or consent of instructor. Advanced theories, techniques, modalities, and environments of play therapy amplified by supervised experience with children in playrooms.

6001. **Advanced Study of Special Topics in Counselor Education (V1-6).** Prerequisite: Consent of instructor and admission to doctoral program in counselor education. An organized course to foster in-depth study of a current topic in counselor education. Coursework will focus on one major current topic. May be repeated for credit.

6094. **Doctoral Internship in Counseling (V1-3).** Prerequisite: Admission to Ed.D. program in counseling, completion of all coursework including practica and supervision, and consent of instructor. Supervised employment or field experience in a school or community agency setting. May be repeated for credit.

6335. **Advanced Counseling Theory and Techniques (3-3-0).** Prerequisite: EPCE 5357, 5364, and admission to doctoral
program in counseling. Analysis of major approaches to counseling with integration of the techniques in clinical practice.

6350. Doctoral Seminar in Counseling (3:3:0). Prerequisite: Admission to doctoral counseling, consent of instructor, EPSY 5381 or equivalent. Special topics in counseling covering both research and practice. May be repeated for credit.


6360. Advanced Practicum in Counseling (3). Prerequisite: Admission to Graduate School, admission to the counseling program, completion of all EPCE 5000 level practica, and consent of instructor. Supervised laboratory and field experience in schools and community agencies. Emphasis on integration of theory and practice. May be repeated for credit with the instructor's consent.

6366. Advanced Practicum in Counselor Education and Supervision (3). Prerequisite: Admission to the Graduate School, full status admission to the counseling program, completion of all EPCE 5000 level practica, EPCE 6360 and 6335, and consent of instructor. Emphasis on supervision theory, training, and experience in the supervision of counselors.

7000. Research (VI-12).
8000. Doctor's Dissertation (VI-12).

Educational Leadership (EDLD)

Graduate Courses

5001. Advanced Education Workshops in Teaching and Administration (V1-6). Prerequisite: Consent of instructor. Advanced workshop activities and experiences in administration. A maximum total of 6 hours of credit may be earned either simultaneously or in different semesters.

5306. School-Based Leadership (3:3:0). This course examines the major theories, concepts, and empirical findings related to school-based leadership.

5310. Instructional Supervision (3:3:0). Principles, planning, organizations, and processes of supervision in both elementary and secondary schools.

5330. Staff Development (3:3:0). Principles and procedures of organizing programs of school improvement through comprehensive and ongoing staff development.

5340. Educational Law (3:3:0). Introduction to the legal aspects of educational organizations, focusing on the school building level and emphasizing the rights and responsibilities of students, teachers, and administrators. (AGED 5340)

5350. School Personnel and Fiscal Management (3:3:0). Introduction to the concepts of fiscal and human resource management with an emphasis on site-based decision making.

5351. Communication for School Leaders (3:3:0). The study and application of interpersonal communication theory and research as related to organizational, social, and environmental contexts. Individual conferencing, informational and employment interviewing, and group dynamics, are included.


5380. The School Superintendent and Educational Governance (3:3:0). Prerequisite: Admission to superintendent certification program. Prepare educational leaders for the national, state, and local aspects of school district governance in the 21st century.


5382. The Superintendency, Organizational Politics, and Legal Issues (3:3:0). Prerequisite: Admission to superintendent certification program. Emphasis on political and legal knowledge, skill and competencies; also board and superintendent relationships, conflict resolution, communications, and community relations.

5391. School and Community (3:3:0). Explores the development of collaborative culture at school, enlist community support, and form partnerships with businesses, universities, and parents. Addresses improved communication among increasingly diverse members of the school staff, parents, students, community members, and media. (AGED 5391)

5392. Principal Internship in Education (V3-6). Prerequisite: The internship can only be taken as the final course in the principal certification program. Guided experiences in principalship. May be repeated for credit with a maximum of 6 credit hours.

5394. Superintendent Internship in Education (3). Prerequisite: Admission to superintendent certification program. Guided experiences in central office administration under the supervision and direction of a central office administrator and a university professor. The internship can only be taken as the final course in the superintendent's certification program.

6001. Advanced Study of Special Topics in Educational Administration (V1-6). Prerequisite: Consent of instructor and admission to doctoral program. An organized course to foster in-depth study of a current topic in Educational Leadership. Coursework will focus on one major current topic. May be repeated for credit.

6300. Organizational Theory in Education (3:3:0). Prerequisite: Admission to doctoral program. The development and content of public school finance policy in the United States focusing on the fiscal, political, legal, and economic and normative dimensions.

6330. Educational Leadership, Democracy, and Schools (3:3:0). Exploration of democratic principles, philosophy, and past and present cultural influences on our democracy and schools.

6340. Educational Policy and the Law (3:3:0). Prerequisite: Admission to doctoral program. The development and content of public school finance policy in the United States focusing on the fiscal, political, legal, and economic and normative dimensions.

6341. Legal Issues With Special Populations (3:3:0). Prerequisite: EPCE 5340 or consent of instructor. Prepare educational leaders for legislative and litigating aspects of working with special populations.

6351. Organizational Communication in Education (3:3:0). Prerequisite: Admission to doctoral program. The study of organizational communication theory and research as related to theoretical issues, environments, and patterns in education. Organizational communication methodology and process are included.

6361. Doctoral Seminar in Educational Administration (3:3:0). Prerequisite: Admission to doctoral program. Advanced analysis and synthesis of research and practice in human resource management and legal issues in educational leadership. May be repeated for credit.


6385. Research in Educational Administration (3:3:0). Prerequisite: Admission to doctoral program. Survey of educational leadership research focusing on contemporary issues, techniques in research design and methodology (qualitative and quantitative), and grantsmanship.

6392. Doctoral Internship in Educational Leadership (3:3:0). Prerequisite: Admission to doctoral program and consent of instructor. The application of reflective practice to problems of leadership in a school setting. Expert practitioners and University professors coach students through a process of thinking about the definition and solution of problems as they develop and test plans for action.

7000. Research (VI-12).
8000. Doctor's Dissertation (VI-12).

Early Childhood Education (EDEC)

Undergraduate Course

4000. Student Teaching EC-4 Certification (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 Psychology (EPSY)

#### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>5380</td>
<td>Introduction to Educational Statistics (3:3:0). Study of the influence of environmental factors on the physical, emotional, social, and intellectual growth of young children.</td>
</tr>
<tr>
<td>5381</td>
<td>Analysis and Design of Programs in Early Childhood Education (3:3:0). Research study and laboratory observations to determine nature and need of school experiences for young children.</td>
</tr>
<tr>
<td>5382</td>
<td>Qualitative Research in Education (3:3:0). Study of qualitative methods used in educational research. Includes application and problems.</td>
</tr>
<tr>
<td>5383</td>
<td>Methods of the analysis of educational data using statistical software.</td>
</tr>
<tr>
<td>5384</td>
<td>Shape of educational data using statistical software.</td>
</tr>
<tr>
<td>5385</td>
<td>Survey Research in Education (3:3:0). Prerequisite: EPSY 5381 or STAT 5303 or consent of instructor. The design and implementation of survey methodology in educational settings. Coverage of sampling techniques. Questionnaire design, analysis of data, and strategies for dissemination of findings to specific audiences.</td>
</tr>
<tr>
<td>5386</td>
<td>Educational Measurement (3:3:0). Prerequisite: 3 hours of statistics. Study of psychometric theory, test and instrument development, and use of standardized instruments in educational research.</td>
</tr>
<tr>
<td>5387</td>
<td>Qualitative Research Methods (3:3:0). Prerequisite: EPSY 5382. Study of qualitative methods used in educational research. Includes application and problems.</td>
</tr>
<tr>
<td>5388</td>
<td>Qualitative Data Analysis in Education (3:3:0). Prerequisite: EPSY 6304. Study of methods used in the analysis of data gathered through qualitative research methods and of ways of reporting these research findings.</td>
</tr>
<tr>
<td>5389</td>
<td>Advanced Educational Psychology (3:3:0). Emphasis on the research and theories of educational psychology and the evaluation and synthesis of psychology theories.</td>
</tr>
<tr>
<td>5390</td>
<td>Doctoral Seminar in Educational Psychology (3:3:0). Prerequisite: Admission to doctoral program. Several topics in research and analysis in educational psychology. May be repeated for credit.</td>
</tr>
<tr>
<td>5391</td>
<td>Research (V1-12).</td>
</tr>
<tr>
<td>5392</td>
<td>Doctor's Dissertation (V1-12).</td>
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</tbody>
</table>

#### Graduate Courses

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>5310</td>
<td>Philosophy of Education (3:3:0). Major western social philosophies and their application to the field of education in the United States.</td>
</tr>
<tr>
<td>5314</td>
<td>History of Education (3:3:0). A study of the development of Western education with emphasis on pedagogical leaders and reformers.</td>
</tr>
<tr>
<td>5323</td>
<td>Cultural Foundations of Education (3:3:0). Analysis of linkages between school and community with special reference to the impact of the selection and allocation functions of schooling on minority groups.</td>
</tr>
<tr>
<td>5330</td>
<td>Motivation in Educational Settings (3:3:0). This course reviews various theories in motivation and their applications in education with an emphasis on the cognitive perspective of motivational processes.</td>
</tr>
<tr>
<td>5331</td>
<td>Human Development in Education (3:3:0). Interrelationships of social and psychological development through the lifecycle and implications for teaching and learning.</td>
</tr>
<tr>
<td>5332</td>
<td>Educational Psychology (3:3:0). Emphasis on the application of educational psychological principles to teaching at all levels.</td>
</tr>
<tr>
<td>5333</td>
<td>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.</td>
</tr>
<tr>
<td>4399</td>
<td>Individual Study (3). Prerequisite: Consent of instructor. Independent study of selected topics in educational psychology and the foundations of education.</td>
</tr>
</tbody>
</table>

### Higher Education (EDHE)

#### Graduate Courses

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>5001</td>
<td>Seminar in Higher Education (V1-6). A special topics course designed to acquaint students with current research, theory, policies, and/or practices in higher education. May be repeated for credit.</td>
</tr>
<tr>
<td>5300</td>
<td>The History of Higher Education in the United States (3:3:0). An examination of the development of the American system of higher education, its origin, major characteristics, trends, and distinctive features.</td>
</tr>
<tr>
<td>5301</td>
<td>American Higher Education (3:3:0). A comprehensive introduction to the basics of American higher education including facts and fundamental theoretical concepts on which to build future understandings and research.</td>
</tr>
<tr>
<td>5305</td>
<td>Leadership in Higher Education (3:3:0). An examination of organization theory, models, and policies; governance and management processes; and leadership perspectives and theory. A review of research and new conceptual perspectives.</td>
</tr>
<tr>
<td>5313</td>
<td>The Community Junior College (3:3:0). An introductory course to acquaint students with the purposes, programs, people, organization, control, and resources of these colleges.</td>
</tr>
<tr>
<td>5315</td>
<td>Community College Leadership (3:3:0). A study of different leadership styles, strategies, and theories applicable to the community college sector.</td>
</tr>
<tr>
<td>5321</td>
<td>The Administration of Higher Education (3:3:0). Examines administration of higher education at institution and unit level. Addresses organizational culture and behavior, as well as management and leadership studies.</td>
</tr>
<tr>
<td>5323</td>
<td>Development and Finance in Higher Education (3:3:0). A study of the requirements for a sound institutional development program, including mission and objectives, budgeting, organization and planning. Relationships with constituencies and proposal preparation is analyzed.</td>
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<tr>
<td>Course Code</td>
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<tr>
<td>5324</td>
<td>Higher Education and the Law (3:3:0)</td>
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<tr>
<td>5332</td>
<td>Student Services in Higher Education (3:3:0)</td>
</tr>
<tr>
<td>5333</td>
<td>Issues in Student Affairs (3:3:0)</td>
</tr>
<tr>
<td>5334</td>
<td>College Student Development (3:3:0)</td>
</tr>
<tr>
<td>5335</td>
<td>The American College Student (3:3:0)</td>
</tr>
<tr>
<td>5341</td>
<td>Assessment of Student Outcomes in Higher Education (3:3:0)</td>
</tr>
<tr>
<td>5342</td>
<td>College Teaching (3:3:0)</td>
</tr>
<tr>
<td>5343</td>
<td>College and University Curriculum (3:3:0)</td>
</tr>
<tr>
<td>5393, 5394</td>
<td>Internship in Higher Education (3 each)</td>
</tr>
<tr>
<td>6300</td>
<td>Master's Thesis (V1-6)</td>
</tr>
<tr>
<td>6310</td>
<td>Higher Education Research Seminar (3:3:0)</td>
</tr>
<tr>
<td>6311</td>
<td>Higher Education Ph.D. Research Seminar (3:3:0)</td>
</tr>
<tr>
<td>6325</td>
<td>Policy Analysis and Issues in Higher Education (3:3:0)</td>
</tr>
<tr>
<td>6370</td>
<td>Capstone Seminar (3:3:0)</td>
</tr>
<tr>
<td>5300</td>
<td>Research (V1-12)</td>
</tr>
<tr>
<td>8000</td>
<td>Doctor's Dissertation (V1-12)</td>
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**Educational Instructional Technology (EDIT)**

<table>
<thead>
<tr>
<th>Undergraduate Courses</th>
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<tbody>
<tr>
<td>2318</td>
<td>Computing and Information Technology (3:3:0)</td>
<td>Use of computer as productivity tools, societal and ethical implications, and applications and related technology in society.</td>
</tr>
<tr>
<td>3318</td>
<td>Applications of Technology in Elementary Education (3:3:0)</td>
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<thead>
<tr>
<th>Graduate Courses</th>
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<tbody>
<tr>
<td>5000</td>
<td>Special Topics in Instructional Technology (V1-3)</td>
<td>Covers special designated topics in instructional technology. May be repeated for credit.</td>
</tr>
<tr>
<td>5316</td>
<td>Foundations of Instructional Technology (3:3:0)</td>
<td>Overview of the field of instructional technology including the design, development, utilization, management, and evaluation of instructional systems.</td>
</tr>
<tr>
<td>5317</td>
<td>Instructional Design Foundations (3:3:0)</td>
<td>Technological advances in instruction with emphasis on instructional systems and a broad overview of the field of instructional technology.</td>
</tr>
<tr>
<td>5318</td>
<td>Introduction to Small Computers in Education (3:3:0)</td>
<td>Introduction to computers for educators. Includes computer terminology, operations, overview of applications, hardware, and software. Hands-on experience with small computers included.</td>
</tr>
<tr>
<td>5320</td>
<td>Educational Network Applications (3)</td>
<td>Computer applications for school-based networks. Issues of instructional support, design, and administration will be discussed.</td>
</tr>
<tr>
<td>5321</td>
<td>Computer Programming for Educators (3:3:0)</td>
<td>Prerequisite: EDIT 5318 or consent of instructor. Overview of instructional programming using a high level object oriented language to develop educational software. Best practice and design will be modeled.</td>
</tr>
<tr>
<td>5322</td>
<td>Authoring Systems for Educational Software (3:3:0)</td>
<td>Explores computer authoring languages and systems, including hypermedia systems, and their application to the design of instructional programs.</td>
</tr>
<tr>
<td>5325</td>
<td>Planning and Developing Instructional Media (3:3:0)</td>
<td>Production and use of visual instructional media. Includes visual design, photographic techniques, video production, animation, and related techniques.</td>
</tr>
<tr>
<td>5326</td>
<td>Instructional Software Design (3:3:0)</td>
<td>Prerequisite: EDIT 5318 or consent of instructor. An in-depth study of instructional software design and development. Principles and procedures for creating sound instructional software will be explored.</td>
</tr>
<tr>
<td>5327</td>
<td>Computers, Critical Thinking, and Problem Solving in the Content Areas (3:3:0)</td>
<td>Prerequisite: EDIT 5317 or 5318 or consent of instructor. Surveys research and strategies for using computers to promote higher order thinking and problem solving in all content areas. Includes software identification, use, and evaluation.</td>
</tr>
<tr>
<td>5341</td>
<td>Curriculum Applications of the Internet (3:3:0)</td>
<td>Prerequisite: EDIT 5340 or consent of instructor. Integration of the Internet and World Wide Web into the K-12 curriculum, focusing on the use of the resource for communication, information access, and instructional delivery.</td>
</tr>
<tr>
<td>5342</td>
<td>Authoring Tools for Internet Instruction (3:3:0)</td>
<td>Explores authoring tools with an emphasis on proper instructional design to deliver effective and appropriate Internet based instructions.</td>
</tr>
<tr>
<td>5370</td>
<td>Foundations of Distance Education (3:3:0)</td>
<td>Overview of the field of distance education including history, research, technologies, and related design models.</td>
</tr>
<tr>
<td>5380</td>
<td>Principles and Practice for Video Based Distance Learning (3:3:0)</td>
<td>Prerequisite: EDIT 5318 or consent of instructor. Evaluation, selection, and administration of video based distance learning systems, emphasizing legal, ethical, and access issues. Strategies for creating effective distance learning environments.</td>
</tr>
<tr>
<td>5390</td>
<td>Online Distance Learning (3:3:0)</td>
<td>Web-based teaching in K-12, adult, and higher education. Includes instructional design, instructional management, and related issues.</td>
</tr>
<tr>
<td>5395</td>
<td>Administration of the Educational Technology Program (3:3:0)</td>
<td>Prerequisite: EDIT 5318 and 5319 or consent of instructor. Covers organization and management of computer resources; selection and acquisition of computer hardware and software.</td>
</tr>
<tr>
<td>5397</td>
<td>Practicum in Educational Technology (3:3:0)</td>
<td>Prerequisite: EDIT 5318, 5319, or consent of instructor. Supervised experience in an educational setting which requires the application of competencies such as teaching, management, supervision, and administration.</td>
</tr>
<tr>
<td>6000</td>
<td>Master's Thesis (V1-6)</td>
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<tr>
<td>6317</td>
<td>Advanced Instructional Design: Theory and Practice (3:3:0)</td>
<td>Prerequisite: EDIT 5317 or EDI 5310. This seminar explores the theory and practice of instructional design in-depth. Product development, research, and evaluation of instructional design models are included.</td>
</tr>
<tr>
<td>6322</td>
<td>Research in Instructional Technology (3:3:0)</td>
<td>Prerequisite: EDIT 5318 and EPSY 5380 or consent of instructor. Review of research on instructional technology, use of computers for research data analysis, and designing research on instructional technology.</td>
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<tr>
<td>6325</td>
<td>Multimedia Production for Instruction (3:3:0)</td>
<td>Explores design and delivery of individualized instruction and information retrieval via modern multimedia systems.</td>
</tr>
<tr>
<td>6380</td>
<td>Distance Education: Trends, Issues, Research (3:3:0)</td>
<td>Prerequisite: EDIT 5370, 5380, or consent of instructor. Students will identify and evaluate relevant literature to synthesize theories, trends, issues, and concerns related to the field of distance education.</td>
</tr>
<tr>
<td>7000</td>
<td>Research (V1-12)</td>
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<td>Doctor's Dissertation (V1-12)</td>
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**Special Education (EDSP)**

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<td>3205</td>
<td>Learning and Special Populations (2:2:0)</td>
<td>Examines the psychological, sociological, and educational implications of both high and low incidence populations of exceptionality for middle level classrooms. Field-based experience required.</td>
</tr>
<tr>
<td>3300</td>
<td>Exceptional Children and Youth (3:3:0)</td>
<td>Major categories of exceptionalities; psychological, sociological, and educational implications of exceptionality. Field-based experience required.</td>
</tr>
<tr>
<td>3302</td>
<td>Assessment and Program Planning for Exceptional Children (3:3:0)</td>
<td>Appraisal instruments and techniques used by relevant</td>
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disciplines in determining educational placement and programing 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 concepts and subjects to students with mild disabilities including modifications to regular education curricula. 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.

Graduate Courses

5093. Internship in Special Education (V1-3). Prerequisite: Consent of instructor.

5094. Advanced Internship in Special Education (V1-3). The arranged internship gives students practical experience in an area of specialization.

5095. Internship for Diagnosticians (V1-3). This arranged internship provides experiences in educational diagnostics.


5301. Educational Appraisal of Exceptional Children (3:3:0). Appraisal instruments and techniques employed by relevant disciplines in determining appropriate educational placement and programming for exceptional children.

5303. Applied Behavior Analysis in Special Education (3:3:0). Use of applied behavior analysis in special education programs. Included are techniques for observing and recording behavior, testing intervention, effects, and use in learning environment.

5304. Instructional Strategies for Teaching Students With High Incidence Disabilities (3:3:0). Provision of knowledge of various models of instruction and strategies related to education of learners with varying disabilities, including materials development and evaluation.

5306. Instructional Strategies for Teaching Students With Low Incidence Disabilities (3:3:0). Strategies for teaching students with severe disabilities utilizing a critical skills model curriculum aimed at teaching appropriate functional skills across the domains.


5308. Authentic Assessment for Students With Exceptionalities (3:3:0). Authentic appraisal strategies and techniques to document the strengths and needs of students with exceptionalities in a naturalistic setting.

5310. Gifted and Talented Children and Youth (3:3:0). Psychological, sociological, and educational implications of higher level intelligence and intellectual ability as well as various talents.

5312. Creativity and the Gifted and Talented Children (3:3:0). Psychological foundations of creativity especially as they apply to gifted children, how to assess and nurture creativity, and establish an environment conducive to creativity.

5320. Child and Youth With Low Incidence Disabilities (3:3:0). The characteristics and psychological, sociological, and educational implications of severe disabilities including mental retardation, autism, serious emotional disturbance, dual sensory impairment, and multiple disabilities.

5330. Children and Youth With High Incidence Disabilities (3:3:0). The characteristics and psychological, sociological, and educational implications of mild disabilities including learning disabilities, behavior disorders, and mild mental retardation.

5350. Foundations and Psychosocial Aspects of Students Who Are Deaf or Hard of Hearing (3:3:0). Overview of historical and contemporary issues, individual assessment, academic placement, achievement, deaf cultural heritage, and educational controversies for students who are deaf or hard of hearing.

5351. Emergent Language and Literacy for Students Who Are Deaf or Hard of Hearing (3:3:0). Development of communication, language, and emergent literacy in students who are deaf or hard of hearing. Addresses all modes of communication, including speech, ASL, and MCE.

5352. Oral Communication for Students Who Are Deaf or Hard of Hearing (3:3:0). Theories and developmental stages of speech acquisition in students who are deaf or hard of hearing. Emphasis on effects of cochlear implants.

5353. Educational Strategies for Advanced Language and Literacy for Students Who Are Deaf or Hard of Hearing (3:3:0). Focus on strategies and methods of promoting literacy for deaf or hard of hearing students, including assessment, systematic instruction, and all modes of communication.

5354. Assessing the General Education Curriculum for Students Who Are Deaf or Hard of Hearing (3:3:0). Focuses on the use of materials, technology, and visual strategies to help students who are deaf or hard of hearing succeed in general curriculum courses.

5380. Programs and Services for Individuals With Visual Impairments (3:3:0). Introduction to educational programs and services for students with visual impairments, including history, developmental characteristics, psychological needs, and legislation.


5382. Communication Skills for Individuals With Visual Impairments (3:3:0). Knowledge and skills in reading and writing the literary Braille code, Nemeth mathematics code, and format. Overview of other codes and basic signing skills for nonverbal communication.


5384. Basic Orientation and Mobility Skills (3:3:0). Prerequisite: EDSP 5300. Exploration of space in the home and school environment and the wider community according to individual needs; appreciation and understanding of professional mobility instruction programs.


5387. Advanced Orientation and Mobility Training for Multihandicapped and Blind (3:3:0). Prerequisite: EDSP 5386. Advanced orientation and mobility teaching techniques for travel in independent settings for multihandicapped and blind students.

5388. Programs and Services for Students With Dual Sensory Impairments (3:3:0). Psychological, sociological, and educational implications of dual sensory impairments in children and youth, including appropriate community, educational, and social services.

5389. Methods and Materials for Teaching Students With Dual Sensory Impairments (3:3:0). Curricular adaptations and additions for students with dual sensory impairments. Emphasis on functional communication, behavior management, and training for independent living and employment.

5390. Seminar in Special Education (3:3:0). Recent research practices and problem areas in special education. May be repeated for credit.

6000. Master’s Thesis (V1-6).

6301. Leadership Issues With Special Populations (3:3:0). Prerequisite: Admission to doctoral program. Preparation of leaders in Special Education through analysis of research and critical issues, professional writing and speaking, and grant preparation. May be repeated for credit.

6303. Physical and Psychological Aspects of Special Populations (3:3:0). Preparation of graduate students to understand physical and psychological backgrounds of people with disabilities.

6304. Preparing Leadership Personnel for Special Populations (3:3:0). Course will prepare doctoral level students to develop a leadership and managerial style and to effectively develop, implement, and evaluate preservice and in-service programs for adults.

7000. Research (V1-12).

8000. Doctor’s Dissertation (V1-12).
College of Engineering

Pamela Eibeck, Ph.D., Dean
100 Engineering | Box 43103 | Lubbock, TX 79409-3103
T 806.742.3451 | F 806.742.3493 | www.coe.ttu.edu

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About the College
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.

Undergraduate Program
The college 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.

The college 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. 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 advancing to a pattern of lifelong learning.

The Bachelor of Science degree programs in chemical engineering, civil engineering, computer engineering, electrical engineering, engineering physics, industrial engineering, mechanical engineering, and petroleum engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, 410.347.7700. The three engineering technology programs—construction, electrical-electronics, and mechanical—lead to a Bachelor of Science in Engineering Technology degree and are accredited by the Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, 410.347.7700.

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 and Environmental Engineering. The option of a nonABET accredited Bachelor of Science in Environmental Engineering is available to Master of Environmental Engineering students.

A degree in computer science is offered by the Department of Computer Science and 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.

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 and Environmental Engineering Department coordinates the program for the College of Engineering.

The College of Engineering is divided into instructional departments that offer coursework 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.

**150-Hour Dual Degree.** The College of Engineering 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.

**Interdepartment Degree Plans.** The College 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, 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 30 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 coursework 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.

**Departmental 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.

**Engineering Minor.** The College of Engineering offers an engineering minor for students enrolled in academic programs outside of the college. This minor consists of a minimum of 18 hours of engineering coursework with at least 6 hours completed at the junior level or above (3000- or 4000-level courses). The academic dean of the College of Engineering must approve all programs of study for this minor.

**Bioengineering Minor.** A minor in bioengineering is available to students enrolled in any College of Engineering degree program. This minor consists of four required preparatory courses (in biology, chemistry, and statistics), one course in a bioengineering core area (biomechanics, biochemical engineering, or bioinstrumentation), and two approved bioengineering elective courses. Students who wish to pursue this minor should see their advisor or the academic dean.

**Joint Business/Engineering Certificate in Technology Entrepreneurship.** The purpose of the Certificate in Technology Entrepreneurship (CTE) is to prepare students majoring in either engineering or business careers in technology-driven industries. The certificate program is designed for those students who would like to develop a cross-disciplinary perspective of technology using both engineering and business skills.

**Undergraduate Certificate in Technology Entrepreneurship (coupled with a B.S. in Engineering or a Bachelor of Business Administration) — 9 total hours required**

- Required Business Foundation Course for **Engineering Students:** B A 3302, Financial and Managerial Accounting ................................................... 3 hrs.
- Required Business Foundation Course for **Business Students:** I E 4320, Fundamentals of Systems .. 3 hrs.
- Required Courses for All Certificate Program Students:
  - MGT 4376, Entrepreneurship II: Discovering Entrepreneurial Opportunity ........................................... 3 hrs.

**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.

**Dynamic Enrollment Management Plan (DEMP).** The college uses a dynamic enrollment management plan to control quality and enrollments in upper-level classes. The set points of GPA and details of implementation vary by department. Some departments, for example, require a GPA of 2.5 or higher to continue into upper-level classes or to transfer into the department. Students should see their department advisor and understand the requirements for their major.

**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.

**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.

**Admission Requirements.** Students meeting the admissions requirements of the university will be admitted to any major within the college with the exception of mechanical engineering and petroleum engineering. These majors may have more stringent admissions requirements than the rest of the college. Students interested in these majors should refer to the departmental sections of the catalog under the sections describing freshman admission and transfer admission. Students admitted to the College of Engineering, but not into the department of their choice, may choose engineering undeclared as a major while they attempt to fulfill the additional admissions requirements.
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 admission prior to their first enrollment to avoid losing credit. A listing of Core Curriculum requirements is in the Undergraduate Academics section of this catalog.

Computer. All students in the college are expected to have access to a personal computer. Many instructors require students to transfer homework with email. Some instructors 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 recommendations.

Maximum Course Load. A normal course load is 15-19 credit hours. 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. Students who work should adjust their course load accordingly. Check with the dean's office for recommendations.

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.

Graduate Program
The College of Engineering offers programs of instruction and research leading to the Master of Science and the Doctor of Philosophy degrees with majors in chemical, civil, computer science, electrical, industrial, mechanical, and petroleum engineering. A Master of Science in Environmental Technology Management degree and a Master of Environmental Engineering degree are offered in the Department of Civil and Environmental Engineering. The Department of Industrial Engineering offers a Master of Science in Systems and Engineering Management. The general regulations governing the graduate programs at Texas Tech University apply to these degrees.

In addition to the above degree programs, work leading to the Master of Engineering degree is offered with the entire graduate faculty of the college participating. The program leading to the Master of Engineering degree does not specify an area of specialization and does not require a thesis. The program is designed primarily for practicing engineers. For such practicing engineers credit for graduate coursework completed in residence at another accredited graduate school may be accepted for as much as 15 hours of the 36 semester hour requirement for the Master of Engineering degree. All work credited toward the degree must be completed within nine calendar years. Under certain circumstances, regular on-campus students may be admitted to the undifferentiated Master of Engineering degree program. (In such cases, the regular six-year time limit will apply.) In addition to the regulations governing admission to the Graduate School, a baccalaureate degree in engineering, or its equivalent, is required for entrance to the Master of Engineering program. The student may be required to take (without graduate credit) such undergraduate leveling courses as may be designated by the college.

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 Distance Education 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. Each department evaluates transfer courses associated with courses taught in their department.

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 1312, 2351, and 2311.

Basic Science and Mathematics Requirements. If a student receives advanced placement in a mathematics course (on the basis of high school mathematics classes, MAE, 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. If a student earns a D or F grade in a prerequisite to a required course, the student must retake the prerequisite course and complete a grade of C or better before enrolling in the required course.

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. Subse-
Department of Chemical Engineering

Faculty

M. Nazmul Karim, Ph.D., Chairperson

Horn Professor: McKenna
Professors: Hoo, Karim, Mann, Riggs, Simon
Associate Professors: Dai, Leggoe, Vaughn, Wiesner
Assistant Professors: Khare, Weeks

About the Program

This department supervises the following degree programs:

- Bachelor of Science in Chemical Engineering
- Master of Science in Chemical Engineering
- Doctor of Philosophy in Chemical Engineering

Program Educational Objectives. 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, professional, and academic environments, and (3) to develop graduates with a strong sense of ethics and professionalism and the ability to succeed as both individual and team contributors.

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 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, plastics production, basic chemicals, petrochemicals, pharmaceuticals, metals, 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 MatLab 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. 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 coursework.

### Undergraduate Program

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.

If a student earns a D or F grade in a prerequisite to a required course, the student must retake the prerequisite course and complete it with a grade of C or better before enrolling in the required course. 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. Students who have not achieved a grade of C or better after two attempts (including withdrawals) in a required chemical engineering course must apply for readmission to the program.

**Assessment.** The department uses outcome assessment to monitor quality. Students should expect periodic assessment of technical competence in addition to those activities contributing to course grades.

**Transfer Admissions.** 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 GPA.

**Scholarships.** In addition to scholarships offered through the university’s Financial Aid Office and the College of Engineering, the Chemical Engineering Department also offers scholarships to qualified students.

**Curriculum.** The first curriculum table in this section 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. Specification of prerequisites implies all prior prerequisites must have been met. Oral communication is included in CH E 2306 and 4555. Writing intensive courses include CH E 1121, 2306, 3232, 4232, and 4555. The second curriculum table gives a 10-semester sequence for the joint chemical engineering and computer science B.S. degrees. The courses in the table are required and must be taken in the order shown. The remaining Core Curriculum requirements and chemistry electives can be taken as the student's load permits. Several substitutions are made in the B.S.Ch.E. curriculum: C S 1411 is substituted for CH E 1305, seven of the C S hours at the junior level or higher are substituted for CH E 3330 and for four hours of chemistry electives, and I E 3301 is counted toward the Core Curriculum Group and Individual Behavior requirement.

Several substitutions are also made in the B.S.C.S. curriculum: CH E 2306 is substituted for ENGL 2311 and COMS 3358, CH E 3343 is substituted for the Mathematical Probability and Statistics elective, and CH E 3353/4153 are substituted for a computer science elective, and two required CH E courses at the junior level or higher are substituted for the technical or professional development electives.

The department also offers a combined Bachelor of Science and Master of Science curriculum in which completion of degree requirements leads to the award of two degrees (see curriculum table).

**Minors.** Along with the B.S.Ch.E. degree, 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 polymers and materials is offered by the department. The department participates in the college-wide minor in bioengineering (see page 239). A minor in chemistry or mathematics can also be earned with very few additional hours.

A minor in chemical engineering consists of 18 or more hours in chemical engineering courses, including CH E 2410, 2421, 3315, 3322, and 3326. Prerequisites for all of these courses will be enforced.

The minor in polymers and materials 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 MTCE 3441). The remaining four courses should be selected from the following list:

- CHEM 3306 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 3381 VLSI Processing
- M E 3328 Materials and Mechanics Laboratory
- M E 4341 Materials in Design
- M E 4344 Manufacturing Processes for Engineering Materials

### Chemical Engineering (CH E)

*(To interpret course descriptions, see page 8)*

#### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CHEM 3306</td>
<td>Organic Chemistry II</td>
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<tr>
<td>CHEM 4310</td>
<td>Polymer Chemistry</td>
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<td>CH E 4340</td>
<td>Polymer Processing</td>
</tr>
<tr>
<td>CH E 4341</td>
<td>Polymerization Engineering</td>
</tr>
<tr>
<td>CH E 4342</td>
<td>Polymer Physics and Engineering</td>
</tr>
<tr>
<td>CH E 4345</td>
<td>Dynamics of Polymeric and Nonlinear Fluids</td>
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<td>CH E 4346</td>
<td>Polymer Viscoelasticity</td>
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<td>E E 3381</td>
<td>VLSI Processing</td>
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<td>M E 3328</td>
<td>Materials and Mechanics Laboratory</td>
</tr>
<tr>
<td>M E 4341</td>
<td>Materials in Design</td>
</tr>
<tr>
<td>M E 4344</td>
<td>Manufacturing Processes for Engineering Materials</td>
</tr>
</tbody>
</table>

1121. Chemical Engineering Seminar (1:1:0). Readings and discussion of the chemical engineering profession; history, ethics, career paths, and research opportunities. (Writing Intensive)

1305. Engineering Analysis I (3:2:3). Synthesis and analysis of typical engineering problems emphasizing the use of computing tools, spreadsheet and compiler programming.


2410. Introduction to Chemical Process (4:4:0). Prerequisite: CHEM 1307, PHYS 1408, MATH 1351, ENGL 1301. Units and conversions, process variables, material and energy balances, process flow sheet analysis, phase equilibrium, elementary transient balances.


3232. Chemical Engineering Transport Laboratory (2:0:6). Prerequisite: CH E 2306, 3315 and 3326; corequisite: CH E 3341. Experiments in mass, momentum, and heat transport; statistical analysis of data. (Writing Intensive)


3326. Heat Transfer (3:3:0). Prerequisite: CH E 2421 and MATH 3350. Principles of energy transport. Application to heat con-
Curriculum for Bachelor of Science in Chemical Engineering

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1351, Calculus I*</td>
<td>MATH 1352, Calculus II</td>
</tr>
<tr>
<td>CHEM 1307 &amp; 1107, Prin. of Chem. II**</td>
<td>CHEM 1308 &amp; 1108, Prin. Chem. II</td>
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**SECOND YEAR**

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<tr>
<td>CHEM 3305 &amp; 3105, Org. Chem. I</td>
<td>CHEM 3315, Fluid Mechanics</td>
</tr>
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<td><strong>TOTAL</strong> 10</td>
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**THIRD YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH E 3315, Fluid Mechanics</td>
<td>CHEM 3308 &amp; 3108, Phys. Chem. II</td>
</tr>
<tr>
<td>CH E 3326, Heat Transfer</td>
<td>CH E 3323, Transport Lab.</td>
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<td><strong>TOTAL</strong> 3</td>
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**FOURTH YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>CH E 4322, Unit Oper. Lab.</td>
<td>CH E 4153, Process Control Lab.</td>
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<tr>
<td>Chemical Engineering Elective</td>
<td>Chemical Engineering Elective</td>
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<td>I E 3301, Engr. Econ. Anal.</td>
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<td><strong>TOTAL</strong> 11</td>
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**Critical-Path Hours—97**

**Additional Requirements:**

- American Government: 6
- U.S. History: 6
- Chemistry Elective: 3
- Visual and Performing Arts: 3
- Humanities/Multicultural: 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 1408. 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.

Curriculum for Joint Bachelor of Science in Chemical Engineering and Computer Science

**FIRST YEAR**

<table>
<thead>
<tr>
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<th>Spring</th>
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<tbody>
<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
<td>MATH 1352, Calculus II</td>
</tr>
<tr>
<td>CHEM 1307, Calculus I*</td>
<td>CHEM 1308 &amp;1108, Org. Chem. I</td>
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<tr>
<td>C S 1411, Programming Princ. I</td>
<td>C S 2413, Data Structures</td>
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**SECOND YEAR**

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<tr>
<td>MATH 2350, Calc. III</td>
<td>MATH 2360, Linear Algebra</td>
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<tr>
<td>PHYS 2401, Prin. of Phys. II</td>
<td>CHE M 3305 &amp; 3105, Org. Chem. I</td>
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**THIRD YEAR**

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**FOURTH YEAR**

<table>
<thead>
<tr>
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<th>Spring</th>
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<tbody>
<tr>
<td>C S 3383, Theory Automata</td>
<td>C S 3375, Comp. Architecture</td>
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<td>CHEM 3301 before enrolling in PHYS 1408. A high school physics course and a year of calculus are recommended as adequate preparation.</td>
<td>C S 3352, Intro. Systems Program.</td>
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**FIFTH YEAR**

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<tr>
<td>CH E 4322, Unit Oper. Lab.</td>
<td>CH E 4153, Process Control Lab.</td>
</tr>
<tr>
<td>CH E 4323, Reactor Design</td>
<td>CH E 4372, Engr. Exp.</td>
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<tr>
<td>C S 3365, Software Eng.</td>
<td>C S 3375, Comp. Architecture</td>
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**Critical-Path Hours—137**

**Additional Requirements:**

- American Government: 6
- U.S. History: 6
- Chemistry Elective: 3
- Visual and Performing Arts: 3
- Humanities/Multicultural: 3

Minimum hours required for graduation—155

* 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 1408. 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 one laboratory course from approved sophomore or higher courses.

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3330. **Engineering Materials Science (3:3:0).** Prerequisite: CH E 3322 or CHEM 3307 and 3305. Engineering properties of metals, ceramics, and polymers; molecular, crystal, and microstructure configurations; selection of materials for applications.

3341. **Mass-Transfer Operations (3:3:0).** Prerequisite: CH E 3322. Theory and practice of mass transfer. Particular emphasis on the operations of distillation, absorption, and extraction.

3353. **Process Control (3:3:0).** Prerequisite: CH E 3315 and 3326 and MATH 3350 or 3354. Study of the principles of process dynamics and control and their applications to feedback control.

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 3353. Experiments with control equipment and the minicomputer. Professional practice course.

4232. **Unit Operations Laboratory (2:0:6).** Prerequisite: CH E 3322 and 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. (Writing Intensive)

4323. **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.

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 thermostet polymers: The science and art of manufacturing with plastic materials.
Curriculum for Combined Bachelor of Science and Master of Science in Chemical Engineering

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
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</thead>
<tbody>
<tr>
<td><strong>FIRST YEAR</strong></td>
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<tr>
<td><strong>Fall</strong></td>
<td><strong>Spring</strong></td>
</tr>
<tr>
<td>MATH 1351, Calculus I*</td>
<td>MATH 1352, Calculus II</td>
</tr>
<tr>
<td>CHEM 1307 &amp;1107, Chem. II**</td>
<td>CHEM 1308 &amp;1108, Chem. II</td>
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<td>PHYS 1408, Prin. of Phys. I***</td>
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<tr>
<td><strong>Fall</strong></td>
<td><strong>Spring</strong></td>
</tr>
<tr>
<td>PHYS 2401, Prin. of Phys. II</td>
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<td><strong>THIRD YEAR</strong></td>
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</tr>
<tr>
<td><strong>Fall</strong></td>
<td><strong>Spring</strong></td>
</tr>
<tr>
<td>CH E 3315, Fluid Mechanics</td>
<td>CHEM 3308 &amp; 3108, Chem. II</td>
</tr>
<tr>
<td>CH E 3326, Heat Transfer</td>
<td>CH E 3323, Transport Lab.</td>
</tr>
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<td><strong>TOTAL</strong></td>
<td>CH E 3341, Mass-Trans. Oper.</td>
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<td>9</td>
<td>CH E 3353, Process Control</td>
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<tr>
<td><strong>FOURTH YEAR</strong></td>
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<tr>
<td><strong>Fall</strong></td>
<td><strong>Spring</strong></td>
</tr>
<tr>
<td>CH E 4232, Unit Oper. Lab.</td>
<td>CH E 4153, Process Control Lab.</td>
</tr>
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<td>Graduate Core Course+</td>
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<td>I E 3301, Engr. Econ. Anal.</td>
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<td><strong>FIFTH YEAR</strong></td>
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<tr>
<td><strong>Fall</strong></td>
<td><strong>Spring</strong></td>
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<tr>
<td>CH E 5721, Graduate Seminar</td>
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<tr>
<td>Graduate Elective Course++</td>
<td>CH E 6000, Master’s Thesis</td>
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Critical-Path Hours—118

Additional Requirements:

- American Government: 6
- Humanities/Multicultural††: 3
- U.S. History: 6
- Chemistry Electives#: 8
- Visual and Performing Arts$: 3
- Group or Individual Behavior†: 3
- Minimum hours required for graduation—152

* 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 1408. 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.
+ Choose from the five graduate core courses: CH E 5310, 5312, 5321, 5323, or 5343.
++ One graduate level elective must be a CH E course, the other two may be in any area of engineering, science, or mathematics.

Graduate Program

The master's program is a structured program requiring five core courses: CE 5310, 5312, 5321, 5323, and 5343. The graduate student will be required to take one additional chemical engineering course and at least two other courses as specified by his or her advisory committee. A written thesis and a minimum of 24 hours of graduate-level coursework, exclusive of thesis and seminar, are required for the master's degree. In addition, a final oral exam in defense of the completed thesis will be administered by the candidate's thesis committee.

The master's program may also be completed without a thesis. Entry into the nonthesis option must be approved by the departmental graduate committee. This program is intended for graduate students in the college-sponsored International Exchange Program and for new students with more than five years industrial experience. Graduate students in this nonthesis option are required to take 36 credit hours of graduate coursework, exclusive of seminars. The coursework for each student must meet approval of the department's graduate committee. Students must obtain approval from the department before registering for required graduate courses.

In addition to regulations established by the Graduate School, applicants for candidacy for the doctor's degree are required to demonstrate high proficiency in a single research area. Certification of the research proficiency will be based on a record of accomplished research that demonstrates the required level of competence in the research area. The record must be substantiated by published articles, final research reports, or papers presented at meetings of learned societies.

All master's students and doctoral candidates are required to register for CH E 7121, 7122, 7123, or 7124 each long semester unless exempted by the chairperson. Seminar courses do not count toward fulfilling credit hour requirements.
**Graduate Courses**

5000. Advanced Topics in Chemical Engineering (V1-6). Prerequisite: Approval of department chairperson. Individual study of topics of current interest under the guidance of a member of the staff. May be repeated for credit on different topics.

5121. Graduate Seminar (1:1:0). Prerequisite: Senior standing in science or engineering or consent of instructor. The cost, availability, and processing requirements for each student are determined by the instructor. May be repeated for credit.

5316. Linear Chemical Process Control Theory (3:3:0). Prerequisite: CH E 4353, 5310, or equivalent. Linear systems theory is employed to analyze models of chemical and chemical-related processes and to design stable controllers.

5317. Chemical Process Model-Based Control (3:3:0). Prerequisite: CH E 5316 or equivalent. Different model descriptions of chemical and related processes are identified and analyzed for the synthesis of predictive, stable, and optimal control systems.

5321. Advanced Chemical Engineering Thermodynamics (3:3:0). In-depth study of fundamental laws of thermodynamics, property relations for pure materials and mixtures, and phase and chemical equilibrium principles.

5323. Digital Computation for Chemical Engineers (3:3:0). The development of current numerical methods for application to modeling of chemical engineering systems. Primary emphasis is placed upon steady-state and unsteady-state chemical reaction systems.

5335. Advanced Transport Phenomena (3:3:0). Prerequisite: CH E 5312 and 5310 or consent of instructor. Tensor analysis; partial differential equations for multicomponent fluid mixtures; two-phase flow problems; and interfacial transport.

5340. Polymer Processing (3:3:0). Polymer processing and fabrication technology for thermoplastic and thermoset polymers. The science and art of manufacturing with plastic materials.

5341. Polymer Chemistry and Processing (3:3:0). Polymerization reactions, mechanisms, and kinetics, large-scale synthesis, scale-up of polymer processing, and fabrication technology.


5344. Polymers and Materials Laboratory (3:2:3). Synthesis and properties of materials, including polymers, polymerization, transitions, phase separation, mechanical properties, and processing.

5345. Dynamics of Polymeric and Nonlinear Fluids (3:3:0). Observed phenomena in polymeric and multiphase flow systems; viscometry and viscoelastic measurements for nonlinear fluids; rheological models; analytical solutions to flow problems; and dimensional analysis.


5348. Materials Applications for Scanning Probe Microscopy (3:3:0). The science and technology of scanning probe techniques, including scanning tunneling microscopy, near field scanning optical microscopy, and atomic force microscopy, applied to materials characterization.


5360. Advanced Industrial Waste Treatment (3:3:0). Advanced methods for treating industrial wastes and remediating previously contaminated sites are of increasing importance to industry and to society. This course will detail the ways to evaluate the many proposed treatment methods. They will be evaluated in terms of science, engineering science, operability, costs, and credentials of the developer. Actual proposed processes will be used as examples.


5364. Chemical Engineering Applications in Biological Systems (3:3:0). Prerequisite: MATH 3350 or 3354. Transport phenomena and chemical reactions at the molecular and cellular level in biological systems.

5372. Engineering Experimentation (3:3:0). Course emphasizes strategy in experimentation, planning efficient experiments, analyzing and interpreting data, presenting results, and Six Sigma methodology.


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^ The master's program is a structured program requiring the five core courses denoted by asterisks.
Department of Civil and Environmental Engineering

Faculty

H. Scott Norville, Ph.D., Chairperson

Horn Professor: Mehta
Professors: Borrelli, Fedler, Kiesling, Letchford, Norville, Rainwater, J. Smith, Swift, Sweazy

Associate Professors: Jackson, Jayawickrama, Ramsey, Senadheera, D. Smith

Assistant Professors: Budek, Chen, Lawson, Liu, McEnery, Morse, Newhouse, Zuo

About the Program

This department supervises the following degree programs:

- Bachelor of Science in Civil Engineering
- Bachelor of Science in Environmental Engineering
- Master of Science in Civil Engineering
- Master of Environmental Engineering
- Master of Science in Environmental Technology Management
- Doctor of Philosophy in Civil Engineering

Mission. 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.
- 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.

Program Educational Objectives. The faculty members strive to achieve the following objectives for their graduates:

- Graduates will progress to professional registration.
- Graduates will develop professionally through participation and leadership in professional organizations.
- Graduates will pursue lifelong learning through continuing education or postgraduate education.
- Graduates will be capable of diverse career paths in industry, consulting, and government.

Undergraduate Program

The Civil and Environmental 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 and Environmental Engineering. Forms and information pertaining to departmental regulations are available in the Department of Civil and Environmental Engineering. Professors and instructors reserve the right to restrict the use and type of calculators used during class hours and tests.

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.

Civil Engineering (C E)

(To interpret course descriptions, see page 8.)

Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisite</th>
<th>Corequisite</th>
</tr>
</thead>
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<td>5381</td>
<td>Statistical Mechanics for Chemical Engineers (3:3:0)</td>
<td>CH E 5321</td>
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<td>5382</td>
<td>Methods of Molecular Simulations (3:3:0)</td>
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<td>5615</td>
<td>Topics in Process Engineering and Intelligent Control (6:3:9)</td>
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<td>5635</td>
<td>Advanced Topics in Transport Phenomena (6:3:9)</td>
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<td>5640</td>
<td>Topics in Polymer and Materials Science (6:3:9)</td>
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<td>5660</td>
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<td>6000</td>
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<td>7121</td>
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<td>7122</td>
<td>Polymer and Materials Seminar (1:1:0)</td>
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<td>Bioengineering Seminar (1:1:0)</td>
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<td>7124</td>
<td>Process Control and Engineering Seminar (1:1:0)</td>
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Bachelor of Science in Civil Engineering Curriculum

**FIRST YEAR**

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<tbody>
<tr>
<td>MATH 1351, Calculus I</td>
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<td>ENGL 1301, Ess. Coll. Rhetoric</td>
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<td>HIST 2300, U.S. Hist. to 1877</td>
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<tr>
<td>C E 1100, Civil Engr. Seminar I</td>
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<td>E GR 1207, Engr. Graphics</td>
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<td>CHEM 1307, Prin. of Chem. I</td>
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<td>CHEM 1107, Prin. of Chem. (Lab.)</td>
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**SECOND YEAR**

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<td>MATH 2350, Calc. III</td>
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<td>PHYS 2401 or E E 3301</td>
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<td>C E 2301, Statics</td>
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<td>C E 3305, Mech. of Fluids Lab.</td>
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<td>POLS 1301, Amer. Govt., Org.</td>
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<td>C E 2101, Construction Matls.</td>
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**THIRD YEAR**

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<tr>
<td>C E 3340, Struct. Anal. I</td>
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<tr>
<td>C E 3354, Intro. to Hydrology</td>
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<tr>
<td>C E 3309, Engr. Engr.</td>
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<td>C E 3171, Engr. Engr. Lab.</td>
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<td>C E 3105, Mech. of Fluids Lab.</td>
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<tr>
<td>C E 3103, Mech. of Solids Lab.</td>
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<tr>
<td>HIST 2301, U.S. Hist. Since 1877</td>
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**FOURTH YEAR**

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<tr>
<td>C E 4343, Des. Conc. Struct.</td>
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<td>C E 4202, Engr. Ethics &amp; Prof.</td>
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<td>Tech. Writing/Oral Comm.**</td>
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<td>E C 4361, Transport. Engr.</td>
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<tr>
<td>Elective (Humanities)+</td>
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<td>Sr. Elective++</td>
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Minimum hours required for graduation—126

* 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.

Master of Environmental Engineering Curriculum

**FIRST YEAR**

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<tbody>
<tr>
<td>MATH 1351, Calc. I</td>
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<td>ENGL 1301, Ess. Coll. Rhetoric</td>
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**SECOND YEAR**

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<td>PHYS 1408, Prin. of Phys. I</td>
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<td>CHEM 3305, Org. Chemistry I</td>
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<td>BIOL 4103, Biology I</td>
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<tr>
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**THIRD YEAR**

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<tr>
<td>Stats*</td>
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<td>C E 3309, Envir. Engr.</td>
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<tr>
<td>C E 3303, Mech. of Solids</td>
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<tr>
<td>C E 3354, Engr. Hydrology</td>
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<tr>
<td>Engr. Communication***</td>
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**FOURTH YEAR**

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<th>Spring</th>
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<tbody>
<tr>
<td>C E 4353, Design of Hydraulic Systems</td>
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<tr>
<td>C E 4105, Mech. of Fluids Lab.</td>
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<td>ENVE 4390, Water-Wastewater</td>
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<tr>
<td>ENVE 4370 Phy./Chem. Mun. WW Trt.</td>
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<td>ENVE 4385, Micro Appl. in Env. Engr.</td>
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<td>C E 4292, Engr. Ethics and Prof.</td>
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**FIFTH YEAR**

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<tr>
<td>C E 5364, Groundwater Transp.</td>
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<tr>
<td>ENVE 5305, Env. Sys. Design I</td>
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<tr>
<td>I E 5306, Safety Engineering</td>
<td>3</td>
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<tr>
<td>C E 5360, Open Channel Hydr.</td>
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<tr>
<td>C E 5393, Unit Processes Lab.</td>
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Minimum hours required for graduation—156

* Select I E 3341 or MATH 3342.

** Select environmental science elective such as GEOG 1401, 3301, 3310, GEOL 3323, 3428, ATM 3001, CHEM 3311, 4303, or others with advisor approval.

*** Either PETR 3308 or I E 2331.

† I E 3301 strongly recommended, other courses from Core Curriculum with advisor approval.

‡ Core Curriculum F could be used to meet the multicultural requirement.

# Core Curriculum E should be used to meet multicultural requirement if F was not.

## Choose graduate technical electives from: C E 5327, 5361, 5362, 5365, 5366, 5368, 5383, 5394, 5398, or others with advisor approval.


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.


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. (Writing Intensive)


3440. Structural Analysis I (4:3:3). Prerequisite: C E 3303. Introduction to the analysis of statically determine 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.

4101. Application of Engineering Fundamentals (1:1:0). Prerequisite: Students must be within two long semesters of
College of Engineering

Graduate Courses

5101. Civil Engineering Seminar (1:1:0). Individual study of engineering problems of special interest and value to the student.


5311. Advanced Mechanics of Solids (3:3:0). Stress and strain at a point; theories of failure; unsymmetrical bending; curved flexural members; beams on continuous support; experimental and energy methods.

5312. Theory of Elastic Stability (3:3:0). Theory of the conditions governing the stability of structural members and determination of critical loads for various types of members and structural systems.

5314. Theory of Plates and Shells (3:3:0). Stress analysis of plates and shells of various shapes; small and large deflection theory of plates; membrane analysis of shells; general theory of shells.

5316. Theory of Elasticity (3:3:0). Analysis of stress and strain; equilibrium and compatibility equations; plane stress, plane strain, and axisymmetric problems; torsion of noncircular shafts; finite difference and finite element methods; energy principles.

5318. Finite Element Methods in Continuum Mechanics (3:3:0). Prerequisite: C E 5310 and 5311 or consent of instructor. Theory of the finite element method-constant strain elements; plane stress or strain for axisymmetric problems; application to plates and shells, torsion, heat transfer and seepage problems.


5321. Advanced Soil Engineering I (3:3:0). Prerequisite: C E 5321 or equivalent, or consent of instructor. Introduction to physio-chemical properties of soils; soil structure; soil classification; permeability; principle of effective stress; stress-deformation; stress paths and strength characteristics; partly saturated soils; advanced consolidation theory; secondary consolidation; field instrumentation.

5322. Advanced Foundation Engineering (3:3:0). Prerequisite: Computer programming skills and consent of instructor. Advanced foundation engineering theory and practice, bearing capacity, settlement analysis, piles and pile groups, drilled piles, wave equation analysis.

5325. Soil-Structure Interaction (3:3:0). Prerequisite: C E 5310 and 5311 or consent of instructor. Numerical methods for beam on elastic foundation; piles and pile groups; laterally-loaded piles; slab on elastic foundation.

5326. Analysis and Design of Earth Structures (3:3:0). Prerequisite: C E 5321 or consent of instructor. Principles of stability analysis and design as applied to earth dams, embankments, fills, cuts, and natural slopes; pore pressure considerations; initial and long-term stability.

5327. Geotechnical Practice for Waste Disposal (3:3:0). Review of government regulations; risk assessment; site investigation techniques; design and installation of land fills; land treatment; toxic waste handling.

5329. Advanced Design of Bridge Structures (3:3:0). Prerequisite: C E 4329 or consent of instructor. Advanced structural design of highway/roadway/guideway bridges using the LRFD design method.

5331. Advanced Work in Specific Fields (3:3:0). Nature of course depends on the student’s interest and needs. May be repeated for credit.

5333. Advanced Work in Water Resources (3:3:0). Individual studies in advanced water resources. May be repeated for credit.


5341. Wind Engineering Laboratory (3:2:3). Prerequisite: C E 5346. Introduction to instrumentation, design of experiments, data analysis, and interpretation for full and model scale wind engineering applications.

5342. Advanced Design of Steel Structures (3:3:0). Prerequisite: C E 4343 or consent of instructor. Advanced design of structures, utilizing LRFD design concepts.

5343. Advanced Reinforced Concrete Design (3:3:0). Prerequisite: C E 4343 or consent of instructor. Understanding advanced concrete design concepts and discussion of new concrete material technology.

5346. Structural Dynamics I (3:3:0). Dynamic response of single and multidegree of freedom systems; modal analysis of lumped and continuous mass systems.

5347. Structural Dynamics II (3:3:0). Prerequisite: C E 5346 or consent of instructor. Design consideration for structures subjected to time-varying forces including earthquake, wind, and blast loads.

5348. Wind Engineering (3:3:0). Prerequisite: Consent of instructor. Understanding the nature of wind related to wind-structure interaction, and wind loads on structures. Design loads for extreme winds, tornadoes, and hurricanes.


5352. Advanced Pavement Design (3:3:0). Analysis and design of flexible and rigid pavements: pavement type selection; loading; failure criteria and reliability; mechanistic pavement design; design exercises using existing methods.

5353. Pavement Management Systems (3:3:0). Pavement distresses and evaluation, nondestructive testing, back-calculation of layer moduli, pavement performance models, pavement maintenance, rehabilitation, pavement management concepts, existing pavement management systems.

Graduate Program / Civil and Environmental Engineering

For master’s and doctoral degrees in civil engineering, students may choose one or more of several areas of specialization including environmental engineering, water resources engineering, structural engineering, wind engineering, engineering mechanics, geoenvironmental engineering, geotechnical engineering, and highway engineering.

Students with a baccalaureate degree in engineering may enter the graduate program by having their entrance credentials evaluated by both the Graduate School and the department. For applicants with a baccalaureate degree in science or mathematics, certain leveling courses in engineering normally are required. Persons entering the graduate program in civil engineering should consult with a graduate advisor.

Two general plans of study are available for the Master of Science degree: a 30-hour plan that includes 6 hours credit for the master’s thesis and a 36-hour plan that includes 3 hours credit for the master’s report. The decision regarding which plan to follow is made jointly by the student and faculty advisor.

The master's degree in environmental engineering is an ABET accredited freshman-to-master's degree program specializing in environmental engineering. It is a design-oriented program that culminates in a comprehensive design problem rather than a research-oriented thesis.

Students in the master’s program in environmental technology management may choose one or more of six areas of specialization: environmental technology management, land quality, water quality, hazardous and toxic waste, solid waste, and air quality. Course selection will be from several engineering and science disciplines. Certain leveling courses may be required for students entering the environmental technology and management program with a baccalaureate degree in science, mathematics, or technology. For acceptance into the degree program, students must have their entrance credentials evaluated by both the Graduate School and the department. The required undergraduate course prerequisites are MATH 1351, 2350, BIOL 1403, CHEM 1307 and 1107, 1308 and 1108, and ECO 2301 or their equivalents. In addition, students should have the computer skills necessary to do the analytical work required in the program.

Professors and instructors reserve the right to restrict the use and type of calculators used during class hours and tests.

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 five-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 original intentions of the curriculum and program standards 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 www.cc.ttu.edu.
5385. Micro Applications in Environmental Engineering (3:3:0). The course presents information regarding bacterial cell structure and microbial genetics: metabolism and the role of microbes in the design of treatment process; and water wastewater reuse issues.

5390. Water and Wastewater Analysis (3:1:6). Prerequisite: Consent of instructor. Laboratory procedures for the physical, chemical, and biological examination of water, wastewater, and hazardous wastes. Interpretation of water quality data.

5391. Advanced Water Treatment (3:3:0). Water chemistry and microbiology; design procedures for municipal water treatment; advanced methods for quality control, renovation, and reuse.

5392. Conventional Wastewater Treatment Systems (3:3:0). Prerequisite: Consent of instructor. Municipal wastewater treatment methods, including suspended and attached growth biological systems, nitrification and denitrification, sludge stabilization, treated effluent, and sludge disposal.

5393. Unit Processes Laboratory (3:0:9). This course demonstrates fundamental equilibrium, kinetic and transport processes to describe basic environmental systems and processes, including design of an experiment relating to these concepts and analysis of data using appropriate models.

5394. Natural Systems for Wastewater Treatment (3:3:0). Examination of tertiary systems for municipal wastewater; natural systems (land application, wetlands, and aquaculture) and modular facilities incorporating unit operations, biological, and chemical processes.

5395. Solid and Hazardous Waste Treatment (3:3:0). Prerequisite: Consent of instructor. Treatment and disposal of municipal and industrial solid and hazardous wastes.


5397. Limnological Aspects of Environmental Engineering (3:2:3). Study of the biological phenomena and physical, chemical interactions that occur in fresh and marine surface waters with emphasis on water pollution control including water quality hazard assessment techniques.

5398. Risk Management and Public Policy (3:3:0). Methods and principles of risk assessment will be examined. Incorporation of these findings into practical risk management programs meeting current policy requirements will be discussed.

6000. Master's Thesis (V1-6).

6330. Master's Report (3).

7000. Research (V1-12).

8000. Doctor's Dissertation (V1-12).

Environmental Engineering (ENVE)

Undergraduate Courses

1100. Environmental Engineering Seminar (1:0:2). Introduction of first year and transfer students to the practice of environmental engineering.

4307. Physical and Chemical Municipal Wastewater Treatment (3:3:0). Prerequisite: C. E. 3309 and consent of instructor. Characterization of municipal wastewaters and the application of physical and chemical design procedures to remove and dispose of criteria pollutants in wastewater.

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.

4385. Microbial Applications in Environmental Engineering (3:3:0). Presents information regarding bacterial cell structure and microbial genetics, metabolism and the role of microbes in the design of treatment processes and water wastewater reuse issues.

4390. Water and Wastewater Analysis (3:1:6). Prerequisite: Junior or senior standing; 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. Biological Municipal Wastewater Treatment (3:3:0). Prerequisite: ENVE 4307, C. E. 3309 or consent of instructor. Municipal wastewater treatment methods, including suspend and attached growth biological systems, nitrification, denitrification, phosphorous removal, sludge stabilization, and treated effluent and sludge disposal.

Graduate Courses

5303. Design of Air Pollution Control Systems (3:3:0). Engineering analysis procedures techniques for the selection, application, and operation of air pollution control methods in various operational situations.

5305, 5306. Environmental Systems Design I, II (3:2:3 each). Student teams evaluate a waste problem, select and develop a treatment alternative in a feasibility study; and then finalize their design selections in technical memorandums.

5307. Advanced Physical and Chemical Municipal Wastewater Treatment (3:3:0). Characterization of municipal wastewaters and the application of physical and chemical design procedures to remove and dispose of criteria pollutants in wastewater.

5310. Principles of Environmental Technology and Management (3:3:0). The magnitude and impacts of the different waste streams produced by man and his activities on the various components of the environment will be examined.

5311. Environmental Systems Models and Information Reporting (3:3:0). Research report will be prepared on the modeling of an environmental system of process. Course stresses the research report as well as modeling techniques.

5399. Biological Municipal Wastewater Treatment (3:3:0). Municipal wastewater treatment methods, including suspend and attached growth biological systems, nitrification, denitrification, phosphorous removal, sludge stabilization, and treated effluent and sludge disposal.
Department of Computer Science

Faculty
Noe Lopez-Benitez, Ph.D., Interim Chairperson

Professors: Cooke, Gelfond, Hewett, Marcy, Sobolewski
Associate Professors: Desrosiers, Lakhani, Lopez-Benitez, Mengel, Pyeatt, Sinzinger, Temkin, Richard Watson, Yu Zhuang

Instructors: Balduccini, Watson
Lecturer: Paniagua

About the Program

The Computer Science department offers the following degree programs:

- Bachelor of Science in Computer Science
- Master of Science in Computer Science
- Master of Science in Software Engineering
- Doctor of Philosophy in Computer Science

The computer science curriculum places a strong emphasis on writing, communications, professional skills, and ethical concerns. The objectives of our programs are to give students a broad-based understanding of the computing discipline and to prepare them for a productive professional career and/or for pursuing advanced degrees in the field. Students are expected to be involved in an exciting learning experience involving both course and lab work to develop problem-solving skills and logical reasoning that can be successfully applied to areas of computer science that involve computational theory, intelligent systems design, and applications.

At the completion of an undergraduate degree, computer science graduates should be familiar with the mathematical foundations of computation, have the ability to apply design techniques and programming practices in the solution of challenging problems, have an understanding of how computer science theory relates to the fundamental workings of contemporary computing, and have a breadth of knowledge in the theory and practice of computer science.

At the completion of a graduate degree, computer science graduates also should have the ability to work in multidisciplinary environments with cross-functional teams, perform modeling and experimental analysis on challenging research problems, and investigate current advances in computing research for the purpose of making innovative contributions that are particularly expected at the Ph.D. level.

Undergraduate Program

All students entering the computer science degree program are expected to follow the sequence of courses shown in the curriculum table in this section 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 coursework 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 consists of C S 1411, 1412, 2413 and three of the following courses: C S 1382, 3361, 3364, 3383.

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 (CHCS) dual-degree 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 on the following pages; 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 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 the combined degree program 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 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 (C S)

(To interpret course descriptions, see page 8.)

Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1300</td>
<td>[COSC 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.</td>
</tr>
<tr>
<td>1303</td>
<td>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.</td>
</tr>
<tr>
<td>1305</td>
<td>[COSC 1301, 1401] Introduction to Computer Science (3:3:0). An introduction to the field of computer science for majors. Computer ethics issues facing computer science professionals are addressed. Students will also learn concepts of computer programming with an emphasis on problem solving, critical thinking, logical reasoning, design and implementation techniques.</td>
</tr>
<tr>
<td>1382</td>
<td>Discrete Computational Structures (3:3:0). Prerequisite: C S 1411. Sets, functions, counting principles, basic probability, logic, proof methods, and graphs.</td>
</tr>
<tr>
<td>1411</td>
<td>[COSC 1436] Programming Principles I (4:3:3). Prerequisite: Department approval. Procedural programming. Discipline of computer science; analysis, design, implementation, debugging, and testing of software. Introduction to field for majors.</td>
</tr>
<tr>
<td>1412</td>
<td>[COSC 1437] Programming Principles II (4:3:3). Prerequisite: C S 1411. Object-oriented programming with emphasis on evaluation of alternative program design strategies. Class design, recursion, linked, and dynamically allocated structures.</td>
</tr>
<tr>
<td>2350</td>
<td>[COSC 1319, 2319, 2325, 2419, 2425] Computer Organization and Assembly Language Programming (3:3:0). Prerequisite: C S 1412, E E 2372. Introduction to the organization of single-processor computer systems via Assembly Language. Topics addressed include basic concepts of computer architecture and organization, assembly programming, interfacing</td>
</tr>
</tbody>
</table>
assembly with High Level Languages, sub-procedures and macros, I/O devices, interrupts, and multitasking issues.

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.


3352. Introduction to Systems Programming (3:3:0). Prerequisite: C S 2350, C S 2413. Introduction to system software including assemblers, linkers, loaders, and compilers. Other topics addressed include design of utility and networking software, shell programming, and script languages.


3364. Design and Analysis of Algorithms (3:3:0). Prerequisite: C S 1382, 2413, 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, MATH 3342, or equivalent. Introduces theory and practice for software engineering. Topics include software life cycle, requirements, specification and analysis, software architecture and detailed design, implementation, and testing.

Curriculum for Computer Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST YEAR</td>
<td></td>
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</tr>
<tr>
<td>C S 1411, Programming Princ. I</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1351, Calculus I</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1352, Calculus II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 1408, Princ. of Physics I</td>
<td>3</td>
<td>3</td>
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<tr>
<td>PHYS 2401, Princ. Phys. II</td>
<td>3</td>
<td>3</td>
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<tr>
<td>PHYS 2350, Calculus III</td>
<td>3</td>
<td>3</td>
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<tr>
<td>E E 2372, Modern Dig. Sys. Des.</td>
<td>3</td>
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<tr>
<td>Elective (Core Curr.)*</td>
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<td>3</td>
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<tr>
<td>Elective (Core Curr.)*</td>
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<td>3</td>
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<tr>
<td>TOTAL</td>
<td>16</td>
<td>16</td>
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</tbody>
</table>

| SECOND YEAR                    |               |                |
| C S 2413, Data Structures      | 4             | 4              |
| PHYS 1408, Princ. of Physics I | 3             | 3              |
| PHYS 2401, Princ. Phys. II     | 3             | 3              |
| PHYS 2350, Calculus III        | 3             | 3              |
| E E 2372, Modern Dig. Sys. Des.| 3             | 3              |
| Elective (Core Curr.)*         | 3             | 3              |
| Elective (Core Curr.)*         | 3             | 3              |
| TOTAL                           | 16            | 16             |

| THIRD YEAR                     |               |                |
| MATH 3342, Stat. Eng. & Sci.   | 3             | 3              |
| C S 3361, Concepts. Prac. Lang. | 3             | 3              |
| C S 3364, Des. & Anal. Alg.    | 3             | 3              |
| C S 3383, Theory of Automata   | 3             | 3              |
| COMS 3358, Bus. & Prof. Comm.  | 3             | 3              |
| Elective (Core Curr.)*         | 3             | 3              |
| Elective (Core Curr.)*         | 3             | 3              |
| TOTAL                           | 15            | 15             |

| FOURTH YEAR                    |               |                |
| Elective (Core Curr.)*         | 3             | 3              |
| Elective (C S)**               | 3             | 3              |
| Elective (C S)**               | 3             | 3              |
| Elective (C S)**               | 3             | 3              |
| Elective (C S)**               | 3             | 3              |
| TOTAL                           | 15            | 15             |

Minimum hours for graduation—123

- 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.
- Computer Science electives: choose from any 3000- or 4000-level computer science courses that are not required for the C S major.

** 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.

3368. Introduction to Artificial Intelligence (3:3:0). Prerequisite: C S 1382. This course provides introduction to theory, design, and implementation of intelligent systems.


3375. Computer Architecture (3:3:0). Prerequisite: C S 2350. Introduction to the functional components of computer systems; their hardware implementation and management at different levels; their interaction, characteristics, and performance as well as their practical implications for computer programming.


Curriculum for Combined B.S. in Computer Science and M.S. in Software Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>Spring</th>
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</thead>
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<tr>
<td>FIRST YEAR</td>
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<tr>
<td>C S 1411, Programming Princ. I</td>
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</tr>
<tr>
<td>PHYS 2401, Princ. Phys. II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

| SECOND YEAR                     |               |                 |
| MATH 3342, Stat. Eng. & Sci.    | 3             | 3               |
| C S 3361, Concepts. Prac. Lang. | 3             | 3               |
| C S 3364, Des. & Anal. Alg.     | 3             | 3               |
| C S 3383, Theory of Automata    | 3             | 3               |
| COMS 3358, Bus. & Prof. Comm.   | 3             | 3               |
| Elective (Core Curr.)*          | 3             | 3               |
| Elective (Core Curr.)*          | 3             | 3               |
| TOTAL                           | 15            | 15              |

| THIRD YEAR                      |               |                 |
| MATH 3342, Stat. Eng. & Sci.    | 3             | 3               |
| C S 3361, Concepts. Prac. Lang. | 3             | 3               |
| C S 3364, Des. & Anal. Alg.     | 3             | 3               |
| C S 3383, Theory of Automata    | 3             | 3               |
| COMS 3358, Bus. & Prof. Comm.   | 3             | 3               |
| Elective (Core Curr.)*          | 3             | 3               |
| Elective (Core Curr.)*          | 3             | 3               |
| TOTAL                           | 15            | 15              |

| FOURTH YEAR                     |               |                 |
| Elective (S E)†                 | 3             | 3               |
| Elective (S E)†                 | 3             | 3               |
| Elective (S E)†                 | 3             | 3               |
| C S 6000, Master's Thesis^      | 3             | 3               |
| TOTAL                           | 12            | 12              |

Minimum hours for graduation—150

- 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.
- Computer Science electives: Choose from any 3000 or 4000 level computer science courses that are not required for the C S major.
- 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 minor 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.
Deterministic and nondeterministic machines. Pushdown automata and Turing machines. Limits of computability.

### 4000. Special Topics in Computer Science (VI-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 3365, 3364, COMS 3358 or PETR 3308, and 12 additional hours of upper-division computer science coursework and senior standing. For majors only. This is a project-oriented course intended not only to consolidate most theoretical aspects of software engineering, but also to emphasize team work and foster communication skills. Projects are formulated, formally proposed, designed, implemented, tested, documented, and demonstrated.

### 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)

### 4328. Scientific Computing (3:3:0)
Prerequisite: C S 3375 and MATH 2350. Numerical techniques for interpolation, integration, and the solution of systems of algebraic and differential equations with special emphasis on hardware limitations.

### 4352. Operating Systems (3:3:0)
Prerequisite: C S 3352, C S 3364. Concepts and design of different components of operating systems.
Graduate Program / Computer Science

The Department of Computer Sciences offers a number of graduate programs ranging from a Certificate in Software Engineering to a Doctorate of Philosophy. The department has an excellent graduate faculty with research specialties in a variety of areas, including programming language design, logic programming, artificial intelligence, distributed computing, software engineering, computer graphics, data mining, robotics, bioinformatics, and image compression. Further information is provided below and students also should refer to the Graduate School section of the catalog and general rules/regulations for graduate degrees.

Students who do not have a background in computer science are required to take a short series of courses to provide the necessary background knowledge for graduate study in computer science. These courses are required for leveling only; they cannot be counted in satisfying the required hours for graduation. Students in other departments at Texas Tech who wish to transfer to computer science must first complete all leveling courses or show that they have taken the equivalent courses at another university before their application will be considered.

Certificate in Software Engineering

The Certificate in Software Engineering is intended for those who do not need or wish to have a full graduate degree in software engineering or computer science. In particular, the certificate is directed towards working professionals and graduate students in non-computer science majors who are interested in systematic software development. In addition to any leveling requirements, coursework for the certificate requires 12 hours consisting of C S 5373 and 5374 plus two courses from the following list: C S 5332, 5355, 5363, 5377, 5379, 5380, and I E 5320.

Master’s Degree

Two general plans are available for the Master of Science degree: a 30-hour plan that includes 6 hours credit for the master’s thesis and a 36-hour plan that is based solely on coursework and a comprehensive exam. Students who wish to use the 36-hour plan must obtain approval from the departmental graduate advisor within their first semester of study.

The degree plan for students pursuing a Master of Science in Computer Science must include two theory courses (C S 5381, 5383, 5384) and two systems courses (C S 5352, 5375, 5368). Students choosing the 30-hour thesis plan must apply 6 hours of C S 6000 and may apply 3 hours of C S 7000 credit toward their degree. Students choosing the 36-hour nonthesis option may not use C S 6000 or 7000 for credit towards their degree. Aside from these requirements and limitations, master’s students may use any graduate-level computer science course for credit towards their degree except C S 5301, 5302, and 5303.

The degree plan for students pursuing a Master of Science in Software Engineering (M.S.E.) must include C S 5363, 5373, and 5374 as well as elective courses (chosen from C S 5332, 5355, 5377, 5379, 5380, I E 5320, and S E electives) and C S electives (C S graduate courses). Students choosing the 30-hour thesis option must take 6 hours of C S 6000 as well as three elective courses from the S E electives (one course may be substituted with C S 7000) and two courses from C S electives. Students choosing the 36-hour nonthesis option may not use C S 6000 or 7000 towards their degree and must take five elective courses from the S E electives and four courses from the C S electives. The M.S.E. thesis option is not available for distance education students.

Doctoral Program

For the Ph.D. degree, students are required to demonstrate general knowledge in several areas of computer science and proficiency in a single research area. Certification of research proficiency will be based on a record of accomplished research. The record must be substantiated by published articles, technical reports, and papers presented at meetings, workshops, and conferences. The Ph.D. degree requires a minimum of 60 hours of graduate work, not counting dissertation and candidacy exam. If a student has a prior master’s degree in computer science from another institution, up to 30 hours of coursework may be transferred towards the degree requirements.

Topics addressed include process management, scheduling and resource management, file systems, I/O, and security issues.

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.

4379. Parallel and Concurrent Programming (3:3:0). Prerequisite: C S 3352, C S 3364. Introduction to multi-threaded programming, data parallelisms, and message passing techniques. Topics include concurrent and parallel execution environments, user-programmed parallelism, and compiler-based parallelism. Applications addressed involve numerical algorithms familiar to senior-level students.

4391. Special Topics in AI (3:3:0). Prerequisite: Senior standing. In-depth treatment of one or more topics in artificial intelligence. Such topics include robotics, knowledge representation, or automated reasoning.

4392. Computer Networks (3:3:0). Prerequisite: C S 3352. Digital transmission fundamentals, local area networks, network protocols, and common Internet applications.


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.

5000. Practicum of Computing (V1-3). Industrial training in an approved field of graduate studies. Can be used only as an additional requirement on degree program.

5301, 5302. Foundations of Computer Science I, II (3:3:0 each). Prerequisite: Programming proficiency. An accelerated survey of computer science. Computer organization, high level and assembler languages, job control, software design, data structures, file organization, machines, and formal languages. These courses are for leveling purposes and cannot be applied towards course requirements of any C S graduate degree.

5303. Foundations of Computer Engineering (3:3:0). An accelerated introduction to the fundamentals of computer engineering for students without a computer hardware background. Boolean algebra, digital logic, digital devices and functions, digital system design, computer architecture. These courses are for leveling purposes and cannot be applied towards course requirements of any C S graduate degree.


5321. Virtual Reality Fundamentals (3:3:0). The course will cover fundamental principles of virtual reality and development of future virtual reality applications.

5323. Computer Haptics (3:3:0). This course will provide a unified and complete background for the novel force-tactile feedback technology and its use in virtual reality simulations.
5328. Scientific Computing (3:3:0). This course provides an overview of numerical methods that are essential to computing. Topics include matrix computations, statistical methods, numerical integration, and multiresolution methods.

5331. Special Problems in Computer Science (3). Individual studies in advanced computer science and technology.


5341. Pattern Recognition (3:3:0). Traditional and current approaches to the general problem of recognizing patterns in images, signals, and other domains. Includes Bayes decision theory, supervised learning, and nonparametric techniques.

5352. Advanced Operating Systems Design (3:3:0). Prerequisite: C S 3352 and 3364, equivalent, or consent of instructor. Topics on distributed operating systems, such as synchronization, communication, file systems, and memory sharing are discussed. Several programming projects are implemented.

5353. Compiler Construction (3:3:0). Prerequisite: C S 3364, equivalent, or instructor consent. Implementation aspects of compiler construction, automata for formal grammar, semantics of procedural languages, automatic generation of parser, and assembly code generation. A prototype of a compiler is developed.

5355. Real Time and Time Sharing Systems (3:3:0). Prerequisite: C S 3365, 3352, equivalent, or consent of instructor. Study of the functional needs in real time and time sharing systems. Basic techniques and display concepts, random-access fields, computer networks, simultaneous operations, multiprogramming, and multiprocessing.

5356. Advanced Database Management Systems (3:3:0). Prerequisite: C S 3364, equivalent, or consent of instructor. Systems aspects of relational databases are emphasized. Topics include relational database design, index and access structures implementation and performance evaluation, query processing, and optimization, transaction management, and concurrency control.

5357. Multimedia Systems (3:3:0). Prerequisite: C S 3364, equivalent or consent of instructor. Multimedia digital audio processing; image and video data compression; and processing for multimedia presentations. Time-based media representation and synchronization; multimedia communication systems; and hypertext and programming.

5358. Software Studio I (3:3:0). Prerequisite: C S 3365, equivalent, or consent of instructor. Capstone design and implementation experience of a major software project applying comprehensive software engineering techniques.


5363. Software Project Management (3:3:0). Prerequisite: C S 3365, equivalent, or consent of instructor. Explores the principles of software project management and their effective application. Topics include project, risk, process, and resource management and improvement techniques.


5368. Intelligent Systems (3:3:0). Prerequisite: C S 3364 or consent of instructor. Comprehensive introduction to the field of artificially intelligent computer based systems. Theory and applications in artificial intelligence.

5369. Web-Based Software Systems (3:3:0). Prerequisite: C S 3365, equivalent, or consent of instructor. In-depth study of how to engineer Web-based software systems. Topics include process, development, testing, and performance issues.

5373. Software Modeling and Architecture (3:3:0). This course introduces the theory and practice for software development and covers software requirements, analysis, software architecture and detailed design.

5374. Software Verification and Validation (3:3:0). This course introduces how to implement effective test and measurement programs as well as how to apply this knowledge to the production of low-defect software.

5375. Computer Systems Organization and Architecture (3:3:0). Prerequisite: C S 3375 or consent of instructor. Introduction to the architecture, organization, and design of computer systems. Topics include processor, control and memory design, computer arithmetic, I/O, and a brief introduction to multiprocessors.


5377. Distributed Computing (3:3:0). Prerequisite: C S 4352, equivalent, or consent of instructor. Introduction to distributed systems. Topics include communications, distributed operating systems, fault-tolerance, and performance issues. Case studies and term projects supplement this course.

5379. Parallel Processing (3:3:0). Prerequisite: C S 3364 and 3375 or consent of instructor. Introduction to parallel processing in theory, performance evaluation of parallel machine-algorithm ensemble, parallelization techniques of sequential codes, parallel algorithm design, and parallel API.

5380. Fault-Tolerant Computer Systems (3:3:0). Prerequisite: C S 3375 and I E 3341, equivalent, or consent of instructor. Introductory course to methodologies for specifying, designing, and modeling fault-tolerant computer systems. Includes fault classification, design techniques for fault detection and recovery, and reliability modeling techniques.

5381. Analysis of Algorithms (3:3:0). Prerequisite: C S 3364 or equivalent. Theoretical analysis of algorithms for sorting, searching, sets, matrices, etc.; designing efficient algorithms for data structures, recursion, divide-and-conquer, dynamic programming; nondeterministic, NP-completeness and approximation algorithms.

5383. Theory of Automata (3:3:0). Prerequisite: C S 3383, equivalent, or consent of instructor. Structured grammars, relation between grammars and automata, deterministic, and non-deterministic finite automata, push-down store, and linear-bounded automata, and Turing machines.

5384. Logic for Computer Scientists (3:3:0). An introduction to mathematical logic. The course includes proofs of several basic theorems and discusses the application of logic to different areas of computer science.

5388. Neural Networks (3:3:0). Neural network theory, models, and implementation. Applications to real-time systems, robotics, pattern recognition, computer vision, and event driven systems.

5391. A I Robotics (3:3:0). Programming of artificially intelligent robots. Topics include sensing, navigation, path planning, and navigating with uncertainty.

5392. Reinforcement Learning (3:3:0). Introduction to reinforcement learning and Markov decision processes and their applications for making optimal decisions.

8000. Doctor’s Dissertation (V1-12).
Department of Electrical and Computer Engineering

Faculty

Jon G. Bredeson, Ph.D., Chairperson

Horn Professors: Kristiansen, Mitra, and Temkin
Professors: Bredeson, Chao, Gale, Giesselmann, Krompholz, Parten, Trost
Associate Professors: Baker, Dallas, Dickens, Karp, Mankowski, Neuber, Nikishin, Nutter, Saed, Sari-Sarraf, Zieher

Assistant Professors: Bernussi

Research Professor: Cox
Adjunct Faculty: Ishihara, Lu, Storrs, Woolverton

About the Program

This department supervises the following degree programs:

- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Computer Engineering
- Master of Science in Electrical Engineering
- Doctor of Philosophy in Electrical Engineering

Mission. 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 continuous 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:

Electrical Engineering Educational Objectives. In their first few years on the job, graduates of the electrical engineering program at Texas Tech should be able to utilize the knowledge gained from their academic program to:

- Solve important problems in a modern technological society as valuable, productive engineers.
- Enter and succeed in a graduate program.
- Function and communicate effectively, both individually and within multidisciplinary teams.
- Continue the process of lifelong learning.
- Be sensitive to the consequences of their work, both ethically and professionally, for productive professional careers.

Computer Engineering Educational Objectives. In their first few years on the job, graduates of the computer engineering program at Texas Tech should be able to utilize the knowledge gained from their academic program to:

- Identify, analyze and solve computer engineering problems by applying knowledge of mathematics, science, and engineering with modern engineering tools in the specific areas of circuits and systems, electronics, communications, digital systems, microcontrollers, programming, software engineering, design and analysis of algorithms, computer architecture, operating systems, a technical speciality chosen by the student, and electromagnetics.
- Design a system, component, or process to meet desired needs within realistic constraints.
- Design and conduct scientific and engineering experiments, and to analyze and interpret the resulting data.
- Recognize the need for, and have the ability to engage in, perpetual learning by working on projects for which they have no prior experience.
- Have a fundamental capability in oral and written communication.
- Function effectively within multidisciplinary teams.
- Understand ethical and professional engineering practice in the context of global, economic, environmental, and societal realities as well as other contemporary issues.

The department continues to strive to provide the best educational environment for all students, regardless of ethnicity or gender, and to succeed in accomplishing these objectives in an appropriate time period.

Program Overview. 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, the programs will offer a wide range of technical specialities 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
Curriculum for Computer Engineering

Fall    Spring
MATH 1351, Calculus I         3               MATH 1352, Calculus II         3
CHEM 1307, Prin. of Chem. I*  3               CHEM 1307, Prin. of Chem. I*  3
CHEM 1107, Prin. of Chem. I  (Lab.)*  1               E E 2372, Mod. Dig. Syst. Des.  4
C S 1411, Programming Prin. I  4               POLS 1301, Amer. Govt. Org.  3
ENGL 1301, ESS. Coll. Rhetoric 3               ENGL 1301, ESS. Coll. Rhetoric 3
TOTAL 17

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
C S 2413, Data Structures     4               Elective (History)  3
TOTAL 17               E E 3303, Linear System Analysis  3
TOTAL 18

THIRD YEAR
Fall    Spring
E E 3334, Comp. Eng. Proj. Lab. 3               E E 3333, Proj. Lab. II  3
E E 3323, Prin. Comm. Sys.       3               E E 3341, Electromag. Theory I  3
E E 3312, Electronics II        3               E E 3382, Disc. Computational Struct.  3
C S 3365, Software Engineering 3               C S 3352, Intr. Sys. Prog.  3
PHYS 2401, Prin. Phys. II      4               Elective (Political Science)  3
TOTAL 16               TOTAL 18

FOURTH YEAR
Fall    Spring
E E 4333, Senior Proj. Lab. IV 3               E E 4334, Proj. Lab. V  3
Elective (E E/C S)              3               Elective (E E/C S)  3
Elective (Humanities)          3               Elective (E E/C S)  3
Elective (Oral Comm.)         3               Elective (Ind. Group Behavior)  3
Elective (History)            3               Elective (Vis. Perf. Arts)  3
TOTAL 15               TOTAL 18

FIFTH YEAR
Fall    Spring
Elective (E E 5000-level)     3               Elective (E E 5000-level)  3
Elective (E E 5000-level)     3               Elective (E E 5000-level)  3
Elective (E E 5000-level)     3               Elective (E E 5000-level)  3
E E 6000, Master's Thesis     1               TOTAL 11
TOTAL 10

5TH YEAR
TOTAL 17

Minimum hours required for graduation—129

Electives from the following categories must be selected from approved lists available from the Department of Electrical and Computer Engineering to ensure that ABET, General Education, departmental, and legislative requirements are satisfied: 1 political science, 2 history, 1 humanities, 1 visual and performing arts, 1 basic science or math elective, 1 Prob. & Statistics, 4 electrical engineering, and 2 other engineering.

Option courses include:
- Analog VLSI—E E 4310, 4314, 4321; MEMS — E E 4381, 4385, 4386;
- Power — E E 4343, 4344, 4391;
- Signal Processing — E E 4364, 4367;
- Communication Systems — E E 4323, 4325, 4361;
- High Frequency Communications — E E 4342, 4344, 4360;
- Control Systems — E E 4324, 4368;
- Digital Systems — E E 4314, 4375, 4382.

** Students who do not have high school credit for chemistry or physics must take CHEM 1301 and/or PHYS 1304 before those listed.

** Elective (Prob. & Statistics) — MATH 3342 or E E 3341

Curriculum for 150-Hour Combined Bachelor of Science in Computer Engineering, Master of Science in Electrical Engineering

The combined Bachelor of Science in Computer Engineering and Master of Science in Electrical Engineering degree program differs only in the final years; the first years are the same as the standard B.S. program. Electives must be selected from approved lists to ensure that ABET, General Education, departmental, and legislative requirements are satisfied.

FALL    SPRING
E E 4333, Senior Proj. Lab. IV  3               E E 4334, Proj. Lab. V  3
Elective (E E 5000-level)       3               Elective (E E 5000-level)  3
Elective (Hum. or Fine Arts)    3               Elective (E E 5000-level)  3
Elective (Oral Comm.)          3               Elective (Ind. Group Behavior)  3
Elective (History)             3               Elective (Vis. Perf. Arts)  3
TOTAL 15               TOTAL 15

FIFTH YEAR
Fall    Spring
Elective (E E 5000-level)     3               Elective (E E 5000-level)  3
Elective (E E 5000-level)     3               Elective (E E 5000-level)  3
Elective (E E 5000-level)     3               Elective (E E 5000-level)  3
E E 6000, Master's Thesis     1               TOTAL 11
TOTAL 10

150-Hour Combined Bachelor of Science, Master of Science in Electrical Engineering

The combined Bachelor of Science in Electrical Engineering and Master of Science in Electrical Engineering degree program differs only in the final years; the first years are the same as the standard B.S. program. Electives must be selected from approved lists available from the department to ensure that ABET, Core Curriculum, departmental, and legislative requirements are satisfied.
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 these curriculums and personalized advising plays an important role in its implementation.

**Undergraduate Program**

The required undergraduate programs are contained in the curriculum tables shown in this section. 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 and computer engineering and other related disciplines allowing them to specialize at the senior level. If a student wishes, specific specialization options are available, including analog VLSI, MEMS, power; signal processing; communication systems; high frequency communications; control systems and digital systems.

Success in engineering courses is highly dependent on knowledge and skills in mathematics. It is strongly recommended that students have a minimum mathematics SAT score of 500, a minimum score of 23 on the mathematics ACT, or take mathematics courses at a junior or community college to be ready to take calculus classes at Texas Tech. 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 of 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) to be permitted to continue as an EEE or CMPE major. The ECE DEMP requires students to maintain a 2.25 adjusted cumulative GPA. Students must also meet all degree and prerequisite requirements with grades of C or better. No course can be attempted more than two times (including withdrawals) to achieve a C or better. Students who do not meet these requirements will be dropped from the EEE or CMPE program and will not be allowed to register for any EEE courses appearing in the university catalog in the “Second Year, Spring” semester or beyond. A faculty committee determined by the department will review individual cases of students requesting readmission to the department. Required courses taken more than twice, under any circumstances, will not apply toward the degree without PRIOR written approval by the department. It is the responsibility of the student to seek written permission. 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 interested in a dual degree program or a minor should consult a faculty advisor. A minor in electrical engineering consists of EEE 2331, 2372, 3302, 3303, 3311, and 3362. Any student within nine semester hours of graduation may take courses for graduate credit. 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.

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**Curriculum for Dual Bachelor of Science in Electrical Engineering and Computer Science Plus Master of Science in Electrical Engineering**

The dual Bachelor of Science in Electrical Engineering and Computer Science plus Master of Science in Electrical Engineering degree program differs only in the final years; the first years are the same as the standard B.S. program. Electives must be selected from approved lists available from the Department of Electrical and Computer Engineering or Computer Science to ensure that ABET, General Education, departmental, and legislative requirements are satisfied.

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEE 3331, Proj. Lab. I</td>
<td>EEE 3341, Electromag. Theory I</td>
</tr>
<tr>
<td>PHYS 2401, Prin. of Phys. II</td>
<td>EEE 3312, Electronics II</td>
</tr>
<tr>
<td>MATH 2360, Linear Algebra</td>
<td>EEE 3361, Concepts Prog. Lang.</td>
</tr>
<tr>
<td>Elective (Oral Comm.)</td>
<td>Elective (Vis. &amp; Perf. Arts)</td>
</tr>
<tr>
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</table>

<table>
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<tr>
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<th>Spring</th>
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<tbody>
<tr>
<td>EEE 3342, Electromag. Theory II</td>
<td>Elective (History)</td>
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<tr>
<td>CS 5375 or EEE 5375, Struct. &amp; Org.</td>
<td>Elective (C S 5000-level)</td>
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<td>Elective (Ind. Group Behavior)</td>
<td>Elective (Hum. or Fine Arts)</td>
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<td>TOTAL 15</td>
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</table>

<table>
<thead>
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<th>Spring</th>
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<tbody>
<tr>
<td>EEE 4333, Senior Proj. Lab. IV</td>
<td>Elective (E E 5000-level)</td>
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<tr>
<td>CS 3352, Intro. Sys. Prog.</td>
<td>Elective (E E 5000-level)</td>
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<tbody>
<tr>
<td>Elective (E E 5000-level)</td>
<td>Elective (Vis. &amp; Perf. Arts)</td>
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<tr>
<td>Elective (E E 5000-level)</td>
<td>Elective (Vis. &amp; Perf. Arts)</td>
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<tr>
<td>EEE 6000, Master’s Thesis</td>
<td>Elective (Vis. &amp; Perf. Arts)</td>
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Electrical Engineering–Computer Science Dual-Degree Curriculum

**FIRST YEAR**

<table>
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<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>MATH 1351, Cal. I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1307, Prin. of Chem. I*</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1107, Prin. of Chem. I (Lab.)*</td>
<td>1</td>
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<tr>
<td>C S 1411, Programming Prin. I</td>
<td>4</td>
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<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
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**SECOND YEAR**

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<tbody>
<tr>
<td>MATH 2350, Calculus III</td>
<td>3</td>
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<tr>
<td>C S 2413, Data Structures</td>
<td>4</td>
</tr>
<tr>
<td>E E 3302, Fund. of Elec. Engr.</td>
<td>3</td>
</tr>
<tr>
<td>E E 3382, Engr. Appro. to Dig. Des.</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 1408, Prin. of Phys. I*</td>
<td>4</td>
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**THIRD YEAR**

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<tbody>
<tr>
<td>E E 3331, Proj. Lab. I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 2401, Prin. of Phys. II</td>
<td>4</td>
</tr>
<tr>
<td>C S 3365, Software Eng.</td>
<td>3</td>
</tr>
<tr>
<td>MATH 2360, Linear Algebra</td>
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**FOURTH YEAR**

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<tr>
<td>Elective (History)</td>
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<tr>
<td>E E 3342, Electromag. Theory II</td>
<td>3</td>
</tr>
<tr>
<td>E E 3332, Proj. Lab. II</td>
<td>3</td>
</tr>
<tr>
<td>C S 3375, Machine Struc. &amp; Org.</td>
<td>3</td>
</tr>
<tr>
<td>Elective (Other Engineering)</td>
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</tr>
<tr>
<td>TOTAL</td>
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**FIFTH YEAR**

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<tbody>
<tr>
<td>E E 4333, Senior Proj. Lab. IV</td>
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</tr>
<tr>
<td>C S 3352, Intro. Sys. Prog.</td>
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<tr>
<td>Elective (Ind. Group Behavior)</td>
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<tr>
<td>Elective (History)</td>
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Minimum hours required for graduation—150

Electives from the following categories must be selected from approved lists available from the Department of Electrical Engineering or Computer Science to ensure that ABET, General Education, departmental, and legislative requirements are satisfied: 1 political science, 2 history, 1 humanities, 1 Visual and Performing Arts, 1 individual and group behavior, 1 computer science, and 1 other engineering.

* Students who do not have high school credit for chemistry or physics must take CHEM 1301 and/or PHYS 1304 before those listed.

** Elective (Prob. & Statistics) - MATH 3342 or IE 3341

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**Electrical Engineering (E E)**

*(To interpret course descriptions, see page 8.)*

**Undergraduate Courses**

1304. Introduction to Electrical and Computer Engineering (3:3:0).
Prerequisite: Score on Mathematics Placement Examination (MPE) of 7, MATH 1350, 1550, or score on MPE of S and MATH 1321. Introduction to the electrical and computer engineering disciplines including familiarization with relevant design tools. Overview of the profession, contemporary issues, and ethics.

1305. Introduction to Engineering and Computer Programming (3:3:0).
Prerequisite: Score on Mathematics Placement Examination (MPE) of 7, MATH 1350, 1550, or score on MPE of 5 and MATH 1321. An introduction to the fundamentals of computing and structured programming for electrical engineering.

Prerequisite: Score on Mathematics Placement Examination (MPE) of 7, MATH 1350, 1550, or score on MPE of 5 and MATH 1321. An introduction to combinational and sequential digital systems.

3301. General Electrical Engineering (3:3:0).
Prerequisite: MATH 1352. Analysis of electric circuits. Introduction to electronic instrumentation and electromechanics. For non-majors only.

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**Graduate Program**

The Department of Electrical and Computer Engineering offers students the opportunity of graduate study under the direction of faculty members in an atmosphere of enthusiasm for learning. Master’s and doctoral degrees are awarded to students completing a comprehensive program of courses, examinations, and thesis or dissertation. Courses provide breadth and depth of knowledge; and thesis and dissertation projects are an important expression of creative research activity.

The master’s degree program prepares students for successful professional careers based on a broad foundation, together with specialized technical expertise, in electrical engineering. The doctoral degree program prepares students for engineering-based leadership roles in society involving the solution of important technological problems and the advancement and dissemination of knowledge.

Graduate students can find thesis and dissertation topics in a variety of areas, with research conducted in the following multidisciplinary centers, laboratories, and industry-sponsored programs:

- Center for Pulsed Power and Power Electronics
- Nano Tech Center
- Maddox Laboratory
- Computer Vision and Image Analysis Laboratory
- Applied Vision Laboratory
- Advanced Vehicular Engineering Laboratory
- Neuroimaging, Cognition, and Engineering Laboratory
- Microwave and Antenna Laboratory
- Program for Semiconductor Product Engineering
- Advanced Electronic Systems Engineering Program

The Department of Electrical and Computer Engineering encourages study abroad, and graduate students have studied in Denmark, France, Spain, and Mexico.

Before being recommended for admission to a degree program, students may be required to take (without graduate credit) undergraduate leveling courses designated by the department.

Prerequisite: MATH 1352. Principles of electric circuits. DC, transient, and sinusoidal steady-state analysis.

3303. Linear System Analysis (3:3:0).
Prerequisite: E E 1304, 3302; corequisite: MATH 3350 and 2.25 adjusted cumulative GPA. Concepts of signal and system analysis in time and frequency domains as applied to electric circuits. Laplace transform, Fourier series, and Fourier transform techniques are stressed.

3311. Electronics I (3:3:0).
Prerequisite: E E 3302 and 2.25 adjusted cumulative GPA. 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, 3303, and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Analysis and design of special-purpose amplifiers and oscillators.

Prerequisite: E E 3303, 3311, MATH 3342 or 3341, and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Random processes and spectral densities. Fourier Transforms and linear systems concepts. Amplitude, phase angle, and pulse modulation communication systems.

3331. Project Laboratory I (3:0:9).
Prerequisite: ENGL 1302, E E 3362, 3302 and 2.25 adjusted cumulative GPA. A laboratory course to accompany second-year basic courses in electrical or computer engineering. (Writing Intensive)

3332. Project Laboratory II (3:0:9).
Prerequisite: E E 3303, 3311, 3331 CHEM 1307, PHYS 1408 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. A laboratory course to accompany third-year basic courses in electrical engineering. (Writing Intensive)

3333. Project Laboratory III (3:0:9).
Prerequisite: E E 3312, 3332, PHYS 2401 and 2.25 adjusted cumulative GPA. A laboratory
course to accompany third-year basic courses in electrical or computer engineering. (Writing Intensive)

3344. Microwave Solid-State Circuits (3:3:0). Prerequisite: E 3312 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Review of transmission-line and waveguide theory, scattering matrix, impedance matching, resonators, and passive devices. Design and four-diode circuits.

3433. Introduction to Power Systems (3:3:0). Prerequisite: E 3341 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Electrical power transmission and distribution systems; power generation systems, system management, and new transmission and distribution methods.

3444. Antennas and Radiating Systems (3:3:0). Prerequisite: E 3342 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Antenna fundamentals, uniformly spaced arrays, wire antennas of various types, aperture radia-
tors, and numerical applications.

3454. Pulsed Power (3:3:0). Prerequisite: E 3342 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Fundamentals of pulsed power circuits, components, and systems. Pulse forming lines, energy storage, voltage multipliers, switching, materials, grounding and shielding, measurements, and applications.

3533. Gaseous Electronics (3:3:0). Prerequisite: E 3342 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Kinetic theory of gases, ionization, self-sustained discharge, Paschen law, glow discharge, arc discharge, streamers, spark discharge, corona discharge, and gas lasers.

3636. Fiber Optic Systems (3:3:0). Prerequisite: E 3312, 3323, and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Optical fibers, couplers, sources, detectors; applications in analog and digital modulation systems, optical receivers.

3736. Modern Optics for Engineers (3:3:0). Prerequisite: E 3323, 3342 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Information transmission in electronic systems; Random variables and stochastic processes, noise in analog and digital modulation systems, optimal receivers.

3836. Digital Signal Processing (3:3:0). Prerequisite: E 3323 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Information transmission in electronic systems; Random variables and stochastic processes, noise in analog and digital modulation systems, optimal receivers.

3936. Image Processing (3:3:0). Prerequisite: E 3323 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Analysis and design of systems using digital signal processing, filtering, discrete and fast Fourier transforms, flowgraphs, design techniques for digital filters, effects of finite word length, and applications.

4036. Advanced Control Systems (3:3:0). Prerequisite: E 3353 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Analysis and design of advanced control systems including optimal, nonlinear, multiple-input multiple-output, digital, fuzzy logic, and neural network control.

4136. Computer Architecture I (3:3:0). Prerequisite: E 3312 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. An introduction to the architecture, organization, and design of microprocessors. Hardware design related to various microprocessors. Analysis of current microprocessors and applications.

4236. VLSI Processing (3:3:0). Prerequisite: PHYS 2401, MATH 3350, and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Introduction to the fabrication of integrated circuits; Design of VLSI digital integrated circuits; System analysis; Design fundamentals. Linear operations in both spatial and frequency domains. Image enhancement and restoration techniques.

4336. Digital IC Analysis and Design (3:3:0). Prerequisite: E 3312, 3362, and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Design of VLSI digital integrated circuits; System analysis; Design fundamentals. Linear operations in both spatial and frequency domains. Image enhancement and restoration techniques.

4436. Introduction to Microsystems I (3:3:0). Prerequisite: E 3311, 3303, and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Design of VLSI digital integrated circuits; System analysis; Design fundamentals. Linear operations in both spatial and frequency domains. Image enhancement and restoration techniques.

4536. Introduction to Microsystems II (3:3:0). Prerequisite: E 4385 and 2.25 adjusted cumulative GPA. For majors only or departmental consent. Application of microfabrication to create microsensor systems. Integration of optics, optoelectronics, and microfluidics. Includes other MEMS projects.
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites and Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>5331</td>
<td>Individual Studies in Engineering Applications</td>
<td>3:3:0</td>
<td>Prerequisite: Graduate standing in engineering. An individual study course involving a rigorous theoretical investigation of some aspect of an engineering problem of current interest. A formal report is required.</td>
</tr>
<tr>
<td>5332</td>
<td>Topics in Electrical Engineering</td>
<td>3:3:0</td>
<td>The course will elaborate on a special topic of current interest in electrical engineering. May be repeated for credit.</td>
</tr>
<tr>
<td>5334</td>
<td>Power Systems Engineering</td>
<td>3:3:0</td>
<td>Electrical power transmission and distribution systems; power generation systems; system modeling, planning, management, and protection.</td>
</tr>
<tr>
<td>5335</td>
<td>Antennas and Radiating Systems</td>
<td>3:3:0</td>
<td>Antenna fundamentals, uniformly spaced arrays, wire antennas of various types, aperture radiation, antennas for special applications.</td>
</tr>
<tr>
<td>5345</td>
<td>Pulsed Power</td>
<td>3:3:0</td>
<td>Fundamentals of pulsed power circuits, components, and systems. Pulse forming lines, energy storage, voltage multipliers, switching, materials, grounding, and shielding, measurements, and applications.</td>
</tr>
<tr>
<td>5350</td>
<td>Gaseous Electronics</td>
<td>3:3:0</td>
<td>Kinetic theory of gases, collisions, emission processes, self sustained discharge, Paschen law, glow discharge, arc discharge, streamers, spark discharge, corona discharge, gas lasers.</td>
</tr>
<tr>
<td>5360</td>
<td>Fiber Optic Systems</td>
<td>3:3:0</td>
<td>Optical fibers, couplers, sources, and detectors; applications to communications and sensing. Integrated optics.</td>
</tr>
<tr>
<td>5362</td>
<td>Modern Optics</td>
<td>3:3:0</td>
<td>Modern concepts in optics related to engineering applications. Geometrical, physical, and quantum optics; Fourier optics, holography, and image processing.</td>
</tr>
<tr>
<td>5364</td>
<td>Digital Signal Processing</td>
<td>3:3:0</td>
<td>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 application to communication systems.</td>
</tr>
<tr>
<td>5368</td>
<td>Advanced Control Systems</td>
<td>3:3:0</td>
<td>An introduction to advanced control systems. Optimal, adaptive, and robust control of linear and nonlinear systems. Fuzzy logic and neural network applications to control systems.</td>
</tr>
<tr>
<td>5371</td>
<td>Engineering Analysis</td>
<td>3:3:0</td>
<td>Prerequisite: MATH 3350 or its equivalent. Application of mathematical methods and algorithms to engineering problems, stochastic linear system models, vector spaces and operators, orthogonality principle and its applications, adaptive filtering, matrix factorization, and eigenvalue decomposition methods.</td>
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<tr>
<td>5375</td>
<td>Computer Architecture</td>
<td>3:3:0</td>
<td>An introduction to the architecture, organization, and design of microprocessors. Hardware design related to various microprocessors. Analysis of current microprocessors and applications.</td>
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<tr>
<td>5376</td>
<td>System Modeling and Simulation</td>
<td>3:3:0</td>
<td>Mixed-signal system specification, behavioral modeling and analysis, functional modeling and analysis, mixed-signal system design and evaluation.</td>
</tr>
<tr>
<td>5381</td>
<td>Introduction to Semiconductor Processing</td>
<td>3:3:0</td>
<td>Introduction to the physical principles, techniques, and technologies involved with the fabrication of very large scale integrated circuits (VLSI).</td>
</tr>
<tr>
<td>5385</td>
<td>Introduction to Microsystems I</td>
<td>3:3:0</td>
<td>Fundamentals of microelectromechanical systems (MEMS) and microfluidic systems. Project-based course introduces basic microsystem design, analysis, simulation, and manufacture through several case studies using representative devices.</td>
</tr>
<tr>
<td>5386</td>
<td>Introduction to Microsystems II</td>
<td>3:3:0</td>
<td>Prerequisite: EE 5385. Application of microfabrication to create microsensor systems. Integration of optics, optoelectronics and microfluids. Includes other MEMS projects.</td>
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<td>6000</td>
<td>Master's Thesis</td>
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<td>6351</td>
<td>Physical Electronics</td>
<td>3:3:0</td>
<td>Prerequisite: E E 5352 or consent of instructor. Fundamentals of solid state physics relevant to device applications. Semiconductors, dielectrics, ferroelectric, ferromagnetic, and superconductive materials. Laser devices, applications, and engineering of lasers.</td>
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<tr>
<td>6360</td>
<td>Computer Vision and Image Reconstruction</td>
<td>3:3:0</td>
<td>Theories of image formation and reconstruction. Reconstruction problems in tomography, magnetic resonance imaging, synthetic aperture radar, and other modalities of imaging.</td>
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<tr>
<td>6365</td>
<td>Topics in Advanced Communications</td>
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<td>Applications of detection and estimation theory in the design of optimum communication systems.</td>
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<td>7000</td>
<td>Research</td>
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<td>8000</td>
<td>Doctor's Dissertation</td>
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**System Engineering (S E)**

**Graduate Course**

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<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
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<th>Prerequisites and Notes</th>
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<tbody>
<tr>
<td>5301</td>
<td>System Engineering Processes</td>
<td>3:3:0</td>
<td>An introduction to the system engineering process and practice required in response to federal government procurements. The topics are applicable to the development and marketing of electromechanical products and associated supporting software.</td>
</tr>
</tbody>
</table>
Engineering Physics

Faculty

Jeffrey Woldstad, Coordinator; Charles W. Myles, Director; and Timothy Dallas, Director

Honors Professors: Kristiansen
Professors: Gregory, Hatfield, Holtz, Lichti, Myles, Simon, Trost, Woldstad
Associate Professors: Akchurin, Baker, Dallas, Gibson, Lamp, Thacker

About the Program

The College of Engineering and the Department of Physics supervise the following degree program:

- Bachelor of Science in Engineering Physics

This program emphasizes flexibility and personalized advisement and 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; to research, design, and solve problems in the context of societal and community needs; and to provide the foundation for graduate study and lifelong learning.

Educational Goal. Engineering physics is a unique program with three educational goals. These goals are:

- 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.
- Provide courses and experiences that develop students who have the professional skills to practice engineering.

Educational Objectives. The constituencies of the engineering physics program have established six specific educational objectives. Graduates of the program should be able to:

- Identify and understand the fundamental physical principles underlying engineering devices and processes necessary for engineering physics graduates 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 basic physical capabilities associated with 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.
- Practice engineering with a commitment to professional, scientific, and ethical responsibility.

Short-Term Educational Outcomes. Students at graduation must have:

- An ability to design and conduct experiments, as well as to analyze and interpret data.
- An ability to design a system, component, or process to meet desired needs.
- An ability to function on multidisciplinary teams.
- An ability to identify, formulate, and solve engineering problems.
- An understanding of professional and ethical responsibility.
- An ability to communicate effectively.
- The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- A recognition of the need for and an ability to engage in lifelong learning.
- A knowledge of contemporary issues.
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- An ability to understand the interface between basic physics and engineering.
- An ability to apply the methods of mathematical physics to engineering problems.

Undergraduate Program

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. Students, in consultation with the physics advisor and the engineering advisor, select the courses to be used for the electives shown in the following curriculum tables. This allows considerable flexibility to accommodate the various programs available in the engineering departments.

Assessment. Assessment is made on student and alumni performance before and after graduation. The focus of assessment before or at the time of graduation is on meeting the short-term educational objectives as program outcomes. The focus of assessment of alumni one year and later is the achievement of the educational objectives.

Electrical Engineering Option

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<tr>
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<tbody>
<tr>
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</tr>
<tr>
<td>PHYS 1408, Prin. Phys. I</td>
<td>Fall</td>
</tr>
<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
<td>Fall</td>
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<tr>
<td>ENGL 1302, Amer. Govt., Org.</td>
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<tr>
<td>MATH 1362, Calculus II</td>
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<tr>
<td>PHYS 2401, Phys. II</td>
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<tr>
<td>E 2372, Mod. Dig. Sys. Des.</td>
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<tr>
<td>ENGL 1304, Intro. Elec. Comp. Eng.</td>
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<td>MATH 2350, Calculus III</td>
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<td>E 3302, Fund. of Elec. Eng.</td>
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<td>E 3362, Eng. Appr. to Dig. Des.</td>
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<tr>
<td>MATH 3350, Math. for Engrs. I</td>
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<tr>
<td>E 3331, Proj. Lab. I</td>
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<tr>
<td>E 3303, Linear Sys.</td>
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<tr>
<td>E 3323, Prin. of Comm. Sys.</td>
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<tr>
<td>E 3332, Proj. Lab. II</td>
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<td>PETR 3308, Engn. Comm.</td>
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<tr>
<td>PHYS 3322, Interm. Lab.</td>
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<tr>
<td>PHYS 3306, Elec. and Magnet.</td>
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<tr>
<td>E 3333, Proj. Lab. III</td>
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<td>Elective (Vis. Perf. Arts)</td>
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<td>POLS 3302, Amer. Pub. Pol.*</td>
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SECOND YEAR

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<td>PHYS 4306, Senior Project</td>
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<td>PHYS 4302, Statist. Therm. Physi.</td>
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<td>PHYS 4309, Solid State Physics</td>
<td>Spring</td>
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<td>E 4334, Proj. Lab. V</td>
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<tr>
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* Any approved political science course may be substituted.
** Non-electrical engineering.
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<td>M E 3370, Fluid Mechanics</td>
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<td>M E 4370, Design I</td>
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<td>M E 3433, Systems &amp; Vibrations</td>
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<tr>
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<tbody>
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<tr>
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<td>C E 3103, Mech. of Solids (Lab)</td>
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<tr>
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<td>PHYS 4306, Senior Project</td>
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<td>C E 4343, Des. Concrete Struct.</td>
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<td>C E 4321, Geotech. Eng. Des.</td>
<td>3</td>
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<tr>
<td>C E 4342, Des. of Steel Struct.</td>
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</tr>
<tr>
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</tr>
</tbody>
</table>

| Engineering Physics | 263 |
Department of Engineering Technology

Faculty
Larry B. Masten, Ph.D., Chairperson
Professors: Burkett, Masten, Pigott
Associate Professors: Akram, Alayyan, Darwisch, Ernst, Green, Reynolds
Assistant Professors: Liang
Lecturers: Hubbard

About the Program
This department supervises the following degree program:
- Bachelor of Science in Engineering Technology

Students may select coursework in one of three areas of specialization: construction engineering technology, electrical-electronics engineering technology, or mechanical engineering technology. All three options are accredited by the Technology Accreditation Commission of ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, 410.347.7700. This department also supervises engineering technology options in the Master of Engineering degree program.

Mission. The department’s mission is to provide educational opportunities to a greater cross-section of the state’s population and includes the following objectives:

- To provide high-quality engineering technology programs with appeal to a broad range of students including traditional students, under-represented populations, and the by-passed learner. (The bypassed 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 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.

Program Educational Objectives. During the first several years after graduation, graduates of the engineering technology programs should be able to:

- Acquire an entry-level position in the areas of product development, construction supervision, component design, manufacturing supervision, HVAC design, technical sales, field sales, field service engineering, and work force coordination.
- Apply engineering knowledge to solving practical industrial problems.
- Apply business and project management skills to the management of engineering projects.
- Function effectively on multidisciplinary teams.
- Communicate effectively.
- Continue the process of lifelong learning.

Program Outcomes. To enable engineering technology students to accomplish these objectives, the graduates will have:

- An appropriate mastery of the knowledge, techniques, skills, and modern tools of their disciplines.
- An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology.
- An ability to conduct, analyze, and interpret experiments and apply experimental results to improve processes.
- An ability to apply creativity in the design of systems, components, or processes appropriate to program objectives.
- An ability to function effectively on teams.
- An ability to identify, analyze, and solve technical problems.
- An ability to communicate effectively.
- A recognition of the need for and an ability to engage in lifelong learning.
- An ability to understand professional, ethical, and social responsibilities.
- A respect for diversity and knowledge of contemporary professional, societal, and global issues.
- A commitment to quality, timeliness, and continuous improvement.

Program Overview. 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 construction specialization stresses basic structural design and construction operations to prepare students to enter various phases of the construction industry. Coursework 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 manufacturing and 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.

Undergraduate Program
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 66-67 hours of required coursework vary with the student’s choice of an engineering technology area and electives. The program concentrations allow in-depth training in the student’s chosen field.
Students are required to plan their program in consultation with faculty advisors. Emphasis on communication skills requires the inclusion of engineering communications (PETR 3308).

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 Fundamentals of Engineering Exam, that student is obligated to pass the exam to graduate.

**Minors.** 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.

**Transfer Admissions.** To obtain a degree in engineering technology, transfer students must complete at least 30 credit hours of engineering technology courses in their discipline.

**Grades.** 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 or she 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 these three times, then the student may be required to transfer to engineering undecided for counseling.

**Internship.** The department 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 will permit students to receive credit for some courses 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 1206 and 1207, Engineering Graphics, is held only in the fall the first Friday after classes begin. Students must register for the exam in Room 224 of the 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.

### Construction Engineering Technology (CTEC)
*(To interpret course descriptions, see page 8.)*

**Undergraduate Courses**

<table>
<thead>
<tr>
<th>Curriculum for Mechanical Specialization</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall</strong></td>
<td><strong>Spring</strong></td>
</tr>
<tr>
<td>MATH 1350, Analytical Geometry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1305, Chem. and Society</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1105, Gen. Chem. I (Lab.)</td>
<td>1</td>
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<tr>
<td>E GR 1206, Engineering Graphics</td>
<td>2</td>
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<tr>
<td>MTEC 1312, Mech. Technology</td>
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<td><strong>TOTAL</strong> 15</td>
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<table>
<thead>
<tr>
<th><strong>Second Year</strong></th>
<th><strong>Spring</strong></th>
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<tbody>
<tr>
<td>MATH 1352, Calculus II</td>
<td>3</td>
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<tr>
<td>GTEC 1312, AC/DC Technology</td>
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<tr>
<td>GTEC 1112, AC/DC Lab.</td>
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<tr>
<td>POLS 2302, Amer. Public Policy</td>
<td>3</td>
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<tr>
<td>GTEC 2311, Statics</td>
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<td><strong>TOTAL</strong> 17</td>
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<table>
<thead>
<tr>
<th><strong>Third Year</strong></th>
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<tbody>
<tr>
<td>MTEC 3441, Materials Tech.</td>
<td>4</td>
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<tr>
<td>GTEC 2151, Intro. To Thermo. Lab</td>
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<td>HIST 2300, History of U.S. to 1877</td>
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<tr>
<td>PETR 3308, Engineering Comm.</td>
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<tr>
<td>GTEC 4351, Mechanisms of Mach.</td>
<td>3</td>
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<tr>
<td>GTEC 4231, Project Mgmt.</td>
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<tr>
<th><strong>Fourth Year</strong></th>
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</thead>
<tbody>
<tr>
<td>MTEC 4311, AC System Design I</td>
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<tr>
<td>MTEC 3453, Mech. Design</td>
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<tr>
<td>MTEC 4170, Capstone Design I</td>
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<td>MTEC Elective</td>
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<tr>
<td>MTEC Elective</td>
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<tr>
<td>Visual/Perf. Arts</td>
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<tr>
<td><strong>TOTAL</strong> 16</td>
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</table>

- Minimum number of hours required for graduation—127 including internship

### Curriculum for Construction Specialization

**Undergraduate Courses**

<table>
<thead>
<tr>
<th>Curriculum for Construction Specialization</th>
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<tbody>
<tr>
<td><strong>Fall</strong></td>
<td><strong>Spring</strong></td>
</tr>
<tr>
<td>MATH 1350, Analytical Geometry</td>
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</tr>
<tr>
<td>CHEM 1305, Chem. and Society</td>
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<tr>
<td>CHEM 1105, Gen. Chem. I (Lab.)</td>
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<tr>
<td>CTEC 1312, Const. Mat'l. &amp; Methods</td>
<td>2</td>
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<tr>
<td>E GR 1207, Engineering Graphics</td>
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<td><strong>TOTAL</strong> 15</td>
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<table>
<thead>
<tr>
<th><strong>Second Year</strong></th>
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<tbody>
<tr>
<td>MATH 1352, Calculus II</td>
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<tr>
<td>HIST 2300, History of U.S. to 1877</td>
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<tr>
<td>PHYS 1404, General Physics II</td>
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<tr>
<td>GTEC 2311, Statics</td>
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<tr>
<td>GTEC 2315, Constr. Equipment</td>
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<table>
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<tr>
<th><strong>Third Year</strong></th>
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<tbody>
<tr>
<td>POLS 2302, Amer. Public Pol.</td>
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</tr>
<tr>
<td>PETR 3308, Engineering Comm.</td>
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</tr>
<tr>
<td>CTEC 3311, Struct. Analysis</td>
<td>3</td>
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<tr>
<td>CTEC 3313, Found. &amp; Earthwork</td>
<td>3</td>
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<tr>
<td>GTEC 4342, Cost Estimating</td>
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<tr>
<td>M 3315, Geotech, Eng. Lab</td>
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<tr>
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<tbody>
<tr>
<td>CTEC 4312, Steel Structures</td>
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<tr>
<td>CTEC 4313, Masonry Struc.</td>
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<tr>
<td>CTEC 4270 Capstone Design</td>
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<tr>
<td>ECO 2305, Prin. of Economics**</td>
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<td>Visual/Perf. Arts**</td>
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<td><strong>TOTAL</strong> 14</td>
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</table>

- Minimum number of hours required for graduation—126 including internship

* One of these courses must also meet the multicultural requirement.

** Suitable substitutions can be made with approval of option coordinator.
### Electrical-Electronics Specialization

#### FIRST YEAR

<table>
<thead>
<tr>
<th>Fall</th>
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<tbody>
<tr>
<td>MATH 1550, Analytical Geometry</td>
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<tr>
<td>CHEM 1305, Chem. and Society</td>
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<tr>
<td>CHEM 1105, Gen. Chem. I (Lab.)</td>
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<td>PHYS 1403, Prep. Physics I</td>
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<td>POLS 1301, Amer. Govt., Org.</td>
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#### SECOND YEAR

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<th>Fall</th>
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<tr>
<td>MATH 1532, Calculus II</td>
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<tr>
<td>HIST 2300, History of U.S. to 1877</td>
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<tr>
<td>EET 2311, Linear Elec.</td>
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<tr>
<td>EET 2111, Linear Elec. Lab.</td>
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<tr>
<td>EET 2314, Digital Technology I</td>
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<td>EET 2114, Digital Technology I Lab.</td>
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<td>GTEC 2311, Statics</td>
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#### THIRD YEAR

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<tbody>
<tr>
<td>MATH 3322, Math. for En. Tech. or 3530, Math for Eng. and Sci. I</td>
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<tr>
<td>EET 3112, Digital Comm. Lab.</td>
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<tr>
<td>EET 3111, Telecomm. Tech.</td>
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<tr>
<td>EET 3316, Power Distribution</td>
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<tr>
<td>EET 3116, Power Distribution Lab.</td>
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<tr>
<td>EET 3321, Prog. Logic Controller</td>
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<tr>
<td>EET 3321, Prog. Logic Cont. Lab.</td>
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#### FOURTH YEAR

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<tr>
<th>Fall</th>
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<tbody>
<tr>
<td>EET 4317, Adv. Micro-Electronics</td>
<td>3</td>
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<tr>
<td>EET 4331, System Des. Lab</td>
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</tr>
<tr>
<td>GTEC 4322, Cost and Profit Anal.</td>
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<tr>
<td>Humanities Elective*</td>
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<td>Ind. Group Behavior Elective*</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>13</strong></td>
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</tbody>
</table>

*One of these courses must also meet the multicultural requirement.*

### Engineering Graphics (E GR)

#### Undergraduate Courses

**1206.** [ENGR 1204] Engineering Graphics: Software A (2:0:4). For students majoring in mechanical and industrial engineering and mechanical and electrical/electronics engineering technology. This course provides a background in orthographic projection, selected topics of descriptive geometry, engineering drawing techniques, and computer-aided design and drafting software.

**1207.** Engineering Graphics: Software B (2:0:4). For students majoring in civil engineering and construction engineering technology. This course provides a background in orthographic projection, selected topics of descriptive geometry, engineering drawing techniques, and computer-aided design and drafting software.

### Electrical-Electronics Engineering Technology (EET)

#### Undergraduate Courses

**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.** [ENGT 1407] 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 1403; corequisite: CTEC 1312. Fundamentals of electronic circuit theory and characteristics of active devices.

**2312.** Optoelectronic Devices (3:3:0). Prerequisite: EET 2311, 2111; corequisite: PHYS 1404. A study of optoelectronic devices, fiber optics, and basic communication systems.


**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. (Writing Intensive)

3116. Power Transmission and Distribution Lab (1:0:3). Corequisite: EET 3316. Designed to introduce students to experimental techniques in areas of using dc and ac motors and 3-phase systems. (Writing Intensive)

3121. Program Logic Controller Lab (1:0:3). Corequisite: EET 3321 concurrent enrollment. Laboratory experiments include design and applications to complement the lecture material in EET 3324. (Writing Intensive)

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. (Writing Intensive)

3311. Telecommunications Technology (3:3:0). Prerequisite: EET 2112, 2312, MATH 1351; Corequisite: MATH 1352. A study of voice and data communications with fiber optic applications.

3312. Digital Communications (3:3:0). Prerequisite: EET 3311, 3311; corequisite: EET 3314, 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.


3321. Programmable Logic Controller (3:3:0). Prerequisite: EET 3114, 3314; Corequisite: MATH 1352. A comprehensive study of relay logic, ladder logic, and programming controllers.


3331. System Design Laboratory I (3:0:9). Corequisite: EET 4317. A laboratory course to accompany first-semester senior courses in electrical-electronics engineering technology. (Writing Intensive)

3352. Digital Signal Processing (3:3:0). Prerequisite: MATH 3350 or 3322, EET 3332, 3112, 3314, and 3114. An introduction to digital transmission systems, binary line codes, and optical fiber systems.

3353. Control Systems (3:3:0). Prerequisite: EET 3324, 4317, MATH 3322 or 3350. An introduction to automatic control systems and the electro-mechanical components used in control systems.

3470. Capstone Design Course (3:1:6). Prerequisite: EET 4351. Corequisites: MATH 3322 or 3350 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. (Writing Intensive)

Analysis of trusses, frames, machines, and beams. Friction, centroids, moments of inertia.

2351. Introduction to Thermodynamics (3:3:0). Prerequisite: PHYS 1403, GTEC 1211 and MATH 1351. A study of the fundamental laws of thermodynamics and their application to analysis of gas, steam, and refrigeration equipment.


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. (Writing Intensive)

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.

4231. Introduction to Project Management (2:2:0). Introduces MTEC and ETEC majors in engineering technology to the basic principles of project management. Curriculum content includes student’s use of project management scheduling software. (Writing Intensive)

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.

**Mechanical Engineering Technology (MTEC)**

**Undergraduate Courses**

1312. [ENGT 2310] Mechanical Technology (3:2:3). Introduction to manufacturing processes and plant operations; plant visits and field trips; familiarization with equipment and instruments; metal fabrication, machine tools, weld, heat treating, and associated safety practices.

3206. Advanced Graphical Design Methods in Engineering (2:1:2). Prerequisite: E GR 1306. Advanced graphical design methods to include 3-D assembly drawings and finite element analysis using appropriate software.

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. E

3370. Introduction to Quality Control (3:3:0). Introduction to statistical process control methodology. Control charts and total quality management tools and techniques are examined.

3412. Analysis of Vapor and Gas Cycles with Laboratory (4:3:3). Prerequisite: GTEC 2151, 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.

4170. Capstone Design Course II (2:0:0). Prerequisite: Senior standing and concert of the instructor. 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. E (Writing Intensive)

4270. Capstone Design Course II (2:0:0). 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. S.
### 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. every year.

### 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)
- **Prerequisite:** Senior standing and consent of the instructor. Senior projects laboratory. Testing and analysis of components of heat power, refrigeration, and mechanical systems. S. (Writing Intensive)

### 4353. Mechanical Design (3:3:0)
- **Prerequisite:** GTEC 3311, MTEC 3441, MTEC 4351.
- Analysis of stresses and deformations in machine elements. Analysis of gyroscopes and vibrations of mechanical systems. S.

### 4352. 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 technician. May be repeated for credit.

### 4351. Mechanisms of Machinery (3:3:0)
- **Prerequisite:** MATH 1351 and GTEC 2311.
- Kinematic analysis and synthesis of cam, gears, and linkages. Applications to machine elements and assemblies. F.

### 4350. 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. S.

### About the Program

**Mission.** The mission of the department is to provide the highest quality of industrial engineering education by stimulating discovery, integration, application, and communication of knowledge.

**Program Educational Objectives.** The objectives of the industrial engineering program are as follows: To graduate well-rounded industrial engineers who are employed in industrial engineering related jobs or study in graduate programs; 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 allows them to grow professionally and provide service and leadership in their careers.

**Program Overview.** 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 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.
### Undergraduate Program

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.

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 127. The courses are offered so that progress through the program is efficient and flexible to accommodate the needs of individual students. A faculty advisor assists each student with his or her individual program on a semester by semester basis.

The department follows the general standards and requirements of the College of Engineering. Any student requesting an exception must submit a written request and any supporting documentation to the Industrial Engineering Undergraduate Curriculum Committee for its approval.

### Industrial Engineering (I E)

(To interpret course descriptions, see page 8.)

### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1101</td>
<td>Introduction to Industrial Engineering (1:1:0)</td>
<td></td>
</tr>
<tr>
<td>1305</td>
<td>Engineering Analysis (3:3:0)</td>
<td>Use of microcomputers in engineering analysis and design. Structured programming languages.</td>
</tr>
<tr>
<td>2301</td>
<td>Engineering Design in Production Operations (3:3:0)</td>
<td>The engineering design process applied to development management objectives, resource planning, product design, production operations, and engineering design team operations. (Writing Intensive)</td>
</tr>
<tr>
<td>2331</td>
<td>Professional Communication for Engineers (3:3:0)</td>
<td>Prerequisite: ENGL 1302. Rhetorical theory and conventions applied to communication strategies for engineering practice in the global workplace, addressing collaboration, ethical situations, community service, and electronic communication.</td>
</tr>
<tr>
<td>3301</td>
<td>Engineering Economic Analysis (3:3:0)</td>
<td>Prerequisite: MATH 1351. 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.</td>
</tr>
<tr>
<td>3311</td>
<td>Operations Research I (3:3:0)</td>
<td>Corequisite: MATH 2350. Introduction to operations research, linear programming, dynamic programming, integer programming, traveling salesman problem, transportation, and assignment problems.</td>
</tr>
<tr>
<td>3341</td>
<td>Engineering Statistics (3:3:0)</td>
<td>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.</td>
</tr>
<tr>
<td>3343</td>
<td>Quality Assurance and Engineering Statistics (3:3:0)</td>
<td>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.</td>
</tr>
<tr>
<td>3361</td>
<td>Work Analysis and Design (3:2:3)</td>
<td>Corequisite: I E 3341. Principles and techniques of work measurement, methods engineering, workplace design, work sampling, and predestined time systems. Basic ergonomic principles applied to workplace design and physiological work measurement.</td>
</tr>
</tbody>
</table>

### Curriculum for Industrial Engineering

#### FIRST YEAR

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>I E 2301</td>
<td>Engr. Design Prod.</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1351</td>
<td>Calculus I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 1301</td>
<td>Ess. Coll. Rhetoric QWL</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1307</td>
<td>Prin. of Chem.</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1107</td>
<td>Prin. of Chem. (Lab.)</td>
<td>1</td>
</tr>
<tr>
<td>Social Science—Humanities*</td>
<td></td>
<td>TOTAL 16</td>
</tr>
<tr>
<td>TOTAL 16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### SECOND YEAR

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>I E 2331</td>
<td>Pro. Comm. for Engr.††</td>
<td>3</td>
</tr>
<tr>
<td>MATH 2350</td>
<td>Calculus III</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 1408</td>
<td>Prin. of Phys. I</td>
<td>4</td>
</tr>
<tr>
<td>C E 2301</td>
<td>Statistics</td>
<td>3</td>
</tr>
<tr>
<td>Social Science Elective*</td>
<td></td>
<td>TOTAL 16</td>
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<tr>
<td>TOTAL 16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### THIRD YEAR

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>I E 3351</td>
<td>Manuf. Engr.</td>
<td>3</td>
</tr>
<tr>
<td>I E 3341</td>
<td>Engr. Stat.</td>
<td>3</td>
</tr>
<tr>
<td>I E 3361</td>
<td>Work Anal. &amp; Des.</td>
<td>3</td>
</tr>
<tr>
<td>M E 2302</td>
<td>Engr. Thermo.*</td>
<td>3</td>
</tr>
<tr>
<td>Soc. Sci.—Humanities*</td>
<td></td>
<td>TOTAL 15</td>
</tr>
<tr>
<td>TOTAL 15</td>
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<td></td>
</tr>
</tbody>
</table>

#### FOURTH YEAR

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>I E 4331</td>
<td>Operations Res. II</td>
<td>3</td>
</tr>
<tr>
<td>I E 4361</td>
<td>Engr. Des. for People</td>
<td>3</td>
</tr>
<tr>
<td>I Elective†</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>I Elective†</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>I E 4351</td>
<td>Facilities Planning</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Elective*</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>TOTAL 15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Minimum hours required for graduation—127

* Choose from Core Curriculum requirements.
† I E electives from the following courses: I E 2351, 4320, 4331, 4352, 4362, 4363.
†† Engineering elective from the following courses: C E 3302, 3303, 3305, M E 3331, 3370.

### Fundamentals of Monte Carlo methods. Systematic development, programming, and analysis of computer simulation models using a high-level simulation language such as GPSS or Arena.

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.


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 or Arena.

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 and have completed all 3000-level I E courses. Individual industrial engineering design project. Applications of systems thinking, oral and written communications, professionalism, and ethics. (Writing Intensive)

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 engineering, workplace design, work sampling, and predestined time systems. Basic ergonomic principles applied to workplace design and physiological work measurement.
Graduate Program

The Master of Science in Industrial Engineering (M.S.I.E.), Master of Science in Systems and Engineering Management (M.S.S.E.M.), Master of Science in Manufacturing Systems and Engineering (M.S.M.S.E.), the Doctor of Philosophy in Industrial Engineering, and the Doctor of Philosophy in Systems and Engineering Management programs prepare competent industrial engineers and engineering managers for industry, consulting, university teaching and research. With the counsel of a graduate advisor, students are expected to design individualized academic programs. The master’s level programs consist of two options: (1) a 30-hour thesis option, including 6 credit hours of thesis research, and (2) a 36-hour non-thesis option. The course selection may include a minor in an area outside industrial engineering.

Master’s and Ph.D. programs incorporate courses taken in each of the three specialty areas below:

- **Ergonomics and Human Factors Engineering:** Occupational biomechanics, work physiology, industrial ergonomics, environmental hygiene, cognitive engineering, human performance, human computer interaction, and occupational safety.

- **Manufacturing and Quality Assurance:** Manufacturing engineering and design, computer integrated manufacturing/CAD/CAM, process analysis and economics, automated manufacturing and process planning, programmable control systems, reliability and maintainability, on-line and off-line quality assurance, and total quality assurance.

- **Operations Research and Systems and Engineering Management:** Simulation modeling, scheduling and sequencing, just-in-time production systems, inventory and production control, linear and nonlinear programming, network analysis, artificial intelligence and expert systems, systems theory, decision theory, industrial cost analysis, advance engineering economics, performance improvement in organizations, project management, and productivity management.

The Master of Science in Systems and Engineering Management (M.S.S.E.M.) program is offered both on campus and by off-campus programs. Details regarding positions in technical management. The M.S. in Manufacturing (M.S.S.E.M.) and the M.S. and Ph.D. in Systems and Engineering Management are offered at the Texas Tech University at Amarillo off-campus site. Details regarding admission and degree requirements are available from the department.

management planning, product and process engineering, methods engineering, and production control.


4361. Engineering Design for People (3:2:3). Prerequisite: I E 3361. 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.


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.

Graduate Courses

5301. Ergonomics and Design (3:2:3). Prerequisite: Consent of instructor. Functional anatomy and physiology of the musculoskeletal system and their applications in work design. Introduction to work physiology, kinesiology, and anthropometry and their applications.

5302. Environmental Ergonomics (3:2:3). Prerequisite: Consent of instructor. Evaluation, measurement, and control of the physical environment. Environments considered include: heat, cold, noise, vibration, light, radiation, and air contaminants.

5303. Work Physiology (3:2:3). Prerequisite: Consent of instructor. Study of cardiovascular, pulmonary, and muscular responses to work, including energy costs of work endurance, fatigue, physical work capacity, and physiological modeling.

5304. Occupritional Biomechanics (3:2:3). Prerequisite: Consent of instructor. Historical development and theoretical fundamentals of body mechanics. The body link systems and kinematic and kinetic aspects of body movement. Applications to work systems.

5305. Cognitive Engineering (3:3:0). Prerequisite: Consent of instructor. Implications of human perceptual, cognitive, and psycho-motor capabilities for the design of systems for effective human use and control.

5306. Safety Engineering (3:3:0). Prerequisite: Consent of instructor. Loss prevention principles, practice, and regulations; accident factors, models, costs, and analysis; systems safety; product safety; and safety and health related workplace hazards.

5307. Loss Assessment and Control (3:3:0). Prerequisite: I E 4363 or I E 5306 or consent of instructor. Advanced topics in worker safety and health; hazard recognition and analysis; system safety techniques and applications; loss assessment and control.


5312. Queueing Theory (3:3:0). Prerequisite: Consent of instructor. Modeling and analysis of simple and complex service systems. Includes single and multiple server Markov queues, queues with general arrival processes and service times, bulk and batch queues, priority queues, and queueing networks.

5314. Multistage Decision Processes (3:3:0). Prerequisite: I E 3311 or 5311 or consent of instructor. Discrete dynamic programming: Knapsack problem, path problems, equipment replacement, capacity expansion, inventory, partitioning problems, sequencing problems; introduction to continuous dynamic programming; Markov decision processes.

5316. Simulation Models for Operations Analysis (3:3:0). Prerequisite: Any scientific programming language. Application of simulation techniques to analysis of large scale operations. Production-distribution models; model construction; validation of simulation models; limitations of simulation techniques; programming with simulation languages.


5318. Operations Research Modeling with Spreadsheets (3:3:0). Development of models for linear, integer, and nonlinear programming; problem formulation, solution, and analysis; Monte Carlo models; sampling methods; and accuracy. Software for current spreadsheet packages.

5319. Risk Modeling and Assessment (3:3:0). Probabilistic risk models; probability distributions for risk modeling; input data for risk modeling; low probability events; risk modeling software; and analysis of risk models for complex systems.

5320. Systems Theory (3:3:0). Examines theoretical foundations of general systems theory applied to engineering and organizational enterprises addressing issues of systems efficiency, effectiveness, productivity, economics, innovation, quality, and QWL.

5321. Decision Theory (3:3:0). Prerequisite: Consent of instructor. Philosophy, theory, and practice of management; decision theory and social responsibility.

5322. Industrial Cost Analysis (3:3:0). Cost analysis and/or control of industrial enterprises. Economic budgeting, planning,
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>5323</td>
<td>The Engineering Management Environment (3:3:0)</td>
<td></td>
<td>Management of research and development; the legal, financial, and professional interrelationships of engineers and their environment in relation to the modern production organization.</td>
</tr>
<tr>
<td>5324</td>
<td>Advanced Economics of Systems (3:3:0)</td>
<td></td>
<td>Prerequisite: I E 3301, equivalent, or consent of instructor. Design analysis and sensitivity of complex economic systems with evaluation of economic system performance measures and modeling.</td>
</tr>
<tr>
<td>5325</td>
<td>Productivity and Performance Improvement in Organizations (3:3:0)</td>
<td></td>
<td>Productivity and performance improvement (including efficiency, effectiveness, quality, QWL, innovation, profitability, and budget ability theories, techniques, analysis, and applications for industrial systems.</td>
</tr>
<tr>
<td>5327</td>
<td>Inventory Systems (3:3:0)</td>
<td></td>
<td>Prerequisite: I E 3341 or consent of instructor. Deterministic sequencing of single machine, parallel machines, flow shops, and job shops. Theory of complexity. Optimization and heuristic algorithms for combinatorial sequence generation.</td>
</tr>
<tr>
<td>5328</td>
<td>Activity Scheduling (3:3:0)</td>
<td></td>
<td>Prerequisite: I E 3371 or consent of instructor. Deterministic sequencing of single machine, parallel machines, flow shops, and job shops. Theory of complexity. Optimization and heuristic algorithms for combinatorial sequence generation.</td>
</tr>
<tr>
<td>5329</td>
<td>Project Management (3:3:0)</td>
<td></td>
<td>Technical, organizational, and personnel project management examination including planning, estimating, budgeting, scheduling, resources management control. Risk analysis and management using software for project performance evaluation.</td>
</tr>
<tr>
<td>5331</td>
<td>Theoretical Studies in Advanced Industrial Engineering Topics (3)</td>
<td></td>
<td>Prerequisite: Consent of instructor and departmental approval. Individual theoretical study of advanced topic selected on the basis of departmental recommendation. May be repeated.</td>
</tr>
<tr>
<td>5332</td>
<td>Experimental Investigation in Advanced Industrial Engineering Topics (3)</td>
<td></td>
<td>Prerequisite: Consent of instructor and departmental approval. Individual experimental study of an advanced topic selected on the basis of departmental recommendation. May be repeated.</td>
</tr>
<tr>
<td>5340</td>
<td>Robust Design and Optimization for Systems (3:3:0)</td>
<td></td>
<td>Prerequisite: Consent of instructor. Experimental, analytical, and optimization approaches for the design and operation of integrated systems emphasizing quality and resource allocation concepts, strategies, and tools.</td>
</tr>
<tr>
<td>5342</td>
<td>Design of Experiments (3:3:0)</td>
<td></td>
<td>Prerequisite: I E 3341 or equivalent. Single factor, factorial, blocked, split plot designs. Means comparisons, contrasts, estimates of variation. Con founding and fractional factorials.</td>
</tr>
<tr>
<td>5344</td>
<td>Statistical Data Analysis (3:3:0)</td>
<td></td>
<td>Prerequisite: I E 3341 or equivalent Exploratory data analysis, graphical displays and analysis. Linear and nonlinear regression, response surfaces. Selected mainframe and microcomputer packages.</td>
</tr>
<tr>
<td>5345</td>
<td>Reliability Theory (3:3:0)</td>
<td></td>
<td>Prerequisite: I E 3341 or equivalent. System reliability, redundancy, maintainability, and availability analysis and modeling. Life testing, acceleration, parametric, and nonparametric models.</td>
</tr>
<tr>
<td>5346</td>
<td>Total Quality Systems (3:3:0)</td>
<td></td>
<td>Prerequisite: Consent of instructor. Total quality philosophy, customer definition and demands, quality strategies, planning and integration, benchmarking, team structures and interaction, supplier qualification, and quality audits.</td>
</tr>
<tr>
<td>5351</td>
<td>Advanced Manufacturing Processes (3:3:0)</td>
<td></td>
<td>Prerequisite: Consent of instructor. Advanced topics in manufacturing materials and processes, including metallurgical considerations, nonmetallic materials, deformation processes, metal removal theory, and process economics.</td>
</tr>
<tr>
<td>5352</td>
<td>Advanced Manufacturing Engineering (3:3:0)</td>
<td></td>
<td>Prerequisite: Consent of instructor. Advanced topics in manufacturing engineering, including manufacturing systems, production integration, cellular manufacturing, group technology, intelligent manufacturing, concurrent engineering, and life-cycle product design engineering.</td>
</tr>
<tr>
<td>5353</td>
<td>Lean Tools for Manufacturing (3:3:0)</td>
<td></td>
<td>Lean philosophy principles; tools for identification of “waste” time (time and/or resources); value stream mapping, Kanban, Kaizen, and Six Sigma concepts applied to an industrial project.</td>
</tr>
<tr>
<td>5354</td>
<td>Computer Control in Manufacturing (3:3:0)</td>
<td></td>
<td>Prerequisite: Consent of instructor. Theory and application of computer control of machines and processes used in manufacturing systems. Relevant issues on the analysis, design, and implementation of computer controlled systems.</td>
</tr>
<tr>
<td>5355</td>
<td>Computer-Aided Manufacturing (3:3:0)</td>
<td></td>
<td>Prerequisite: Consent of instructor. Computer usage in manufacturing systems, CAD/CAM, numerical control, CNC, DNC, computer-aided process planning, manufacturing engineering database systems, industrial robot applications, flexible manufacturing systems, and integration of CAD and CAM.</td>
</tr>
<tr>
<td>6000</td>
<td>Master’s Thesis (V1-6)</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>6323</td>
<td>Systems Management Global Environment (3:3:0)</td>
<td></td>
<td>Prerequisite: Admission to the doctoral program. This course explores the critical quantitative as well as qualitative issues shaping the practice and research of systems-technical management.</td>
</tr>
<tr>
<td>6329</td>
<td>Systems Management Seminar (3:3:0)</td>
<td></td>
<td>Prerequisite: Admission to the doctoral program. Doctoral research seminar exploring the latest trends in systems engineering and technical management research.</td>
</tr>
<tr>
<td>6331</td>
<td>Advanced Industrial Engineering Topics (3)</td>
<td></td>
<td>Prerequisite: Doctoral degree status and departmental approval. Advanced theoretical and/or empirical studies in industrial engineering, ergonomics-human factors, quality or manufacturing engineering, or OR-engineering systems management.</td>
</tr>
<tr>
<td>6399</td>
<td>Research Methods in Science and Technology (3:3:0)</td>
<td></td>
<td>Prerequisite: Doctoral degree status and design of experiments or equivalent. Examines the research process and differing methodological approaches to research in laboratory, industrial, field work, and case study settings.</td>
</tr>
<tr>
<td>7000</td>
<td>Research (V1-12)</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>8000</td>
<td>Doctor’s Dissertation (V1-12)</td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Manufacturing Systems and Engineering (MSE)

(To interpret course descriptions, see page 8.)

#### Graduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>5101</td>
<td>Graduate Seminar of Advanced Manufacturing Systems and Engineering (1:1:0)</td>
<td></td>
<td>Prerequisite: Advancement to enrollment status of the M.S. in Manufacturing Systems and Engineering program. Discussion of advanced manufacturing systems and engineering.</td>
</tr>
<tr>
<td>5333</td>
<td>Manufacturing Systems and Engineering Internship (3)</td>
<td></td>
<td>Prerequisite: Consent of instructor and program advisor. Internship carried out under the supervision of the program graduate advisor, the student’s major advisor, and/or project manager of the internship provided by industrial companies. The internship must take place at the approved major industrial companies within the state of Texas with careful planning in advance.</td>
</tr>
<tr>
<td>6000</td>
<td>Master’s Thesis (V1-6)</td>
<td></td>
<td>Prerequisite: Advancement to candidacy status. Thesis research carried out under the supervision of the student’s major advisor.</td>
</tr>
</tbody>
</table>
Department of Mechanical Engineering

Faculty

Jharna Chaudhuri, Ph.D., Chairperson

Professors: Anderson, Barhorst, J. Berg, Chaudhuri, Chyu, Eibeck, Ertas, Hashemi, Jankowski, Levitas, Maxwell, Parameswaran

Associate Professors: Ekworo-Osire, James, Oler, Pantoya, Rasty

Assistant Professors: Bhattacharya, Han, He, Idesman, Ma, Smirnov, Tate

Lecturers: C. Berg, Fanning, Mosedale

About the Program

This department supervises the following degree programs:

- Bachelor of Science in Mechanical Engineering
- Master of Science in Mechanical Engineering
- Doctor of Philosophy in Mechanical Engineering

Vision. The vision of the department is to be recognized for exceptional undergraduate and graduate education in the art, science, and practice of mechanical engineering.

Mission. 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 department programs support technological development and innovation to meet many goals, including the needs of society. Faculty and student participation in design projects, research, or other similar activities is considered essential to their professional development. The education opportunities are to take place in a collegial environment of effective instruction and counsel.

Program Educational Objectives. The program educational objectives embody the expected accomplishments of graduates in the first few years after graduation. The program educational objectives of the department of mechanical engineering as adopted by its constituents are as follows. As engineers, graduates will:

- Apply their knowledge and skills to solve (engineering) problems both well posed and ill defined.
- Be recognized for their professional contributions in industry, academia, and government.
- Provide effective technical, strategic, and administrative leadership of teams and organizations.
- Continue a process of independent lifelong learning and (as applicable) are successful in graduate schools.
- Know and fulfill ethical and professional responsibilities as embodied in the Engineering Code of Ethics.

These objectives are published in the university’s catalog, mechanical engineering’s Web page, and in information sent to potential students.

Program Overview. 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.

Undergraduate Program

Freshman Admission. To gain admission into mechanical engineering, entering freshmen or transfer students with less than 12 hours of transferable college work must meet the university’s published assured admission standards. Students who are interested in declaring mechanical engineering as their major but do not meet the assured admission requirements will enter with the major of engineering undecided. Note that while not eligible for admission to mechanical engineering, these students may be eligible for admission to other engineering programs at Texas Tech.

Transfer Admission. Transfer students to Texas Tech or students who wish to change their major to mechanical engineering from engineering undecided or another major at Texas Tech must have completed a minimum of 12 hours of transferable college work that includes Calculus (MATH 1351) and Chemistry I (CHEM 1307/1107) with an adjusted GPA of 2.5. This GPA criteria is subject to change based on the current enrollment and enrollment trends in the Department of Mechanical Engineering.

Enrollment in Mechanical Engineering Courses. Enrollment in Introduction to Mechanical Engineering (M E 1315) is open to all students accepted for admission to Texas Tech University. Enrollment in any mechanical engineering course beyond M E 1315 requires official admission to the Department of Mechanical Engineering or another engineering program at Texas Tech University. Students in the engineering undecided program are not eligible for enrollment in mechanical engineering courses beyond M E 1315.

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 coursework 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 Bachelor of Science in Mechanical Engineering 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 cumu-
### Curriculum for Mechanical Engineering

#### FIRST YEAR

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>MATH 1351, Calculus I</td>
<td>MATH 1352, Calculus II</td>
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<tr>
<td>CHEM 1307, Prin. of Chem. I</td>
<td>PHYS 1408, Prin. of Phys. I</td>
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<tr>
<td>M E 1315, Intro to Mech. Eng.</td>
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<td>HIST 2300, History of U.S. to 1877</td>
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#### SECOND YEAR

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<tbody>
<tr>
<td>MATH 2350, Calculus III</td>
<td>MATH 3350, Higher Math. Engr. I</td>
</tr>
<tr>
<td>PHYS 2401, Prin. of Phys. II</td>
<td>M E 2322, Engr. Thermo. I</td>
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<tr>
<td>E E 3301, General E E</td>
<td>M E 2364, Engr. Mechanics I</td>
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<tr>
<td>M E 2311, Materials Science</td>
<td>*Elective (Political Science)</td>
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<td>POLS 1301, Amer. Govt., Org.</td>
<td>*Elective (Oral Communication)</td>
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#### THIRD YEAR

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<tbody>
<tr>
<td>M E 3315, Computer-Aided Analysis</td>
<td>M E 3433, Systems &amp; Vibrations</td>
</tr>
<tr>
<td>M E 3331, Dynamics</td>
<td>M E 3365, Intro. to Design</td>
</tr>
<tr>
<td>M E 3370, Fluid Mechanics</td>
<td>M E 3165, Intro. to Design (Lab.)</td>
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#### FOURTH YEAR

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<tr>
<td>M E 4370, Engr. Design I</td>
<td>Elective (Math or Science)**</td>
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<tr>
<td>ENSR 4101, F.E. Exam</td>
<td>Elective (Visual/Performing Arts)*</td>
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<td>Elective (Humanities)*</td>
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<td>Elective (Humanities)**</td>
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<td>Elective (Multicultural)†</td>
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Minimum hours required for graduation—127

* 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.

### Graduate Program

Students seeking master’s or doctor’s degrees should consult the graduate advisor for the department about their plans of study before enrolling for any courses. The student may wish to emphasize coursework and research activities in any one of the following areas: thermal sciences, fluid mechanics, dynamics and controls, design, solid mechanics and materials, or multidisciplinary studies.

Before being recommended for admission to a master’s degree program with a major in this department, the student may be requested to take a preliminary examination to determine proficiency in background for graduate work or may be required to take (without graduate credit) such undergraduate leveling courses as may be designated by the department.

Three general plans of study are available for the Master of Science degree: (1) the thesis option consisting of 30 hours (six hours of thesis credit and 24 hours of graduate coursework); (2) the nonthesis report option consisting of 36 hours (33 hours of graduate coursework and three hours of credit for the master’s report); and (3) the nonthesis coursework only option (36 hours of graduate coursework). The decision on which plan to follow is made jointly by the student and the advisor. Each option has a set of required core courses and a set of elective courses that are selected in consultation with the student’s advisor. Each of the three options requires a final comprehensive evaluation during the semester of intended graduation. Departmental guidelines for coursework, advisory committees, and the final evaluation can be obtained from the department’s graduate advisor.

The department has no specific foreign language requirement. Research tools are included as an integral part of the degree program in the leveling, minor, or major courses of each student. All courses are determined by the student’s advisory committee. Additional information may be obtained from the department.

### Mechanical Engineering (M E)

**To interpret course descriptions, see page 8.**

#### Undergraduate Courses

1315. Introduction to Mechanical Engineering (3:2:2). 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.


2322. Engineering Thermodynamics I (3:3:0). Prerequisite: MATH 2350 and PHYS 1408. Properties of pure substances, ideal gas behavior, first and second law analysis, and applications to energy conversion and power cycles.

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 deflagrations. Approved M E or design elective.

4360.  Sustainable Energy (3:3:0).  Senior standing: M E 2322, MATH 3350.  Exploration of the global energy demand and its environmental impact for continued human development. Alternative and petroleum-based fuels will be examined for near-term and long-term solutions. Includes researching, developing presentations, and participating at a high level of activity.


4371.  Engineering Design II (3:2:0).  Prerequisite: M E 4370.  Design projects characteristic of mechanical engineering, including consideration of cost, design optimization, codes and standards, and ethics. (Writing Intensive)


4375.  HVAC Systems (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.

4385.  Introduction to Microsystems I (3:3:0).  For majors only or with department consent. Fundamentals of microelectromechanical (MEMS) and microfluidic systems. Project-based course introduces microsystem design, analysis, simulation, and manufacturing through several case studies using representative devices. Approved M E elective.

4386.  Introduction to Microsystems II (3:3:0).  Prerequisite: M E 4385.  For majors only or with department consent. Application of microfabrication to create microsensor systems. Integration of optics, optoelectronics, and microfluidics. Includes design projects. Other M EMS projects. Approved M E elective.

4390.  Foundations of Nuclear Engineering (3:3:0).  Prerequisite: PHYS 2401, MATH 2350.  Survey of nuclear engineering concepts and applications, including nuclear reactions; radioactivity; and radiation interaction with matter and reactor physics. Applications in medicine, industry, and research. Approved M E elective.

5120.  Graduate Seminar (1:1:0).  Discusses mechanical engineering research topics. Teaches written and oral communication techniques for professional engineers. Required first semester for all M E graduate students.


5302.  Numerical Analysis of Engineering Systems (3:3:0).  Prerequisite: M E 3355, MATH 3350, or consent of instructor. Numerical analysis of ordinary and partial differential equations and other advanced topics as applied to mechanical engineering problems.

5311.  Advanced Dynamics (3:3:0).  Prerequisite: M E 3331, 3433, or consent of instructor. Newtonian dynamics of particles and rigid bodies, rotating coordinate systems, coordinate and inertia property transformations, Lagrangian and Hamiltonian mechanics, Gibbs-Appell equations, and gyroscopic mechanics.

5312.  Control Theory I (3:3:0).  Prerequisite: MATH 2360, 3354, 3454, corequisite: M E 3351, or consent of instructor. Linear dynamical systems, stability, frequency response and Laplace transform, feedback, state space description, and geometric theory of linear systems. (MATH 5312)

5313.  Control Theory II (3:3:0).  Prerequisite: MATH 5312, 5316, 5318, or consent of instructor. Quadratic regulator for linear systems, Kalman filtering, nonlinear systems, stability, local controllability, and geometric theory of nonlinear systems. (MATH 5313)

5314.  Nonlinear Dynamics (3:3:0).  Prerequisite: M E 5311, or 5316.  Nonlinear oscillations and perturbation methods for periodic response; bifurcations and chaotic dynamics in engineering and other systems.

5316.  Advanced Vibrations (3:3:0).  Prerequisite: M E 3321, 3433, or consent of instructor. Vibration of single and multiple-degree-of-freedom systems, continuous systems, FE formulation, computer-aided modal analysis, random vibrations.
5317. Robot and Machine Dynamics (3:3:0). An overview of planar mechanism (cams and linkages) and set analysis and synthesis. Introduction to spatial mechanisms and robotics kinematic and dynamic analysis and control. An extended and in-depth project is required. (E 4335)

5321. Thermodynamics (3:3:0). Prerequisite: M E 3322 or consent of instructor. Classical macroscopic theory with an emphasis on availability concepts in nonreacting, reacting, single phase, and multicomponent systems.


5325. Convection Heat Transfer (3:3:0). Prerequisite: M E 3371 or consent of instructor. Fundamental principles of heat transmission by convection; theoretical, numerical, and empirical methods of analysis for internal and external flows.

5326. Combustion (3:3:0). Prerequisite: M E 3322 and 3371. Introduction to combustion kinetics; the theory of premixed flames; turbulent combustion; formation of air pollutants in combustion systems; examples of combustion devices which include internal combustion engines, gas turbines, furnaces and waste incinerators; alternative fuel sources.


5330. Boundary Layer Theory (3:3:0). Prerequisite: M E 3370 or consent of instructor. Fundamental laws of motion for Newtonian viscous flows in steady laminar and turbulent boundary layers. Utilization of analytical and approximate methods to obtain solutions for viscous flows.


5336. Computational Fluid Dynamics (3:3:0). Prerequisite: M E 5302 or equivalent. Simultaneous solution of momentum, heat, and mass transfer problems by applying various computational techniques.

5338. Advanced Fluid Mechanics (3:3:0). Basic laws, fundamental theories, and engineering applications in fluid mechanics, including Stokesian dynamics, lubrication theory potential flow, vortex dynamics, boundary layers and turbulence.

5340. Elasticity (3:3:0). Prerequisite: Consent of instructor. Stress, deformation, and strain; basic equations; analytical solution; energy principles and principles of virtual displacements; finite element method; and solutions of problems with elements of design.

5341. Plasticity (3:3:0). Prerequisite: Consent of instructor. Stress-strain relations for plasticity and viscoplasticity; variational principles, finite element method, radial return algorithm, elements of limit analysis, and solutions of problems with elements of design.


5343. Continuum Mechanics (3:3:0). Prerequisite: Consent of instructor. Basic balance equation in tensor form, as well as constitutive equations for elastic, viscous, plastic solids and liquids.


5345. Computational Mechanics I (3:3:0). Prerequisite: One or more of the following courses M E 5311, 5340, 5341, 5343. Finite element method for elastic problems, Galerkin weighted residual and variational approaches to numerical solutions of mechanical problems, error estimates and adaptive FE refinement, iterative algorithms for nonlinear problems, static and dynamic analysis of nonlinear problems, general purpose finite element codes.

5346. Computational Mechanics II (3:3:0). Prerequisite: One or more of the following courses M E 5311, 5340, 5341, 5343. Finite element method for dynamic elastic problems, time integration schemes for dynamic problems, iterative algorithms for nonlinear dynamic problems, heat transfer analysis, coupled thermomechanical problems, accuracy analysis, general purpose finite element codes.


5350. Mechanics of Composite Material (3:3:0). Prerequisite: M E 5340. Introduction and analysis of the governing principles of the strength and stiffness of uni- and multi-directional composite materials as well as failure analysis and design applications of those materials.


5353. Fundamental of Transdisciplinary Design and Process (3:3:0). The fundamental aspects of design and process which cut across the boundaries of all disciplines and provide a means for solving complex problems.


5362. Orthopedic Biomechanics (3:3:0). The study of kinematics and kinetics of the human musculoskeletal system with emphasis on injuries (sports and trauma), orthopedic fixation, fixation, fixation device design.

5385. Introduction to Microsystems (MEMS) I (3:3:0). Fundamentals of microelectromechanical (MEMS) and microfluidic systems. Project-based course introduces basic microsystem design, analysis, simulation, and manufacture through several case studies using representative devices.

5386. Introduction to Microsystems (MEMS) II (3:3:0). Prerequisite: M E 5385. Application of microfabrication to create microsensor systems. Integration of optics, optoelectronics and microfluidics. Includes other MEMS projects.

5387. Introduction to Microsystems (MEMS) III (3:3:0). Prerequisite: M E 5386 or consent of instructor. Leadership of a team in an interdisciplinary environment. Simulation and computer-aided MEMS design and analysis.

6000. Master’s Thesis (V1-6).

6301. Master’s Report (3).

6330. Advanced Topics in Mechanical Engineering (3:3:0). Expose students to new and advanced technology pertaining to topics in the mechanical engineering field with the most current research information available.

6331. Theoretical Studies (3:3:0). Prerequisite: Consent of instructor. Theoretical study of advanced topics selected on the basis of the departmental advisor’s recommendation. May be repeated for credit in different areas.

7000. Research (V1-12).

8000. Doctor’s Dissertation (V1-12).
Department of Petroleum Engineering

Faculty
Lloyd R. Heinze, Ph.D., Chairperson
Roy S. Butler Professor: Heinze
Associate Professor: House, Ziaja
Assistant Professors: Adisoemarta, Siddiqui
Instructor: Fasesan

About the Program
This department supervises the following degree programs:
• Bachelor of Science in Petroleum Engineering
• Master of Science in Petroleum Engineering
• Doctor of Philosophy in Petroleum Engineering

Mission. The mission of the Petroleum Engineering Department has three elements:
• To provide excellent instruction and design experiences essential for graduates to enter the practice of petroleum engineering and pursue lifelong professional development.
• To provide research opportunities for students that generate, communicate, and apply new knowledge for the betterment of society.
• To foster a spirit of service and leadership among students and faculty and assist the public in addressing issues concerning our resources, protecting our environment, and developing our infrastructure.

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 faculty, students, alumni, petroleum industry advisory board (PIAB) members, and industry employers. To accomplish the mission, the petroleum engineering faculty, with advice from students, alumni, PIAB members, and industry employers, endorse program educational objectives to generate petroleum engineering graduates who will accomplish the following during the first few years after graduation:
• Be successful in diverse career paths in the petroleum industry.
• Continue professional development through participation and leadership in professional organizations (SPE, ASEE, API, AADE, SPWLA).
• Pursue lifelong learning through continuing education or post-graduate education (professional meetings, short courses, graduate courses).
• Progress to professional registration so that some individuals graduate from an ABET-accredited degree plan, pass the Fundamentals of Engineering Exam, work in increasingly responsible engineering positions, and pass the Professional Exam.

The department, 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 Bachelor of Science in Petroleum Engineering program as well as the Master of Science in Petroleum Engineering and the Ph.D. in Petroleum Engineering programs are educated to develop the following:
• An ability to apply knowledge of mathematics, science, and engineering.
• An ability to design and conduct experiments, as well as to analyze and interpret data.
• An ability to design a system, component, or process to meet desired needs.
• An ability to function on multi-disciplinary teams
• An ability to identify, formulate, and solve engineering problems.
• An understanding of professional and ethical responsibility.
• An ability to communicate effectively.
• A broad education necessary to understand the impact of engineering solutions in a global and societal context.
• A recognition of the need for and an ability to engage in lifelong learning.
• A knowledge of contemporary issues.
• An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program Overview. 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.

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 1,700 B.S. degrees since the program’s inception in 1948. A high-priority goal is to produce quality B.S. graduates measured by:
• Nearly 100 percent placement of graduates each year.
• Student average starting salaries near the top of the national average in accredited U.S. petroleum engineering departments.
• Provide summer intern opportunities and experiences within the industry for 100 percent of students desiring positions.
• Ninety percent Fundamentals of Engineering Examination pass rate of graduating seniors.
• Recruiting quality undergraduates.
• ABET accreditation.
• Petroleum Industry Advisory Board recommendations on curriculum and graduates.
• 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 14 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 six 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.

The Petroleum Engineering curriculum is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Undergraduate Program
Success in engineering courses is highly dependent on knowledge and skills in mathematics. It is strongly recommended that students have a minimum mathematics SAT score of 550, a minimum score of 25 on the mathematics ACT, or take mathematics courses at a junior or community college to be prepared to take calculus classes at Texas Tech.

The department recommends that students consider acquiring a personal computer to facilitate coursework.
Curriculum. Petroleum engineering applies the curriculum management of the College of Engineering. To graduate, the student must complete the specified minimum number of hours of the curriculum, have a minimum overall GPA of 2.0, and earn a grade of C or better in all courses.

Transfer Admissions. Students applying for transfer into petroleum engineering from another institution or from another department at Texas Tech must have completed a minimum of 30 hours of transferable college work that includes Calculus I and II (MATH 1351 and 1352), Chemistry I (CHEM 1307 and 1107), and English I and II (ENGL 1301 and 1302) with a GPA of 2.50 or higher. This GPA criteria is subject to change based on the current enrollment trends in the Department of Petroleum Engineering.

Petroleum Engineering (PETR)
(To interpret course descriptions, see - 8.)

Undergraduate Courses

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.


2301. Petroleum Development Methods (3:3:0). Prerequisite: MATH 1351, ENGL 1302, and PHYS 1405. 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 1307. 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.

3304. Formation Evaluation (3:3:0). Prerequisite: PHYS 2401, MATH 3342, and PETR 3402. Use of open-hole well logs including logging suites for the electric survey to the induction and laterolog suites to determine volume and relative productivity of hydrocarbon reserves. Analysis and design techniques of actual well logging packages are emphasized.

3306. Reservoir Engineering (3:3:0). Prerequisite: PETR 3402, PHYS 2401, and MATH 2350. Production performance predictions and estimation of hydrocarbons in place for gas, condensate, and oil reservoirs. Applications of material balance calculations for various reservoir types and applications of fluid flow in porous media.

3308. Engineering Communications (3:3:0). Prerequisite: ENGL 1301, 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)

3402. Reservoir Rock Properties (4:3:3). Prerequisite: MATH 1352, C E 3305, and PHYS 1408; corequisite: PETR 2302. 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 porous media.

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.

4121. Petroleum Engineering Seminar (1). Prerequisite: PHYS 2401, CHEM 1107, 1307, G E 3302, 3303, 3305, MATH 3342, 3350, M E 2322, I E 3301. Study of engineering problems of special interest and value to the student.

4300. Petroleum Property Evaluation and Management (3:2:3). Prerequisite: PETR 3304, 3306, 3308, I E 3301, GEOL, 3302, 4324, MATH 3342, 3350; corequisite: PETR 4308, 4309. 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. Design course. (Writing Intensive)

4303. Petroleum Production Methods (3:3:0). Prerequisite: PETR 2301, MATH 2350, C E 2302, 3305, PHYS 2401. 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. (Design Course)


4308. Advanced Reservoir Engineering (3:3:0). Prerequisite: PETR 3304, 3306, MATH 3342, 3350; corequisites: PETR 4300, 4308. Fundamental laws, anisotropic, coordinate systems and reservoir geometry, continuity and diffusivity equations, pressure-time-volume relationships. Basic theory of transient flow and testing, type curves, pressure derivative method, buildup, drawdown, interference and reservoir limit tests. Water influx, decline curves analysis, software and reservoir models. Unconventional gas reservoirs.

4309. Well Completion, Production Facilities, and Stimulation (3:3:0). Prerequisite: PETR 3303, 3308, 3407, C E 3302, 3303, 3305, M E 2322, I E 3301, MATH 3342, 3350 and advanced standing; corequisites: PETR 4300, 4308. Problem course in analysis, design, and application of Completion, Production Facilities and Stimulation. (Design Course)

4331. Special Problems in Petroleum Engineering (3). Prerequisite: Advanced standing. Individual studies in advanced engineering areas of special interests. May be repeated for credit.

4405. Natural Gas Engineering (4:3:3). Prerequisite: PETR 3306, M E 2322, PHYS 2401, MATH 3342, 3350. The production of natural gas and condensate reservoirs; processing, transportation, distribution, and measurement of natural gas and its derivatives.

4407. Drilling Engineering (4:3:1). Prerequisite: PETR 2301, GEOL 3302, PHYS 2401, MATH 3342, 3350, C E 3303, 3305; corequisite: I E 3301. Rotary drilling systems, drilling fluids

Curriculum for Petroleum Engineering

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<td>CHEM 1307, Prin. of Chem. I</td>
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<td>MATH 1352, Calculus II</td>
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<td>PETR 1305, Engr. Analysis</td>
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SECOND YEAR

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<td>C E 2301 / ME 2364, Statics</td>
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<td>Elective - Core Curriculum*</td>
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<td>MATH 2350, Calculus III</td>
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<td>PETR 2302, Reservoir Fluid Properties</td>
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<td>PHYS 2401, Prin. of Physics II</td>
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<td>M E 2322 / ChE Thermodynamics</td>
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<td>GEO 1303, Physical Geology</td>
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<td>GEO 1101, Physical Geology Lab</td>
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THIRD YEAR

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<td>GEO 3302, Structural Geology</td>
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<td>MATH 3342, Statistics for Engineers</td>
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<td>PETR 3308, Engr. Comm.</td>
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<td>PETR 3402, Reservoir Rock Properties</td>
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FOURTH YEAR

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<td>Fall</td>
<td>PETR 4303, Petr. Production Methods</td>
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<td>ELECTIVE - Core Curriculum</td>
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<td>TOTAL</td>
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Minimum hours required for graduation – 129.
One year (two semesters) of a single foreign language required if student did not have two years in high school.
* Courses needed to fulfill the university Core Curriculum requirements include 6 hours of political science, 6 hours of U.S. History, 3 hours of multicultural requirement, 3 hours of humanities (F), and 3 hours of visual and performing arts (F). Students should consult the Core Curriculum requirements prior to registration for courses.
Graduate Program / Petroleum Engineering

The department is staffed with industry-experienced faculty who has an average of more than 15 years of experience per faculty member. This experience is combined with sound engineering and scientific principles in the classroom and made an integral part of the candidate’s educational challenge. Also, the department is located in a geographical area that produces 20 percent of the nation’s petroleum resources and 68 percent of Texas’ petroleum resources lie within a 175-mile radius. This proximity provides the student with unique opportunities for directly interfacing with industry while still a student as well as first hand observations of oil field operations. The department has been consistently ranked in the top ten petroleum engineering departments for both the graduate and undergraduate program.

Graduate studies in petroleum engineering prepare the engineer to assume responsibility in technical and managerial areas within the oil and gas industry. Historically, the graduate can expect to be challenged quickly and in areas of strong potential for personal and professional growth. Candidates with superior skills and the desire to progress within the industry can expect to be successful. The Petroleum Engineering Department at Texas Tech prepares the advanced student with the technical skills required to meet those challenges.

All petroleum-engineering courses can be taken for credit. No more than six hours of PETR 5000 can appear in a master degree plan without approval from the graduate dean. The curriculum is organized into four core areas that denote the teaching and research concentration of the faculty. However, the degree plan of a petroleum engineering student should include at least one course from each of the four core areas:

- Drilling Engineering—PETR 5000, 5302, 5303, 5315, 5317.
- Production Engineering—PETR 5000, 5306, 5314, 5316, 5318, 5319.
- Reservoir Engineering—PETR 5000, 5307, 5309, 5310, 5311, 5312, 5313, 5320, 5321, 5322, 5323, 5325, 5326, 5327.
- Formation Evaluation—PETR 5000, 5304, 5305, 5308, 5324, 5328, 5329.

Master’s Program

The master’s program requires a minimum of 30 graduate credit hours above the baccalaureate degree, including 6 credit hours allowed for the thesis and at least 18 credit hours of graduate petroleum engineering courses (excluding seminar). Additional graduate credit hours of other engineering, mathematics, or science will be allowed when approved by the candidate’s advisory committee and graduate advisor. A written thesis is required for the master’s degree. In addition, the candidate’s thesis committee will administer a final oral exam in defense of the completed thesis.

The department also offers a nonthesis master’s program that requires a minimum of 33 graduate credit hours approved by the graduate advisor (excluding seminar). The graduate program for nontesis master’s candidate is specifically tailored for that candidate’s educational background, industry experience, and individual interest. For both the thesis and the nonthesis programs, a final comprehensive examination is required. The policy governing the comprehensive examination is available with the departmental graduate advisor. Comprehensive examinations are given only after the graduate dean has admitted the students to candidacy.

Qualified students with a B.S. degree in an engineering field may enter the M.S. program in petroleum engineering by completing (without graduate credit) leveling work as needed in physics, chemistry, mathematics, geology, basic engineering courses and undergraduate petroleum engineering courses. The details of the leveling program will be worked out on an individual basis by the graduate advisor, and the length of the program will depend on the student’s background. The leveling program courses (PETR 5380, 5381, 5382, 5383, and 5384) must be completed with a minimum grade of B.

Joint B.S.—M.S. Degrees. Student entering the petroleum 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 a joint B.S.—M.S. degree are available. Students interested in these programs should inform their academic advisor during the first semester of the junior year.

All graduate students are required to register for PETR 5121 or 7121 each long semester unless exempted by the chairperson. The graduate seminar course does not count toward fulfilling degree requirements for the master’s or doctor’s program.

Doctoral Program

The objectives of the Ph.D. program are to provide students opportunities to reach a critical understanding of the basic scientific and engineering principles underlying their fields of interest and to cultivate their ability to apply these principles creatively through advanced methods of analysis, research, and synthesis. The Ph.D. degree is awarded primarily on the basis of research. Applicants for the doctoral degree must have a degree in engineering disciplines and must meet the approval of the department’s graduate committee. Students majoring in this department for doctoral degree must take diagnostic examinations (or preliminary examination) by the end of their second long semester. These examinations are based on the undergraduate curriculum. Each student is required to take the diagnostic examinations in their area of specialization and any three-core areas.

In addition to regulations established by the Graduate School, applicants for candidacy for the doctor’s degree are required to demonstrate high proficiency in a single research area. The coursework for each student must meet the approval of the student’s doctoral advisory committee. The department has no specific foreign language requirement (but a foreign language for the Ph.D. degree can be specified at the discretion of the student’s dissertation advisor). Research tools are included as an integral part of the degree program in the leveling, minor, or major courses of each student. Additional information may be obtained from the departmental program advisor.

All graduate students are required to register for PETR 5121 or 7121 each long semester unless exempted by the chairperson. The graduate seminar course does not count toward fulfilling degree requirements for the master’s or doctor’s program.

5000. Studies in Advanced Petroleum Engineering Topics (V1-6). An individual study course. Nature of course depends on student’s interests and needs. May be repeated for credit on different topics.

5121. Graduate Seminar (1:1:0). Discussions of petroleum engineering research and special industry problems. Required each semester for all graduate students. May be repeated for credit.


5302. Petroleum Environmental Engineering (3:3:0). Prerequisite: Consent of instructor. A unified treatment of all aspects of

Graduate Courses

5000. Studies in Advanced Petroleum Engineering Topics (V1-6). An individual study course. Nature of course depends on student’s interests and needs. May be repeated for credit on different topics.
petroleum environmental well planning processes, pollution prevention and safety, management practices and self-assessment process, environmental oil and gas law.

5303. Advanced Drilling Techniques (3:3:0). Prerequisite: PETR 3307 or consent of instructor. A unified treatment of all aspects of well planning and optimization of oil and gas drilling processes.

5304. Advanced Well Log Analysis (3:3:0). Prerequisite: PETR 3304 or consent of instructor. Methods of analyzing various types of well logs to obtain quantitative hydrocarbon reservoir parameters.

5305. Advanced Formation Evaluation (3:3:0). Prerequisite: Must have graduate standing in petroleum engineering. Application of petrophysical and core analysis to formation evaluation. Integration of special core analysis with well logs.

5306. Advanced Artificial Lift Methods (3:3:0). Prerequisite: Consent of instructor. Study of the design and analysis of current mechanisms for lifting oil from the reservoir to surface facilities including aspects such as injectivity, displacements in layered reservoirs, and application of finite difference methods to interpret transient pressure behavior.

5308. Pressure Transient Analysis (3:3:0). Prerequisite: MATH 3350, PETR 3303, or consent of instructor. Theory of transient fluid flow in petroleum reservoirs and applications of methods to interpret transient pressure behavior.

5309. Hydrocarbon Reservoir Simulation (3:3:0). Prerequisite: Consent of instructor. The development of unsteady state fluid flow equations for hydrocarbon reservoirs and the application of finite difference methods to obtain solutions to the equations.


5311. Thermal Oil Recovery (3:3:0). Prerequisite: Consent of instructor. Study of the recovery of oil by thermal methods, including steam injection and in situ combustion.

5312. Simulation of Enhanced Oil Recovery Applications (3:3:0). Prerequisite: Consent of instructor. Study of 1D, 2D, 3D, one-, two-, and three-phase simulation modeling of carbon dioxide and thermal recovery applications.


5314. Nodal Analysis and Well Optimization (3:3:0). Prerequisite: Consent of instructor. Inflow performance relationships, well design, theory of the reservoir flow, flow restrictions, completion effects, multiphase flow, and use of computer programs for complex solutions.

5315. Horizontal Well Technology (3:3:0). Prerequisite: PETR 3303, 3407, or consent of instructor. Topics include why horizontal, incremental cost, horizontal drilling change, completion modification, production difference, reservoirs, pressure transient, and analysis adjustment.

5316. Advanced Production Engineering (3:3:0). Prerequisite: PETR 3303, 4309, or consent of instructor. Advanced study of production operations, well deliverability, inflow performance, gas lift design, production system analysis and optimization, downhole equipment and surface facilities design.

5317. Well Completion and Stimulation (3:3:0). Prerequisite: Consent of instructor. Completion parameters, well design, fatigue failure, mechanical properties, hydraulic, acid, sandstone fracturing, well bore stability, proppants placement, skin damage, gravel packing, and workovers.

5318. Gas Production Engineering (3:3:0). Prerequisite: Consent of instructor. Design of processing, transportation, distribution, and flow measurement systems; gas storage reservoirs, flow in porous media, tubing, and pipelines; phase behavior of gas condensates; and coal bed methane.

5319. Multiphase Fluid Flow in Pipes (3:3:0). Prerequisite: Consent of instructor. Horizontal, vertical, and inclined flow in pipes and annuli; numerical methods correlations usage and development; empirical correlations correct usage and extrapolations potential; future of multiphase flow.


5322. Computational Phase Behavior (3:3:0). Prerequisite: Consent of instructor. Advanced PVT and EOS characterization, tuning EOS by regression, gas condensate reservoirs, use of laboratory experiments and correlation to obtain PVT data, pseudoization and use of PVT programs.

5323. Advanced Phase Behavior (3:3:0). Prerequisite: Consent of instructor. Thermodynamics of equilibria, volumetric phase behavior, Gibbs and Helmholtz energy, chemical potential, phase diagram, modeling paraffins, asphaltene, hydrates and mineral deposition, use of PVT software.

5324. Geostatistics for Reservoir Engineers (3:3:0). Prerequisite: Consent of instructor. Flow simulation, characterization, geostatistics, estimation, simulation, case studies, quantifying uncertainties, geological simulation, data integration, grid block properties, and geostatistics software.

5325. Water Flooding Techniques (3:3:0). Prerequisite: Consent of instructor. Frontal advanced theory for multiphase flow, immiscible flow, capillary cross flow, pseudofunctions, streamline, measures of heterogeneity, field case studies, pattern flooding, and use of black oil reservoir simulators.


5327. Streamline Simulation (3:3:0). Prerequisite: Consent of instructor. Multiphase flow equations, displacements in layered reservoirs, streamline models, frontal advanced equation with gravity effects, volumetric linear scaling, streamlines with compositional effects.

5328. Advanced Property Evaluation (3:3:0). Prerequisite: Consent of instructor. Statistical evaluation of hydrocarbon producing properties, risk analysis, economic analysis of production forecast, reservoir architectures, and cash flow evaluation.

5329. Advanced Core Analysis (3:3:0). Prerequisite: Consent of instructor. Rock properties relating to production of oil and gas, multiphase fluid flow, micro- and macro-interaction of fluids and reservoir rocks, Archie parameters and well logs, modeling saturations with permeability.

5330. Drilling Engineering Methods (3:3:0). Prerequisite: Consent of instructor. Drilling equipment, components, description, operation, drilling fluids; hydraulic calculations; casing design; hole problem; cost control, penetration rate, well planning; pressure control; directional drilling; bit; cement. (Leveling program course)

5331. Production Engineering Methods (3:3:0). Prerequisite: Consent of instructor. Artificial lift, inflow performance relationships, well design and application of stimulation practices, processing equipment, separator problems, emulsions, treating, and transmission systems. (Leveling program course)

5332. Well Logging Fundamentals (3:3:0). Prerequisite: Consent of instructor. Use of open-hole logs, survey of induction and laterolog suits to determine reserves. (Leveling program course)

5333. Reservoir Engineering Fundamentals (3:3:0). Prerequisite: Consent of instructor. Reservoir performance predictions, computation of in place gas, condensate and oil reservoirs, applications of M E for reservoir mechanisms, decline curves, EOR methods, fluid flow in porous media. (Leveling program course)

5334. Basic Fluids and Rock Properties (3:3:0). Prerequisite: Consent of instructor. Reservoir fluids and rock properties, fluid sampling, phase behavior, reservoir drives mechanisms, concepts of porosity, permeability, saturations, capillary pressure and compressibility for gas-oil production. (Leveling program course)

6000. Master’s Thesis (V1-12).

6001. Master’s Report (V1-6).

6331. Proposal/Project Communication (3:3:0). Prerequisite: Admission to doctoral program. Guide to research, technical report, project planning, problem definition, grant proposals, thinking, talking, and writing in research, writing technical journal, review articles, and technical presentations.

7000. Research (V1-12).

7121. Doctoral Seminar (1). Open discussion of recent advanced topics with special attention to their relationship to the philosophy of petroleum engineering. May be repeated for credit.

8000. Doctor’s Dissertation (V1-12).
Honors College

Gary M. Bell, Ph.D., Dean
103 McClellan Hall | Box 41017 | Lubbock, TX 79409-1017
T 806.742.1828 | F 806.742.1805
honors@ttu.edu | www.honr.ttu.edu

Faculty

Although Honors courses are taught by professors in departments and colleges throughout the university, the following faculty have appointments exclusively with the Honors College or have joint appointments that include the Honors College.

Professors: Bell, Elbow, Haragan, Purinton
Associate Professors: Brink, McGinley
Assistant Professors: Ashby-Martin, Bradatan, Caswell, Tomlinson, Wilhelm

About the College

Texas Tech offers a special program for highly motivated and academically talented students who want to maximize their college education. Considered to be one of the best honors programs in the nation, the Honors College provides the personalized feeling and challenging instruction of a small private college. The curriculum is designed to provide students with a distinctive and broadly integrated intellectual experience that will complement all academic majors and career paths. The ultimate goal is to assist students in developing a broad education that will enhance their critical thinking and methodological skills and engender a spirit of intellectual independence.

With the exception of those in the natural history and humanities major and the arts and letters major, students accepted into the Honors College are also enrolled concurrently in the college that houses their major area of study. In addition to providing financial support for eligible students through merit-based and special Honors scholarships, enrollment in the Honors College gives students an opportunity to interact with other similarly motivated students and access to such special benefits as early registration, special-interest housing, extended library privileges, enriching co-curricular activities, and closer contact with faculty members.

Honors students are encouraged to engage in the greatest possible range of educational experiences. Some of these include: (1) the Honors Undergraduate Research program, which enables students to take part in undergraduate research with faculty in many disciplines; (2) international study, which enhances marketability and provides opportunities for personal growth and acquisition of cultural knowledge and language skills; and (3) competition for national and international scholarships, such as Goldwater, Truman, Udall, Marshall, Gates-Cambridge, and Rhodes, which provide students with a distinctive and broadly integrated intellectual experience that will enhance their critical thinking and methodological skills and engender a spirit of intellectual independence.

Applying for Admission

Students must make special application to be considered for admission to the Honors College, either as an entering freshman or as a continuing Texas Tech or transfer student. In general, threshold application requirements for incoming freshmen are a composite SAT score (reading and math only) of 1200 or above, a composite ACT score of 26 or better, or graduation in the top 10 percent of the high school class. However, the Honors College applies a portfolio approach to student admission by considering in the admission process such factors as application and entrance exam essays; student activities; and special skills, abilities, or experiences. Therefore, students whose SAT or ACT and class standing do not meet the threshold requirement may still gain admission, just as students who surpass those requirements may not be admitted.

For continuing Texas Tech or transfer students, eligibility to apply is based on a college cumulative GPA of 3.4 or better. The college also will consider admitting students who do not meet the above criteria but who offer a compelling reason why they should be part of the program. Admission is competitive and contingent upon the pool of applicants for any given year. Admission deadlines and information are posted online at www.honr.ttu.edu.

To continue participation after being accepted into the Honors College, a student must maintain a minimum 3.25 cumulative GPA while at Texas Tech and demonstrate adequate progress toward completion of the Honors degree requirements. For more details, see the Honors Student Handbook online at www.honr.ttu.edu.

Academic Program

The Honors College encourages interdisciplinary work and presents a range of courses and programs that offer such opportunities. At the heart of the Honors College experience is a series of departmental classes taught by some of the university’s most talented professors. These courses include those fulfilling both Core Curriculum and specific major or minor requirements. They are generally limited to 25 students and are faster paced, more interactive, more writing intensive, and more personalized than their regular-section counterparts. The Honors program also offers a variety of seminars on special topics that explore specific subject areas in-depth.

Texas Tech School of Medicine

Early Acceptance Program

The joint Texas Tech University—Texas Tech University Health Sciences Center Early Acceptance Program offers an exciting opportunity to select Honors College students by allowing them to waive the Medical College Admission Test (MCAT) and apply early (typically the junior year) to the School of Medicine (SOM) at the Health Sciences Center. Successful applicants to the Early Admission Program are notified of their acceptance to the medical school in late January and must complete their baccalaureate degree prior to admission to the SOM.

The primary goal of this special program is to encourage Honors students to broaden their educational experiences before they enroll in their professional studies. The waiver of the MCAT allows students to include coursework or other experiences in areas such as languages, the humanities, mathematics, and business, thus enabling them to become more well-rounded professionals.
General Requirements for Application. Early acceptance is available to Honors students within any major, so long as the requirements for entry to the School of Medicine are met and the students are judged to be exceptional candidates by the SOM Admissions Committee in the circumstances under which they apply. Students who are eligible to apply must meet the following criteria:

- Enroll officially in the Honors College.
- Enter Texas Tech as freshmen (students classified as transfer students upon entering Texas Tech are ineligible).
- Be legal residents of the state of Texas.
- Have earned a composite score of at least 1300 on the SAT (verbal and math portions only) or at least 29 on the ACT upon matriculation at Texas Tech (the composite score must be earned in one test administration).
- Submit a “checklist” form to the Honors College during their semester of application to the SOM.

For further information about this program, see www.honr.ttu.edu.

Honors College/School of Law Early Decision, Admission Plans

Early Decision Plan. The Honors College and the School of Law cooperate in an Early Decision Plan that allows exceptional Law School applicants who are Honors College students in good standing to receive notification of their acceptance during their third year at Texas Tech. Enrollment in the School of Law would not occur until after the student receives a baccalaureate degree.

To be eligible to apply for Early Decision, applicants must meet the following criteria:

- Have an undergraduate GPA of at least 3.5.
- Have a LSAT score that places them in the top half nationwide.
- Have a SAT score of at least 1300 or an ACT of at least 29.
- Be enrolled in the Honors College and making satisfactory progress toward a baccalaureate degree with a diploma designation in Honors studies.

Students must apply during the fall semester of their third year and must take the LSAT by December of that year. Students who receive and accept an Early Decision offer must commit to enroll at the Texas Tech School of Law and may not apply to other law schools. The School of Law Admissions Committee applies the same standards and procedures for Early Decision applicants and applicants reviewed under the traditional admission process.

“3+3” Early Admission Program. Honors students in good standing who are working toward the B.A., B.S., B.F.A., B.M., or B.G.S. degree in the College of Visual and Performing Arts, the College of Arts and Sciences, or the Honors College may gain early admission to the Texas Tech University School of Law by completing coursework totaling a minimum of 100 semester hours in their undergraduate college and then completing the first year of coursework at the Texas Tech School of Law. To be eligible to participate in this program, students must meet all of the following criteria:

- Have an undergraduate GPA of at least 3.5.
- Have a LSAT score that places them in the top half nationwide.
- Be enrolled in the Honors College and making satisfactory progress toward a Visual and Performing Arts, Arts and Sciences, or Honors College degree (B.A., B.S., B.F.A., B.M., or B.G.S.) consistent with the regulations established by the colleges.

Students must apply for the “3+3” program during the fall semester of their third year and take the LSAT by December of that year. Students who accept Early Admission must commit to enroll at the Texas Tech School of Law and may not apply to other law schools. The School of Law Admission Committee applies the same standards and procedures for “3+3” applicants and applicants reviewed under the traditional admission process.

For more information on the Early Decision Plan and the Early Admission Program, see www.honr.ttu.edu.

Honors Program in Management

The Honors Program in Management is an Honors specialization leading to a Bachelor of Business Administration degree and is a joint program of the Honors College and the area of management in the Rawls College of Business. Another degree program—the 150-Hour Honors Program in Management—allows students to pursue an Honors specialization and earn both a B.B.A. and a M.B.A. degree.

Bachelor of Arts Degree in Arts and Letters

The degree program in Honors Arts and Letters (HAL) is designed for capable, curious students who are pursuing a broad and challenging course of study that will prepare them for a variety of careers and a lifetime of active citizenship. Most university graduates change careers several times during their life. Therefore, this degree emphasizes “portable skills” such as critical thinking and problem solving, which equip students with career flexibility. HAL also provides knowledge and skills that qualify students for admission to graduate and professional schools such as Law. Students who seek a career in health professions can complete their science requirements while pursuing the HAL major.

The HAL major emphasizes a broad, humanistic approach to understanding our world. Required courses include History of Western Civilization, Introduction to Humanities, and Honors Experience in Fine Arts. In addition, HAL students are required to complete an undergraduate thesis, and they graduate with Highest Honors. Students in HAL must complete a 15-hour track. Tracks include pre-law, health professions, art and aesthetics, and American studies. There is also an open track in which students may propose a program of study that fits their personal interests (subject to approval from the HAL advisory committee). For additional program details, see the Honors College Web site at www.depts.ttu.edu/honors/HAL/.

HAL majors are urged to include a study abroad experience as part of their education, and they are required to take a foreign language through the first semester of the third year (3000 level) as preparation for study in a foreign country. Study abroad may be at one of the Texas Tech University overseas campuses or anywhere else in the world where it can be arranged. Most students will study abroad during the spring semester of their junior year, but students in the health professions track may opt to study abroad in the summer to avoid interrupting the sequence of required science courses.

Contact information: Dr. Gary S. Elbow, 211 McClellan Hall, gary.elbow@ttu.edu, 806.742.1828.

Bachelor of Arts Degree in Natural History and Humanities

The Honors College emphasis on breadth of education extends to a multidisciplinary Bachelor of Arts in Natural History and Humanities. This degree is founded upon a broadly based, multidisciplinary curriculum designed to enable students 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.

The knowledge and skills obtained through this degree will enable students 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.
The natural history and humanities curriculum is a true interdisciplinary degree designed ultimately to direct each student toward an individual course of study. In the first two years of the degree plan, all students have common coursework that will allow them to experience a sampling of several different creative paths and to obtain a broad understanding of the sciences (chemistry, physics, biology, geosciences) and how they integrate.

The foundation of the freshman and sophomore years is three semesters of science and three semesters of special natural history and humanities seminars designed to verse students in the philosophy, history, and theories and practices of natural history and the humanities. At the start of the junior year, students will work under the guidance of the program director to customize a course of study that reflects a specific career direction. This ensures that a sound working knowledge of a particular field can be obtained prior to graduation. In addition, students also will be guided toward producing a senior portfolio. This will include spending two semesters working on the portfolio under the guidance of the director and a faculty mentor in the field of the student’s choice. Under special circumstances, permission may be granted for students to complete their coursework prior to graduation.

**Humanities Minor**

Students may complete an 18-hour minor in natural history and humanities by completing HUM 1301, NHH 2301, NHH 3300, NHH 3350, and 3 additional NHH-specific hours of their choosing or 3 hours of portfolio work.

**Contact information:** Dr. Susan Tomlinson, 201B McClellan Hall, 806.742.1828, susan.tomlinson@ttu.edu.

**Natural History and Humanities Minor**

Students may complete an 18-hour minor in natural history and humanities by completing HUM 1301, NHH 1301, NHH 1302, NHH 2301, NHH 3300, NHH 3350, and 3 additional NHH-specific hours of their choosing or 3 hours of portfolio work.

**Contact information:** Dr. Susan Tomlinson, 201B McClellan Hall, 806.742.1828, susan.tomlinson@ttu.edu.

**Humanities Minor**

The purpose of the humanities minor is to provide the inquiring and curious student a flexible and interdisciplinary program to explore the creative works of human beings—literary, musical, philosophical, religious, theatrical, and artistic. The minor encourages a broad-based and overarching approach to the investigation of human accomplishment that expresses visions of life and values for living which offer both delight and wisdom.

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 Core Curriculum requirements or provide elective credit.

In the humanities 19-hour minor, the student takes two 3-hour foundation courses, HUM 2301 and 2302. Under the director’s guidance, the student chooses to focus on one of three tracks: Ancient, Medieval/Renaissance, or Modern. The student then selects one course from each of three categories within each track (Art and Architecture, Language and Culture, and History and Philosophy) as well as an additional course from a category of the student’s choice. The student’s experience culminates with completion of a one-hour capstone course (HUM 4100), which requires an essay that summarizes the ways in which the courses within the selected track relate. The final course of study must be approved by the director.

**Contact information:** Dr. Gary S. Elbow, 211 McClellan Hall, gary.elbow@ttu.edu, 806.742.1828.

**Natural History and Humanities (NHH)**

*(To interpret course descriptions, see page 8.)*

### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1301</td>
<td>The Natural History Tradition</td>
<td>3:3:0</td>
<td>An introduction to the field of nature writing. Field trip required. Fulfills Core Curriculum humanities requirement. Special field trip fee. <em>(Reading and Writing Intensive)</em></td>
</tr>
<tr>
<td>1302</td>
<td>Introductory Fieldcraft: Nature as Text</td>
<td>3:3:0</td>
<td>Development of field skills and interpretation of landscape. Weekly field trips and outside projects required. Special field trip fee. <em>(Reading and Writing Intensive)</em></td>
</tr>
<tr>
<td>1302</td>
<td>The Literature of Place</td>
<td>3:3:0</td>
<td>Prerequisite: NHH 1301 and NHH 1302 or consent of instructor. An introduction to the literature of place through a series of writing and reading workshops. <em>(Reading and Writing Intensive)</em></td>
</tr>
<tr>
<td>3300</td>
<td>Research Methods: Writing the Natural World</td>
<td>3:3:0</td>
<td>Prerequisites: NHH 1301, 1302, and 2301 or consent of instructor. Writing for publication. A writing workshop in creative nonfiction focused on the relationship between people and nature. Field trips required. <em>(Reading and Writing Intensive)</em></td>
</tr>
<tr>
<td>3305</td>
<td>Ecology</td>
<td>3:3:0</td>
<td>Prerequisite: HONS 2305 and 2306 or consent of instructor. An introduction to the ecology of individuals, populations, and ecosystems. Special field trip fee. <em>(Reading and Writing Intensive)</em></td>
</tr>
<tr>
<td>3306</td>
<td>Course Readings in Natural History</td>
<td>3:3:0</td>
<td>Prerequisite: NHH 1301 and 3201 or consent of instructor. An exploration of contemporary writers whose focus is primarily the relationship of people with nature. <em>(Reading and Writing Intensive)</em></td>
</tr>
<tr>
<td>3350</td>
<td>Advanced Fieldcraft: Nature as Text</td>
<td>3:3:0</td>
<td>Prerequisites: NHH 1301, 1302, and 2301 or consent of instructor. An advanced exploration of place. Research of literature, culture, and ecology of a region in preparation for immersion in a field experience. Field trip required. Special field trip fee. <em>(Reading and Writing Intensive)</em></td>
</tr>
<tr>
<td>4300</td>
<td>NHH Senior Portfolio</td>
<td>3:3:0</td>
<td>Prerequisite: Proposal Approval. Individual project work under the guidance of a faculty member. <em>(Reading and Writing Intensive)</em></td>
</tr>
<tr>
<td>4350</td>
<td>Field Methods: The Capstone Experience</td>
<td>3:3:0</td>
<td>Prerequisite: NHH 3350 or consent of instructor. Academic study centered around an immersion field experience. Field trip required. Students are expected to be in good physical condition. Special field trip fee. <em>(Reading and Writing Intensive)</em></td>
</tr>
</tbody>
</table>

### Humanities (HUM)

### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2301</td>
<td>HUMA 1301. Introduction to Humanities</td>
<td>3:3:0</td>
<td>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. <em>(Reading and Writing Intensive)</em></td>
</tr>
<tr>
<td>2302</td>
<td>HUMA 1302. Introduction to Humanities</td>
<td>3:3:0</td>
<td>The exploration of contemporary human values through great works of literature, philosophy, and the arts from the Renaissance to the present. <em>(Reading and Writing Intensive)</em></td>
</tr>
<tr>
<td>4100</td>
<td>Humanities Capstone</td>
<td>1</td>
<td>Under the guidance of the Humanities Director, independent work by the student to summarize the relationships between the courses in the student's selected Humanities Minor track (Ancient, Medieval / Renaissance, or Modern.)*</td>
</tr>
</tbody>
</table>

### Honors (HONS)

### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1101</td>
<td>Honors Arts and Letters Seminar I</td>
<td>1:1:0</td>
<td>This course integrates content from English, history, and political science required core courses.</td>
</tr>
<tr>
<td>1102</td>
<td>Honors Arts and Letters Seminar II</td>
<td>1:1:0</td>
<td>This course integrates content from English, history, and political science required core courses.</td>
</tr>
<tr>
<td>1301</td>
<td>Honors First-Year Seminar in Humanities</td>
<td>3:3:0</td>
<td>Prerequisite: Enrollment in the Honors College or approval of the Honors Dean. An introductory course for first-year Honors students emphasizing in particular the development of critical</td>
</tr>
</tbody>
</table>
thinking and oral and written communications skills through the framework of a humanities discipline. Topics vary. (Writing Intensive)

1302. Honors First-Year Seminar in Sciences (3:3:0). Prerequisite: Enrollment in the Honors College or approval of the Honors Dean. An introductory course for first-year Honors students emphasizing in particular the development of critical thinking and oral and written communications skills through the framework of a natural science discipline. Topics vary. (Writing Intensive)

1303. Honors First-Year Seminar in Social Sciences (3:3:0). Prerequisite: Enrollment in the Honors College or approval of the Honors Dean. An introductory course for first-year Honors students emphasizing in particular the development of critical thinking and oral and written communications skills through the framework of a social and behavioral science discipline. Topics vary. (Writing Intensive)

1304. Honors First-Year Seminar in Fine Arts (3:3:0). Prerequisite: Enrollment in the Honors College or approval of the Honors Dean. An introductory course for first-year Honors students emphasizing in particular the development of critical thinking and oral and written communications skills through the framework of a visual and performing arts discipline. Topics vary. (Writing Intensive)

2301. Honors Experience in Fine Arts I (3:3:0). Corequisite: HIST 1301 and HUM 2301. Course surveys highlights of human experience in the arts from the ancient world to the middle ages. Sculpture, architecture, music, painting, music theatre and dance emphasized through “hands-on” participation experiences. No previous experience required, but an enthusiastic openness for new experiences is essential. (Writing Intensive)

2302. Honors Experience in Fine Arts II (3:3:0). Corequisite: HIST 1302 and HUM 2302. Course surveys highlights of the human experience in the arts from the Renaissance to the 21st century. Sculpture, architecture, music, painting, music theatre and dance are emphasized through “hands-on” participation experiences. (Writing Intensive)


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 as the topic varies with permission of the Honors Dean. (Writing Intensive)

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 as the topic varies with permission of the Honors Dean. (Writing Intensive)

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 as the topic varies with permission of the Honors Dean. (Writing Intensive)

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 as the topic varies with permission of the Honors Dean. (Writing Intensive)

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.
# College of Human Sciences

“Improving and enhancing the human condition”

Linda C. Hoover, Ph.D., Dean
142 Human Sciences | Box 41162 | Lubbock, TX 79409-1162
T 806.742.3031 | F 806.742.1849
hs.advising@ttu.edu | www.hs.ttu.edu

## About the College

**Mission Statement.** The College of Human Sciences provides multidisciplinary education, research, and service focused on individuals, families, and their environments for the purpose of improving and enhancing the human condition.

**Overview.** 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 for employment in broad career options.

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.

**Degree Programs.** Most undergraduate degree programs lead to the Bachelor of Science degree. Majors offered for all programs within the college include the following:

- Apparel Design and Manufacturing
- Community, Family, and Addiction Services
- Early Childhood
- Family and Consumer Sciences
- Human Development and Family Studies
- Interior Design
- Nutritional Sciences
- Personal Financial Planning
- Restaurant, Hotel, and Institutional Management
- Retailing

For additional information about undergraduate degree programs in the various departments, see the following pages and/or contact the office of Academic Advising Services in 159 Human Sciences 806.742.1180.

The college 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 Program sections.

## Undergraduate Program

### General Standards and Requirements

Students are expected to assume responsibility for knowing the rules, regulations, and policies of the university; to learn the requirements pertaining to their degree program; and to consult the catalog, registration guidelines, and degree plans for their major.

**Financial Aid to Students.** Numerous scholarships and assistantships are available to provide financial assistance and valuable experience to capable students. 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. To receive full-time financial aid, students must be enrolled for a minimum of 12 hours. Some programs allow enrollment in less than full-time hours, but students must check with the Financial Aid Office concerning eligibility for these programs.

**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 have transferred to another college at Texas Tech or another institution, 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. The advising staff is responsible for assisting students from orientation to graduation. Students should visit online at www.hs.ttu.edu/AAS to obtain information and updates prior to advance registration periods. Schedule of classes, registration, adding and dropping classes, payment of fees, and individual degree plans (click on degree audit under student services) are available by visiting www.techsis.admin.ttu.edu/student. Students needing additional assistance may visit with an advisor. To make an appointment, call the office of Academic Advising Services at 806.742.1180. Office hours are from 8 to 6 p.m. Monday through Thursday.

**Graduation.** Graduation is attained by fulfilling the requirements for a bachelor's degree using an acceptable catalog edition. The student is responsible 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 email a Progress Report for Graduating Seniors (list of courses lacking toward 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 by email of any discrepancies that may prevent graduation. The last 30 hours are to be taken from Texas Tech (including correspondence and off-campus courses) unless permission has been granted by the dean. 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. Graduating seniors are not allowed to take correspondence courses in their last semester.

Credit by Examination. A matriculated student may attempt credit by examination (described in Admissions section of catalog).

Course Load. The normal course load for a semester is 15 hours or above. The maximum load for a semester is 19 hours (7 hours for a summer term).

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 ineligible 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 3411 and 3413. Courses taken ineligible 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.

Human Sciences (HUSC)
(To interpret course descriptions, see page 8.)

Undergraduate Courses

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 Science 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.

Graduate Courses

5311. Problems in Human Sciences (3:3:0). May be repeated for credit.
6000. Master’s Thesis (V1-12).

Graduate Program

The College of Human Sciences offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees.

The Master of Science degree has majors in environmental design; nutritional sciences; family and consumer sciences education; human development and family studies; marriage and family therapy; personal financial planning; and restaurant, hotel, and institutional management.

The Doctor of Philosophy degree has majors in environmental design and consumer economics, nutritional sciences, family and consumer sciences education, hospitality administration, human development and family studies, and marriage and family therapy.

The graduate programs in the college are designed to educate scholars and leaders in all areas that affect human development; nutrition; family studies; environmental design; restaurant, hotel, and institutional management; personal financial planning; family and consumer sciences education; and consumer behavior.

Persons successfully completing graduate work in the college have traditionally been prepared to serve as leaders in the business world, private sector organizations, and academic institutions. Anyone interested in graduate programs should consult the Graduate School catalog section for information about university requirements for master’s and doctoral degrees. Information about the graduate minor in risk-taking behavior is also provided in the Graduate School section under the heading “Opportunities for Interdisciplinary Study.”

Admission to master’s degree programs requires the recommendation of the department and approval of the graduate dean. Admission to the doctoral program requires the recommendation of the department as well as approval of the graduate dean. Applicants should contact the program director or the chairperson of the department offering the specialization for college and departmental guidelines.

The College of Human Sciences is a member of the Great Plains Interactive Distance Education Alliance (GPIDEA). The GPIDEA is comprised of many institutions of higher education who share a goal of increasing educational options at the graduate level. Ten of the best state universities in the country have joined together to offer online graduate certificates and master’s degrees in human sciences disciplines. Prospective students may apply for admission to a human sciences graduate program at any of the 10 universities. The student is admitted to one university and receives a graduate degree or certificate from that same university.

Two programs are offered through collaboration of the GPIDEA and the College of Human Sciences. Students can specialize in gerontology within the M.S. in Human Development and Family Studies or obtain an M.S. in Family Consumer Sciences Education. For additional information see graduate program listings for the department of Human Development and Family Studies or Applied and Professional Studies.

The courses are taught by several universities, but students enroll and pay for all their courses through the university where they have been admitted. Students therefore have the advantage of receiving coordinated, diverse, high-quality instruction from topic experts at several universities without the hassle and expense of figuring out each institution’s admissions, enrollment, payment, and transcript transfer processes.

For more information about the GPIDEA, its programs, and the participating institutions, visit www.hs.ttu.edu/gpidea.
Department of Applied and Professional Studies

Faculty

Karen S. Wampler, Ph.D., Chairperson

Professors: Couch, Felstehausen, V. Hampton, Ivey, K. Wampler, R. Wampler

Associate Professors: Bagwell, Cordell, Finke, Gustafson, K. Harris, S. Harris, Katz, Kimball, Shumway

Assistant Professors: K. Alexander, Gilliam, Morris, Salter, Smock

Instructors: Barnhill, Comiskey, Davis, Morelock

About the Program

The department supervises the following degree programs:

- Bachelor of Science in Family and Consumer Sciences
- Bachelor of Science in Community, Family, and Addiction Services
- Bachelor of Science in Personal Financial Planning
- Master of Science in Family and Consumer Sciences Education
- Master of Science in Marriage and Family Therapy
- Master of Science in Personal Financial Planning
- Doctor of Philosophy in Family and Consumer Sciences Education
- Doctor of Philosophy in Environmental Design and Consumer Economics with an emphasis in Personal Financial Planning
- Doctor of Philosophy in Marriage and Family Therapy

Mission. The mission of the Department of Applied and Professional Studies (APS) is to serve students and the community by offering quality education in applied human services delivered by world-class faculty teaching in distinguished programs. To accomplish this mission, the department offers the following program areas: family and consumer sciences, personal financial planning, addictive disorders and recovery studies, and marriage and family therapy.

The department relates to the Center for Financial Responsibility, the Center for the Study of Addiction and Recovery, the Family Therapy Clinic, and the Curriculum Center for Family and Consumer Sciences.

Within the department there are opportunities to collaborate with faculty members in research; to experience different aspects of programs through internships, classroom apprenticeships, and independent studies; and to participate in student organizations and activities. The department is committed to being an active and contributing member of the college, university, and surrounding communities. As a result, faculty, staff, and students are actively engaged with many university groups, community groups, and agencies in an effort to improve the experience for students and improve the quality of life for others.

Addictive Disorders and Recovery Studies

The Center for the Study of Addiction and Recovery (CSAR) at Texas Tech, established in 1986, assists individuals recovering from drug and alcohol addiction and eating disorders with their pursuit of a college education. The CSAR has created a community support and relapse prevention program, the Collegiate Recovery Community, which provides an environment in which recovering students can focus on staying sober without having to delay their educational goals. The CSAR, the only program of its kind in the United States, was selected recently to receive support from the federal government to develop a model to replicate collegiate community support and relapse-prevention programs at other universities.

The CSAR offers a comprehensive curriculum in addictive disorders and recovery studies meeting all educational requirements for a student to become a licensed chemical dependency counselor in the state of Texas. Students enrolled in many majors across the university take classes in this curriculum.

Interdisciplinary Minor in Addictive Disorders and Recovery Studies

The Department of Applied and Professional Studies, Addictive Disorders and Recovery Studies program, and the College of Arts and Sciences jointly offer an interdisciplinary minor in addictive disorders and recovery studies (ADRS). 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 coursework be taken in the order listed below:

1. Take this class first: ADRS 2310 Understanding Alcohol, Drugs and Addictive Behavior
2. Take this class second: ADRS 3325 Family Dynamics of Addiction
3. Choose two classes in any order from the following:
   - ADRS 2327 Prevention of Substance Abuse
   - HLTH 3325 Health and Chemical Dependency
   - SOC 3383 Alcohol, Drugs, and Society
   - PSY 4325 Drugs, Alcohol, and Behavior
4. Choose one class from the following:
   - PFP 2325 Family Financial Counseling
   - FCSE 3325 Educational Programming: Addiction Issues
   - ADRS 3329 Addiction, Recovery, and Relationships
   - SOC 4325 Criminology
   - SOC 4327 Juvenile Delinquency
5. Take this class last: ADRS 4325 Treatment of Addictive Disorders

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 alcohol- and drug-specific education for licensure.

Community, Family, and Addiction Services

The B.S. in Community, Family, and Addiction Services (CFAS) prepares graduates to work in administrative and direct service roles in agencies serving communities and families of diverse needs and populations. This plan of study places emphasis on organizational effectiveness, program development, and service delivery. All coursework is grounded in family systems theory and its applications in human services settings. An understanding of addiction in its various manifestations and the development of multicultural competence are also core elements of the curriculum.

Through this dual focus, CFAS graduates develop a unique combination of skills in leadership, fund raising, financial management, program development, program delivery, and cultural competence. They are also trained to understand addiction, including prevention, assessment, treatment, and relationship dynamics. This degree fulfills all of the coursework (but not the 3000 hours of supervised practicum experience) required to become a Licensed Chemical Dependency Counselor (LCDC) in the State of Texas (as administered by the Texas Commission on Alcohol and Drug Abuse and the Texas Certification Board of Alcoholism and Drug Abuse Counselors). The CFAS degree also prepares students for placements within: Non-Profit Administration or Service Coordination, Community Support Outreach, Social and Community Services Management, Drug Abuse Counseling, Graduate Programs within Mental Health Services, and other human service related career paths.

Enrollment in the CFAS major is based on a cumulative grade point average of 2.5 and all upper-division CFAS courses also have a prerequisite of a 2.5 GPA. The program also requires a 14-week practicum in which students work in an existing human service organization during the summer between the junior and senior years.
Curriculum for B.S. in Community, Family, and Addiction Services

**FIRST YEAR**

**Fall**
- HUSC 1100 or IS 1100
- ENGL 1301, Ess. Coll. Rhetoric
- MATH 1300 or 1230, Cont. Math.
- or College Algebra
- Humanities*
- POLS 2302, Amer. Public Policy
- CFAS 2320, Intro to CFAS
- TOTAL 16

**SECOND YEAR**

**Fall**
- HIST 2300, History of U.S. to 1877
- ENGL 1410 Science of Nutrition
- CFAS 2300, Comm., Civil, & Ethics
- CFAS 2360, Multicultural Competence
- PFP 2310, Tech. App. in PFP
- TOTAL 16

**Spring**
- CFAS 3301 (F), Foundation of CFSE
- HDFS 3320, Parenting
- EDIT 3318, App. of Tech in Elem. Edu.
- HDFS 3312, Dev. During Childhood
- HDFS 3310, Prenatal and Infant Dev.
- TOTAL 18

**SUMMER**
- Practicum, CFAS 4314* (SS)
- TOTAL 6

**FORTH YEAR**

**Fall**
- CFAS 4380, Develop. & Evaluation*
- HDFS 2322 Int. Relationships or
- PFP 3301 Personal and Family Fin.
- Research & Ind. Study Elective (B)
- Treatment Elective (A)
- TOTAL 12

**Spring**
- FCSE 4325, Fam. Issues & Soc. Action*
- FCSE 4308 (F), Res. and Eval. in FCS **
- ENGL 4306 (F), Occupational FCS **
- RHIM 4360, Food Syst. Management I
- ID 4000, Housing & Int. All. Course
- TOTAL 15

**TOTAL** — 120 Hours
* Choose from Core Curriculum requirements.
^ Prerequisites apply
(F) Offered fall semester only; (S) offered spring semester only; (SS) offered summer only

**Family and Consumer Sciences Education**

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 specializations in family and consumer sciences teacher certification and family and consumer sciences. The certification specialization meets Texas standards for the Family and Consumer Sciences Composite Certificate that qualifies individuals to teach all family and consumer sciences courses offered in Texas junior and senior high schools. Texas has a critical shortage of teachers, and the demand for family and consumer sciences teachers remains strong.

**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 coursework in all family and consumer sciences content areas and the professional education courses required for teacher certification. See an academic advisor for current information.

Curriculum for B.S. in Family and Consumer Sciences with Teacher Certification

**FIRST YEAR**

**Fall**
- HUSC 1100 or IS 1100
- ENGL 1301, Ess. Coll. Rhetoric
- Mathematics*
- FCSE 2102, Intro. to FCS
- POLS 1301, Amer. Govt. Org.
- Visual & Performing Arts*
- TOTAL 14

**Spring**
- ENGL 1302, Adv. Coll. Rhetoric*
- Math. or Logical Reasoning*
- Natural Lab. Science*
- FCSE 2102, Fam. Issues & Soc. Action*
- HDFS 3320, Parenting
- TOTAL 15

**SECOND YEAR**

**Fall**
- HIST 2300, History of U.S. to 1877
- English Literature*
- Natural Lab. Science*
- EDSE 2300, Schools, Society, and Div.
- ADM 1303 (F), Clothing Const.
- TOTAL 19

**Spring**
- HUSC 3214, Jr./Sr. Seminar
- FCSE 3301 (F), Foundation of FCSE
- HDFS 3321, Parenting
- EDIT 3318, App. of Tech in Elem. Edu.
- HDFS 3312, Dev. During Childhood
- HDFS 3310, Prenatal and Infant Dev.
- TOTAL 18

**TOTAL** — 134 hours
* Choose from Core Curriculum requirements.
^ Prerequisites apply
# Concurrent enrollment is required
** Admission to Teacher Certification (Education) Program and a minimum 2.5 GPA required (apply prior semester).
(F) Offered fall semester only; (S) offered spring semester only

**FOURTH YEAR**

**Fall**
- FCSE 4308 (F), Res. and Eval. in FCS **
- ENGL 4306 (F), Occupational FCS **
- RHIM 4360, Food Syst. Management I
- ID 4000, Housing & Int. All. Course
- TOTAL 15

**Spring**
- FCSE 4601 (S), Student Teaching **
- FCSE 4601 (S), Student Teaching **
- FCSE 4304 (S), Inst. Man. in FCS **
- TOTAL 19

**TOTAL** — 122 Hours
* Choose from Core Curriculum requirements.
^ Prerequisites apply

Curriculum for B.S. in Family and Consumer Sciences
Students seeking teacher certification must meet all requirements outlined in the College of Education section of this catalog. Admission requirements include completion of a minimum of 60 semester hours (including current enrollment) with a 2.5 or better overall GPA and college-level skills in reading, oral and written communication, critical thinking, and mathematics. To be recommended for certification, graduates must maintain a 2.5 or better overall GPA and also a 2.5 or better GPA in all professional education courses as well as in the teaching field(s). In addition, graduates must achieve a satisfactory level of performance on the appropriate examinations prescribed by the State Board for Educator Certification.

Students also may earn a teaching certificate in family and consumer sciences as part of a major in human development and family studies. A Specialized Family and Consumer Sciences Certificate in Hospitality, Nutrition, and Food Sciences is available as part of a major in nutritional sciences or a major in restaurant, hotel, and institutional management. For more information, see the catalog sections for the Department of Human Development and Family Studies and the Department of Nutrition, Hospitality, and Retailing. Family and consumer sciences certification students may take online courses through the Texas Family and Consumer Sciences Distance Education Alliance and the Great Plains Interactive Distance Education Alliance. More information on these options can be found at www.fcsalliance.org or www.gpidea.org or by contacting an FCSE advisor.

Family and Consumer Sciences. The family and consumer sciences specialization is designed for students who wish to pursue multiple fields of study within the College of Human Sciences. It provides flexibility for students to explore specific areas of interest, work toward career goals, or prepare for graduate or professional study. Instead of a major, students complete the requirements for a minor in each of three areas of study. Students may select minors in addictive disorders and recovery studies; apparel design and manufacturing; human development and family studies; interior design; nutritional sciences; personal financial planning; restaurant, hotel and institutional management; or retailing. Each minor consists of a minimum of 18 hours for a total of 54 hours. For additional information about minor requirements in each area, see the catalog sections for the Division of Personal Financial Planning.

Personal Financial Planning. See the catalog section for the Division of Personal Financial Planning.

Addictive Disorders and Recovery Studies (ADRS)

To interpret course descriptions, see page 8.

**Undergraduate Courses**

2125. Colleageate Community Seminar (1:1:3). Prerequisite: Consent of instructor. Philosophy and process of recovery from addiction. Intensive seminar and laboratory experience. May be repeated for credit.

2310. Understanding Alcohol, Drugs, and Addictive Behaviors (3:3:0). This course is designed to provide students with an introduction to addiction, including the nature of addiction, its history, biology, inter/intra personal, and social aspects.

2327. Substance Abuse Prevention (3:3:0). Prerequisite: ADRS 2310. Introduction to different perspectives on current research and methodologies in the field of substance abuse.

3325. Family Dynamics of Addiction and Recovery (3:3:0). Prerequisite: ADRS 2310. An examination of the family system with specific reference to the causes and effects of chemical abuse, addiction, and the process of recovery.

3329. Addiction, Recovery, and Relationships (3:3:0). Prerequisite: ADRS 2310. Addicted persons may have difficulties with intimate relationships. Relationships can also be a specific addiction. This course examines addiction, relationships, and addictive relationships.

4000. Individual Study (3). Prerequisite: ADRS 2310 and written consent of supervising faculty member. Teaching assistantships, independents coursework, or student-initiated research experience. May be repeated once for credit.

4320. Research in Addictive Disorders (3). Prerequisite: ADRS 2310 and written consent of a supervising faculty member and senior standing. Supervised faculty-initiated research experience in selected areas. May be repeated twice for credit.

4325. Treatment of Addictive Disorders (3:3:0). Prerequisite: ADRS 2310 and ADRS 3325. Survey of the current treatment philosophies and programs designed to assist individuals and families affected by addictive disorders.


**Graduate Courses**


6315. Systemic Treatments and Addictions (3:3:0). Study of systemically relevant treatment approaches and strategies for addictive behaviors. Focus is on treating addictions and compulsive behaviors using systemic-focused (e.g., couple and family) approaches.

**Community, Family, and Addiction Services (CFAS)**

**Undergraduate Courses**

2300. Communication, Civility, and Ethics (3:3:0). Provides students with a basic understanding of proper communication, civility, and ethics within professional and personal settings.

2301. Introduction to Community, Family, and Addiction Services (3:3:0). Introduction to the field of community, family, and addiction services, including an overview of family systems theory and its applications.

2360. Diversity in Community, Family, and Addiction Services (3:3:0). Prerequisite: GPA of 2.5 and CFAS 2301. Focus on the interpersonal relationships of race, class, and gender and their impact on community, family, and addiction services.

4000. Individual Study in CFAS (V1-6). Prerequisite: GPA of 2.5, CFAS 2301, and written consent of supervising faculty member. Teaching assistantship, independent coursework, or student-initiated projects. May be repeated once for credit.

4300. Coaching Leaders (3:3:0). Prerequisite: GPA of 2.5 and CFAS 2301. Focus on the interpersonal relationships of race, class, and gender and their impact on community, family, and addiction services.

4314. Practicum in CFAS (3). Prerequisite: GPA of 2.5 and CFAS 2301. This practicum provides students with experience in administrative and organizational functioning as well as the policies and procedures of agencies servicing families and the community.

4330. Administration in Community, Family, and Addiction Services (3:3:0). Prerequisite: GPA of 2.5 and CFAS 2301. Includes approaches to organizational management and intervention, strategic planning, team building, supervision, and basic financial considerations.

4331. Introduction to Marriage and Family Therapy (3:3:0). Prerequisite: GPA of 2.5 and CFAS 2301. An experiential course with emphasis on developing skills that apply to interview situations. A problem-centered approach to family needs.

4350. Development and Evaluation of CFAS Programs (3:3:0). Prerequisite: GPA of 2.5 and CFAS 2301. Approaches to program development in community settings, needs assessment, and evaluation.

4390. Senior Seminar in CFAS (3:3:0). Prerequisite: GPA of 2.5 and CFAS 2301, 4330, 4380, 4314. Capstone experience in grant-writing and board/community/staff management. Includes final preparation of grant proposal for community agency.

**Family and Consumer Sciences Education (FCSE)**

**Undergraduate Courses**

2102. Introduction to Family and Consumer Sciences (1:1:0). For human sciences students only. Exploration of family and
Graduate Programs

The Department of Applied and Professional Studies supervises graduate degree programs in marriage and family therapy, family and consumer sciences education, and environmental design and consumer economics with an emphasis in personal financial planning. Students develop their courses of study in consultation with a graduate advisory committee. During the first year of doctoral study, the graduate faculty in the major field will make a formal evaluation of the student’s background. The results of this evaluation will be used as the basis for planning the student’s program of study and determining any leveling courses that may be needed. Following completion of all coursework, a qualifying examination for admission to candidacy for the Ph.D. degree will be conducted in accordance with the requirements of the Graduate School.

Applicants should contact the graduate advisor in the individual program concerning admission requirements, programs of study, and financial assistance. Admission to a graduate degree program requires both the recommendation of the department and the Graduate School.

Family and Consumer Sciences Education (FCSE)

M.S. in FCSE. The M.S. in FCSE is designed to prepare individuals for advancement in family and consumer sciences careers. A minimum of 32 semester hours is required for the thesis option and 38 semester hours for the nonthesis option. Required coursework includes curriculum development, evaluation, administration and leadership, and research methods. Statistics is required for the thesis option.

Ph.D. in FCSE. The Ph.D. in FCSE prepares individuals for faculty positions in higher education and other professional leadership roles. A minimum of 50 semester hours beyond the master's degree is required, exclusive of dissertation. The program includes a specialization in family and consumer sciences education, a research component, and other coursework designed to meet individual professional goals. Students may complete an 18-hour emphasis that meets the Southern Association of Colleges and Schools standard for coursework in a teaching discipline.

Post-Baccalaureate Certifications. Graduate students also may obtain a teaching certificate in family and consumer sciences by completing coursework that meets the Texas standards for teacher certification. Three post-baccalaureate options are available. The Family and Consumer Sciences Composite Certificate qualifies individuals to teach all family and consumer sciences courses offered in Texas junior and senior high schools. Specialized certificates in human development and family studies and hospitality, nutrition, and food science qualify individuals to teach family and consumer sciences courses in the designated content areas. Post-baccalaureate certification students are eligible to complete a one-year paid teaching internship in lieu of student teaching. Selected graduate credits earned for certification may be applied toward a graduate degree in family and consumer sciences education (M.S. or Ph.D.).

GPIDEA–M.S. in Family and Consumer Sciences Education. An online option for the M.S. in Family and Consumer Sciences Education is offered in collaboration with the Great Plains Distance Education Alliance (GPIDEA). The nonthesis program is designed for individuals who have a bachelor's degree in a family and consumer sciences content specialization or related area and are interested in obtaining initial certification/licensure for teaching family and consumer sciences at the secondary level. The program consists of 39 semester hours and includes the pedagogy courses required for certification. Teacher certification standards vary by state, and students may need to meet additional certification requirements mandated by the state in which they wish to be certified. Students admitted to this program register for all courses at Texas Tech, but the courses may be taught by faculty at any of the Great Plains institutions. Additional information may be obtained at www.hs.ttu.edu/gpidea or by contacting an FCSE advisor.

Marriage and Family Therapy

The M.S. and Ph.D. degree programs in marriage and family therapy provide clinical and academic training to students who will function as marriage and family therapists at the highest level of clinical competence and who will make unique contributions to the field of marriage and family therapy through research, teaching, clinical practice, and other professional activities. The M.S. degree is intended to provide the academic requirements leading to licensure as a marriage and family therapist in the state of Texas. Actual licensure requires additional post-master's degree clinical experience. The Ph.D. degree requires a minimum of 48 credit hours beyond the master's degree plus a clinical internship and at least 12 hours of dissertation research. The Ph.D. program is accredited by the Commission on Accreditation for Marriage and Family Therapy Education of the American Association for Marriage and Family Therapy.

Personal Financial Planning (Environmental Design and Consumer Economics)

The Division of Personal Financial Planning, which is administered by the Department of Applied and Professional Studies, supervises degree programs leading to Master of Science in Personal Financial Planning and a Doctor of Philosophy in Environmental Design and Consumer Economics. See information on these programs in the Division of Personal Financial Planning catalog section.

Graduate Certificates

Addictions and the Family. The graduate certificate in addictions and the family was created to provide specialized training to mental health providers who work with families and individuals struggling with substance abuse and addictive behaviors. Coursework requirements include a total of 18 credit hours: 12 credit hours focusing on family systems theories, the impact of addiction on family dynamics, systemic treatment, and issues in professional development; and 6 credit hours chosen from courses in systemic evaluation, developmental issues in therapy, and couple/sex therapy. Additional coursework and clinical experience is required for clinicians seeking state licensure as a Licensed Chemical Dependency Counselor.

Personal Financial Planning. The Graduate Certificate in Personal Financial Planning is designed to meet the educational requirement for the Certified Financial Planner™ Certification designation. A minimum of 18 hours must be completed in the areas of Financial Planning, Asset Management, Insurance and Risk Management, Retirement, Tax, and Estate Planning for the certificate from Texas Tech. For students with no previous coursework in these areas, 24 hours may be required to meet the educational requirements of CFP Board to sit for the CFP® Certification Examination.
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.


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.


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. F, S, SS.

4103. Field Experiences in Family and Consumer Sciences II (1:1:0). Supervised observation and teaching in occupational family and consumer sciences.


4302. Professional Applications in Family and Consumer Sciences (3:3:0). Prerequisite: FCSE 3301. Application of family and consumer sciences knowledge and skills in the secondary classroom.

4304. Instructional Management in Family and Consumer Sciences (3:3:0). Prerequisite: FCSE 4306, 4308; corequisite: FCSE 4304. Supervised teaching in an approved secondary 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 for use in food service, home furnishings, clothing, child development, services for the elderly, and institutional and hospitality management occupations.

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.

4325. U.S. Family Issues and Social Action (3:3:0). Prerequisite: GPA of 2.5 and junior or senior standing. Designed to help students critically examine private and public family and related community issues and appropriate social action in a democratic culture.


Graduate Courses

5118. Seminar (1:1:0). May be repeated for credit.

5301. Administration in Family and Consumer Sciences Education Professions (3:3:0). Administration of family and consumer sciences programs with emphasis on leadership development in a variety of settings.


5303. Evaluation in Family and Consumer Sciences Education (3:3:0). Appraisal of individual achievement in all subject areas in family and consumer sciences. Development of evaluative instruments and interpretation of data in the evaluation of family and consumer sciences programs.

5304. Techniques of Research in Family and Consumer Sciences Education (3:3:0). Methods of research in family and consumer sciences, including interpretation and application of results.


5308. Communication Processes in Family and Consumer Sciences Education (3:3:0). Exploration of communication theory and processes in family and consumer sciences education programs.

5309. Occupational Family and Consumer Sciences Education I (3:3:0). Emphasis on teaching methods in occupational family and consumer sciences, including cooperative and laboratory programs.

5311. Problems in Family and Consumer Sciences Education (3:3:0). May be repeated for credit.

5312. Occupational Family and Consumer Sciences Education II (3:3:0). Focus on tasks, skills, and equipment for teaching in family and consumer sciences occupational programs.


5344. Internship in Family and Consumer Sciences Education (3:3:0). Prerequisite: 6 hours in family and consumer sciences education and approval of instructor. Supervised experiences in family and consumer sciences positions in extension, business, secondary schools, or related areas. May be repeated for credit.

5350. Special Topics in Family and Consumer Sciences Education (3:3:0). Semester-long study of a specific topic pertinent to the family and consumer sciences education profession. May be repeated (different topics) for a maximum of 12 hours credit.

6000. Master’s Thesis (V1-6).


7000. Research (V1-12).

8000. Doctor’s Dissertation (V1-12).

Marriage and Family Therapy (MFT)

Graduate Courses

5300. Introduction to Marriage and Family Therapy Practice (3:3:0). Prerequisite: Consent of instructor. Analyses of and solutions for common problems in marriage and family therapy practice.

5301. Family Therapy I (3:3:0). Prerequisite: Consent of instructor. Examination of structural, strategic, and systemic approaches to family therapy including the work of Minuchin, Haley, Mental Research Institute, and Milan Associates.

5302. Family Therapy II (3:3:0). Prerequisite: Consent of instructor. Examination of transgenerational and object relations approaches to family therapy including the work of Bowen, Boszormenyi-Nagy, Whitaker, and Satir.
5304. Systemic Evaluation in Couple and Family Therapy (3:3:0). Prerequisite: Consent of instructor. This course provides an in-depth examination of a systemic approach to clinical evaluations. Students receive training in administration and application of systemic assessment methods.

5322. Family Systems (3:3:0). Application of general systems theory and cybernetics to family systems. Examination of structural, strategic and systemic approaches to family therapy, including the work of Minuchin, Haley, Mental Research Institute, and key modern and post-modern family therapy theorists.

5351. Research Methods in Marriage and Family Therapy (3:3:0). Study of research strategies and methodologies relevant to marriage and family therapy, including experience in conducting research investigations.


6000. Master’s Thesis (V1-6).

6303. Family Therapy III (3:3:0). Prerequisite: Consent of instructor. Focuses on the theory and practice of couple therapy and sex therapy. Includes approaches to enhance couple relationships through therapeutic interventions.


6311. Contemporary Directions in Marriage and Family Therapy (3:3:0). Prerequisite: Consent of instructor. An examination of postmodern thought on marriage and family therapy with emphasis on the collaborative and narrative approaches.

6322. Family Systems II (3:3:0). Prerequisite: Consent of instructor. Advanced topics and issues in systems theory. Special focus on marriage and family therapy research.

6323. Qualitative Research Methods in Marriage and Family Therapy (3:3:0). Prerequisite: Consent of instructor. Focuses on qualitative research methodologies specifically related to marriage and family therapy research. Students will gain practical experience applying qualitative methods to their research with clinical populations and family therapy topics.

6342. Advanced Family Therapy Topics (3:3:0). Prerequisite: Consent of instructor. Advanced topics in the field of family therapy that may include family therapy with special populations and recent developments in family therapy theory and application. May be repeated for credit.

6370. Diversity in Marriage and Family Therapy (3:3:0). Prerequisite: Consent of instructor. An examination of issues of race, ethnicity, and culture as they relate to family therapy. The course is designed to raise awareness and to train culturally competent therapists.

6395. Practicum in Marriage and Family Therapy (3). Prerequisite: Consent of instructor. Supervised experiences designed to prepare the student for involvement in marriage and family therapy and family life education. May be repeated for credit up to 48 hours.

6396. Supervision of Marriage and Family Therapy (3:3:0). Prerequisite: Two years of marriage and family therapy practicum and consent of instructor. Theory, research, and supervised practicum in supervision of family therapy.

6397. Supervision Practicum in Marriage and Family Therapy (3:3:0). Prerequisite: Completion of MFT 6396 or equivalent and consent of instructor. Course provides structured experience in supervision of marriage and family therapy students.

7000. Research (V1-12).

7395. Internship in Marriage and Family Therapy (3). Prerequisite: Permission of Director of Marriage and Family Therapy Program. Full-time supervised internship in an appropriate setting. May be repeated for up to 12 hours credit.

8000. Doctor’s Dissertation (V1-12).

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Division of Personal Financial Planning

Faculty

Vickie Hampton, Ph.D., Director

Professor: Hampton
Associate Professors: Bagwell, Cordell, Finke, Gustafson, Joo, Katz
Assistant Professors: Gilliam, Salter
Instructors: Barnhill

About the Program

The Division of Personal Financial Planning is administered by the Department of Applied and Professional Studies. The program offers courses leading to the following degrees:

• Bachelor of Science in Personal Financial Planning
• Master of Science in Personal Financial Planning
• Doctor of Philosophy in Environmental Design and Consumer Economics with an Emphasis in Personal Financial Planning

Mission and Vision. The mission of the Division of Personal Financial Planning is to educate students to the highest standards of excellence; foster intellectual, ethical, and personal development; and generate the highest quality of meaningful research.

The division will excel as the national leader in higher education in personal financial planning, manifesting excellence, inspiring confidence, and engaging the financial planning profession and society at large.

The Division of Personal Financial Planning will:

• Achieve and maintain national recognition as the premier financial planning program, attracting the highest quality students and faculty.
• Prepare students to be leaders, decision-makers, and scholars who are highly competent, articulate, ethical, principled, innovative, and confident in financial planning.
• Generate quality research thus expanding the boundaries of knowledge in financial planning.
• Promote excellence in scholarly and professional organizations through faculty service in leadership roles.

Undergraduate and graduate degree programs in personal financial planning are registered by the Certified Financial Planner Board of Standards, Inc. (CFP Board). The term CFP® identifies a financial planning professional who has met educational standards, passed the CFP® Certification Examination, satisfied a work experience requirement, and agreed to the CFP Board’s Code of Ethics and Professional Responsibility. The terms CFP® and Certified Financial Planner™ represent the most respected professional certification in the financial services industry.

Bachelor of Science in Personal Financial Planning. Students majoring in personal financial planning are prepared for careers in financial planning in private practice, financial institutions, and governmental and social agencies. The multidisciplinary program includes courses in business, accounting, economics, family studies, and communications in addition to personal financial planning. Students will develop a background for graduate study and for certifications as financial planners and counselors.

Students studying personal financial planning must maintain a 2.8 or better GPA to enroll in upper-division classes. A 2.8 or better GPA is needed to transfer into the Division of Personal Financial Planning. The program also requires a paid internship in the financial planning/services industry, typically completed the summer prior to the senior year.

Minor in Personal Financial Planning. A student may minor in personal financial planning by completing a minimum of 27 hours to satisfy the education requirements set by the CFP® Board of Standards.

Minor in Personal Finance Studies. A student may minor in personal finance studies by completing a minimum of 18 hours from selected courses. This minor will not satisfy CFP® Examination requirements but may be appropriate for students wanting to work in affiliated professions.
Curriculum for Personal Financial Planning

**FIRST YEAR**

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<td>POLS 1301, Amer. Govt. Org.</td>
<td>ECO 2301, Princ. of Eco. I</td>
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<td>PFP 3376, Risk Man./Emp. Benefits</td>
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<td>PFP 3350, Ind. Tax Plan. Topics</td>
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<td>PFP 3374, Retirement Planning^</td>
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**SUMMER**

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**FOURTH YEAR**

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**Graduate Programs**

The Division of Personal Financial Planning supervises degree programs leading to the Master of Science degree in Personal Financial Planning and the Doctor of Philosophy degree in Environmental Design and Consumer Economics with an emphasis in Personal Financial Planning.

The nonthesis master’s degree in personal financial planning requires a minimum of 42 hours. Appropriate leveling coursework may be required.

Joint degrees offered in personal financial planning at the master’s level include:

- Law/Personal Financial Planning, J.D.–M.S.
- Business Administration/Personal Financial Planning, M.B.A.–M.S.
- Business Administration-Finance/Personal Financial Planning, M.S.B.A.–M.S.

A thesis master’s degree is offered by the PFP program. Students are required to complete a minimum of 30 hours (including a minimum of 6 hours of thesis), to defend the thesis based on original research, and to take a final oral examination.

The doctoral degree requires a minimum of 78 semester hours of graduate work beyond the bachelor’s degree, exclusive of credit for the dissertation. Students develop their courses of study in consultation with a graduate advisory committee. Following the completion of all coursework, a qualifying examination for admission to candidacy for the Ph.D. degree will be conducted in accordance with the requirements of the Graduate School.

Applicants should contact the division concerning admission requirements, program of study, and financial assistance. Admission to a graduate degree program is a two-part process requiring the recommendation of both the division and the Graduate School.

Undergraduate Courses

1301. Cultural and Gender Issues in Personal Finance (3:3:0). Study of financial attitudes and behaviors of cultural and gender groups in the U.S. Financial content includes budgeting, banking and saving, credit and debt management, major purchases, and other basic financial activities. F, S.

2310. Technological Applications in Personal Financial Planning (3:1:3). Introduction to computer software programs used in financial planning, including spreadsheets, word processing, data base management, and presentations. F, S.

2315. Personal Financial Planning for Professionals (3:3:0). Prerequisite: MATH 1330, ACCT 2300, ECO 2301 or 2302, and PFP major or minor. Introduction to personal financial planning, including goal setting, cash management, credit, housing, education planning, and selected professional issues. F, S.

2325. Family Financial Counseling (3:3:0). For nonmajors only. Methods and procedures to assist individuals and families of different socioeconomic environments to resolve dysfunctional financial behaviors including skills essential in counseling clients. S.

2330. Personal Financial Counseling I (3:3:0). Prerequisite: PFP major or minor. Methods and procedures to assist individuals and families of different socioeconomic environments to resolve financial behaviors, including skills essential for financial planning professionals. F, S.


3210. Professional Field Experience (2:2:0). Prerequisite: 2.8 GPA, 6 hours of PFP courses. Supervised attendance and participation in professional conferences, tours of professional practices, and seminars focusing on professional issues. May be repeated for up to 4 hours of credit. F, S.

3301. Personal and Family Finance (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. Meets the Core Curriculum requirement for Individual and Group Behavior. F, S.

3330. Personal Financial Counseling II (3:3:0). Prerequisite: 2.8 GPA, PFP 2310, 2330, and ENGL 2311. Counseling techniques and interviewing strategies for use in financial counseling and planning settings. Emphasis on the importance of communication processes in helping individuals and families. E (Writing Intensive)

3350. Individual Tax Planning Topics (3:3:0). Prerequisite: 2.8 GPA, ACCT 3307, 2310, and PFP 2315. Study of the impact of federal and state taxation on personal financial planning decisions. F, S.

3374. Retirement Planning (3:3:0). Prerequisite: 2.8 GPA, PFP 2315, 2310, ENGL 2311 and completion or concurrent enrollment in ACCT 3307. A foundation course in retirement planning. F, S.

3376. Asset Management I (3:3:0). Prerequisite: 2.8 GPA, PFP 2315, 2310, and MATH 2345. This course focuses on the theory and practice of personal asset allocation planning with a special emphasis on the basic tools, techniques, and methodologies employed by financial planners. Topics covered include basic security valuation and analysis, capital markets, investment alternatives, fundamentals of portfolio design, money management process, client goals and expectations, regulation of financial advisors, and financial planning issues in asset management. F, S.

3377. Estate Planning (3:3:0). Prerequisite: 2.8 GPA, BLAW 3391, PFP 2310, 2315, and completion or concurrent enrollment in ACCT 3307. Application of estate planning methodologies and policies to personal financial planning. F, S.

3397. Life and Health Insurance Planning (3:3:0). Prerequisite: 2.8 GPA, PFP 2310, 2315, ENGL 2311. This course explores the use of life insurance, health insurance, and annuities in personal financial planning, with an emphasis on advanced planning techniques. S.

3398. Professional Practices in Personal Financial Planning (3:3:0). Prerequisite: 2.8 GPA and all PFP 3000-level courses completed or concurrent enrollment, except 3350. Principles of professional practices focusing on ethics, effective managerial strategies, and the student's transition to the professional workplace. S. (Writing Intensive)

4000. Individual Practice (VI-6). Prerequisite: Written consent of supervising faculty member. 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. F, S.

4370. Personal Financial Planning Capstone (3:1:3). Prerequisite: 2.8 GPA, PFP 3374, 3375, 3376, 3378, 4399, and ACCT 3307. Integration of the financial planning content areas into the development of comprehensive financial plans. Coursework includes case studies and work with clients. F, S.

4376. Asset Management II (3:1:3). Prerequisite: 2.8 GPA, PFP 3376 (or FIN 4324), and ACCT 3307. The evaluation of client risk tolerance, analysis of asset manager's historic performance, and the creation of portfolios using mutual funds and variable annuities. F, S.

4377. Practicum in Personal Financial Planning (3:1:6). Prerequisite: 2.8 GPA and consent of instructor. Supervised experience designed to prepare the student for a career in financial planning/counseling. May be repeated once for credit. F, S.

4380. Advanced Technological Applications in Personal Financial Planning (3:1:3). Prerequisite: 2.8 GPA, PFP 3374, 3375, 3376, 3378, 4370, and 4376, ACCT 3307 or concurrent enrollment. Advanced use of software packages for financial planning and investment portfolio applications. F, S.

4396. Asset Management III (3:3:0). Prerequisite: 2.8 GPA, PFP 3376 and 4376 with grades of B or higher. Students will work with issues regarding the blending of client risk tolerance investment objectives and holding periods into a successfully conceived investment plan. F, S.

4399. Internship in Personal Financial Planning (3:1:6). Prerequisite: 2.8 GPA, all PFP 3000-level courses, and ACCT 3307 completed with a grade of C or higher. Supervised intern experiences in established career-related positions. May be repeated for credit. SS.


5210. Professional Field Experience (2:2:0). Prerequisite: 6 hours of PFP courses or consent of instructor. Supervised attendance and participation in professional conferences, tours of professional practices, and seminars focusing on professional issues. May be repeated for up to 4 hours credit.

5301. Seminar in Personal Financial Planning (3:3:0). Introduction to philosophies, techniques, and processes involved in research and graduate study in personal financial planning.

5311. Independent Study in Personal Financial Planning (3:3:0). Prerequisite: Consent of instructor. Individual study or research under the guidance of a personal financial planning faculty member to enhance the degree program. May be repeated for credit.

5322. Personal Finance: Professional and Personal Applications (3:3:0). Survey course in personal financial planning for those wanting to use this information in their personal and professional lives. F, S, SS, Distance.

5350. Individual Tax Planning Topics (3:3:0). Prerequisite: PFP 5371, ACCT 5311, PFP or CEED major, joint degree student, or consent of instructor. Studies legal research skills and the impact of federal and state tax regulations on personal financial planning decisions.

5362. Asset Management I (3:3:0). Prerequisite: PFP or CEED major, joint degree student, or consent of instructor. Investment management concepts in a personal financial planning context; client goals, expectations, and risk tolerance; capital markets; investment alternatives; security valuation; risk assessment; and portfolio management concepts.

5370. Consumers in the Marketplace (3:3:0). Analysis of current consumer problems and the decision-making process. Overview of consumer policies and programs for consumer protection and education, including decision-making and other relevant theories.

5371. Introduction to Personal Financial Planning (3:3:0). Prerequisite: PFP or CEED major, joint degree student, or consent of instructor. Focus on the financial planning process and the profession, including the study of cash management, time value of money, education funding, and other planning areas.

5372. Asset Management II (3:3:0). Prerequisite: PFP 5362 or FIN 5325. Portfolio management and theory in a personal financial planning context, evaluation of client risk tolerance, market efficiency, fundamental analysis, investment selection, and analysis of portfolio performance.

5373. Personal Financial Planning Capstone (3:3:0). Prerequisite: PFP 5362 (or FIN 5325), 5371; ACCT 5311, PFP or CEED major, joint degree student, or consent of instructor. Prerequisite or corequisite: PFP 5394, 5395, 5397, and 5398. Techniques and methods for utilizing financial planning practice standards in the development of comprehensive financial plans for clients.

5377. Personal Financial Counseling (3:3:0). Prerequisite: PFP or CEED major, joint degree student, or consent of instructor. The study and use of methods to assist families of different socioeconomic groups in correcting financial behavior.


5380. Technological Applications in Personal Financial Planning (3:1:3). Prerequisite or corequisite: PFP 5373, PFP or CEED major, joint degree student, or consent of instructor. Advanced studies in professional software packages for financial planning and investment portfolio applications.

5390. Practicum in Personal Financial Planning (3:1:6). Prerequisite: Consent of instructor. Supervised experience designed to prepare the student for a career in financial planning/counseling. May be repeated for up to 6 hours credit.

5394. Retirement Planning (3:3:0). Prerequisite or corequisite: PFP 5371 and ACCT 5311, PFP or CEED major, joint degree student, or consent of instructor. The study of retirement planning models, retirement plans, and selected employee benefit plans from the perspective of employees and employers. Current retirement issues will be studied.

5395. Risk Management and Employee Benefits (3:3:0). Prerequisite: PFP or CEED major, joint degree student, or consent of instructor. Application of risk management theory, personal risk analysis, and financial loss prevention with private insurance and employee benefits throughout the family life cycle.

5396. Asset Management III (3:3:0). Prerequisite or corequisite: PFP 5372 with a grade of B or higher, or consent of instructor. Synthesis of portfolio management and risk tolerance assessment concepts, participation of an actual securities portfolio, and evaluation of portfolio performance.
5397. Life and Health Insurance Planning (3:3:0). Prerequisite: PFP or CEED major, joint degree student, or consent of instructor. Explores the use of life insurance, health insurance, and annuities in financial planning with heavy emphasis on advanced planning techniques.

5398. Estate Planning (3:3:0). Prerequisite or corequisite: PFP 5371 and ACCT 5311, PFP or CEED major, joint degree student, or consent of instructor. Application of estate planning methodologies and policies to personal financial planning.


6101. Research Seminar in Personal Financial Planning (1:1:0). Seminar in current research topics and methodology in personal financial planning. Should be taken by doctoral student each semester of the program.


6397. Doctoral Seminar in Personal Financial Planning (3:3:0). Doctoral seminar on theories and empirical evidence in personal financial planning and its areas of specialization. May be repeated for credit for up to 6 hours when topics vary.

6399. Residency in Financial Planning Research and Education (3:1:6). Prerequisite: Consent of instructor. Supervised residency teaching and conducting research in personal financial planning at cooperating universities. May be repeated for credit up to 6 hours.

Consumer Economics and Environmental Design (CEED)

Graduate Courses

6374. Family Economics (3:3:0). Economic status of families at all income levels; factors influencing their standard of living; interrelationships with the economy.


6376. Family and Personal Consumption Behavior (3:3:0). Emphasis on factors involved in individual and family consumption. Concepts related to levels and standards of living and quality of life will be examined.

6378. Research Methods II (3:3:0). Prerequisite: CEED 5378 or equivalent and 3 credit hours of statistics. Application of statistical packages to analyze data and interpret results. Includes mainframe and micro applications.

About the Program

The department supervises the following degree programs:
- Bachelor of Interior Design
- Bachelor of Science in Apparel Design and Manufacturing
- Combined Bachelor of Interior Design and Master of Science in Environmental Design
- Master of Science in Environmental Design
- Doctor of Philosophy in Environmental Design and Consumer Economics

A student may minor in one of these programs by completing a minimum of 18 hours selected in conference with the program director/Coordinator.

Undergraduate Program

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 apparel design and manufacturing or interior design. The grade of C is a minimum requirement in all departmental and support courses for majors in the department.

An internship is required of each student specializing in apparel design and manufacturing or interior design. The internship experience is jointly planned by the faculty and the student. A laboratory fee is required.

Bachelor of Science in Apparel Design and Manufacturing

This 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.

Students participate in extracurricular activities that provide additional learning opportunities, including the Hi-Tech Fashion Group, Fashion Tours of New York or Los Angeles, two yearly design competitions, and a Senior Fashion Exhibit.

Sophomore Progress Review. In the fall semester of the sophomore year, students are evaluated on their subject matter knowledge and skills in the area of designing, patternmaking, and construction. In the event of an “unsatisfactory” evaluation is received by a student, the student must submit improved work within one semester following the review. At this time, the student’s work must have met the recommended conditions stated by the reviewers to progress to the next level of coursework.
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 apparel design and manufacturing courses. In addition, students must be registered in ADM 4310 to enter design competitions in the spring semesters of the junior or senior years. One design competition must be entered during the junior or senior years to meet program requirements.

Bachelor of Interior Design

Accredited by the Council for Interior Design Accreditation (formerly FIDER), the Bachelor of Interior Design program provides a sound curriculum that prepares individuals as entry-level 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 professional critiques, field trips, and field experiences. The interior design program has limited enrollment and emphasizes practical application of multidisciplinary principles to residential and non-residential interior environments.

Undergraduate interior design students have the option of obtaining a combined Bachelor of Interior Design and Master of Science in Environmental Design degree.

Graduate Programs

Admission into the master’s and the doctoral programs requires submission of GRE scores. Admission of international students requires submission of TOEFL scores.

The department offers an optional internship for students who have not previously had practicing professional experience in interior design or allied areas. To obtain departmental procedures and guidelines, students should contact the director of graduate programs.

Master’s Degree

The master’s degree in environmental design requires a minimum of 42 semester hours including thesis. Students are required to defend the thesis based on original research. Successful completion of the Environmental Design Master’s Degree increases the student’s ability to positively contribute to the advancement of either the interior design profession or academia.

Doctor’s Degree

The doctor’s degree requires a minimum of 75 semester hours of graduate work beyond the bachelor’s degree, exclusive of credit for the dissertation. Students develop their program of study in consultation with a graduate advisory committee. Leveling coursework may be required. A preliminary examination is required of all students before the end of the second semester of work toward the Ph.D. degree. The student’s progress will be evaluated and recommendations will be made concerning continuation of graduate studies and leveling coursework necessary to remove any deficiencies revealed by the examination. Following the completion of all coursework, a qualifying examination for admission to candidacy for the Ph.D. degree will be conducted in accordance with the requirements of the Graduate School.

Curriculum for Bachelor of Interior Design

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td></td>
<td><strong>FIRST YEAR</strong></td>
<td><strong>SECOND YEAR</strong></td>
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<tr>
<td></td>
<td><strong>THIRD YEAR</strong></td>
<td><strong>FOURTH YEAR</strong></td>
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<td><strong>SUMMER</strong></td>
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<td></td>
<td><strong>FIRST YEAR</strong></td>
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<td>Math. or Logical Reasoning^</td>
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<td>I D 1382, Interiors I#</td>
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<td>Math. or Logical Reasoning^</td>
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<td>MATH*</td>
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<td>ECO 2305, Princ. of Economics</td>
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<td>ARCH 2351 (F), Arch. Construction IV #</td>
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<td>I D 3190 (S), Pre-Internship Seminar^</td>
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<td>I D 3385, Advanced Design Proc. #</td>
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<td>I D 3311, Interior Materials^</td>
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<td>I D 3382 (F), Period Furnishings IV #</td>
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<td>I D 3383 (S), Period Furnishings II^</td>
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<td>I D 3386 (S), Studio Procedures^</td>
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<td>B A 3301, Hospitality Mgt. Mkt.##</td>
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<td>COMS 3358, Bus. and Pro. Comm.</td>
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<td>or RHIM 4316, Fund. of Mkt.##</td>
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<td>I D 4104, Senior Portfolio Seminar##</td>
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<td>Human Sciences Elective+</td>
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<td>PHOT 2310 or ID 3325</td>
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<td>I D 4606 (F), Collaboration Studio##</td>
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<td>I D 4385 (S), Advanced Interiors##</td>
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^ Choose from Core Curriculum requirements.

# Concurrent enrollment is required.

+ HS Core; choose 1 course from: ADRS 2310, NS 1325, HDFS 2322 or 3320, PFP 3301

(F) Offered fall semester only; (S) offered spring semester only; (SS) offered summer only
### Curriculum for B.S. in Apparel Design and Manufacturing

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
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<td>Fall</td>
<td>Spring</td>
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<tr>
<td>HIST 1100 or IS 1100</td>
<td>ENGL 1301, Adv. Coll. Rhetoric$^*$</td>
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<tr>
<td>ART 1302, Design I</td>
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<td>ART 1303, Drawing I</td>
<td>ART 2304, Drawing II$^*$</td>
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<tr>
<td>ADM 1301 (F) Intro. to Apparel Design#</td>
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<tr>
<td>ADM 1303 (F), Clothing Const.#</td>
<td>ADM 1304 (S), Inter. Clothing Const.##</td>
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| **SECOND YEAR** | |
| Fall | Spring |
| Natural Science Lab.$^*$ | Natural Science Lab.$^*$ |
| 3 | 4 |
| HIST 2300, History of U.S. to 1877 | HIST 2301, History of U.S. Since 1877 |
| 3 | 3 |
| ART 3323, Drawing III Life Drawing$^*$ | ART 2302 (S), Fashion Illustration$^*$ |
| 3 | 3 |
| ADM 2311 (F), Textiles$^*$ | Math & Logical Reasoning$^*$ |
| 3 | 3 |
| ADM 2310 (F), Design Through Draping$^*$ | ADM 1310, Art History |
| ART 2311, Art History II | 3 |
| TOTAL | ADM 4307 (S), Apparel Manufacturing$^*$ |
| 16 | 3 |
| TOTAL | 16 |
| TOTAL | 16 |

| **THIRD YEAR** | |
| Fall | Spring |
| POLS 1301, Amer.Govt. Org. | POLS 2302, Amer. Public Policy$^*$ |
| 3 | 3 |
| ADM 3312 (F), Hist. and Phil of Dress$^*$$^*$ | ADM 4350 (S), Apparel Portfolio Dev.$^*$$^*$ |
| 3 | 3 |
| ADM 3310 (F) or 4309 (F)$^*$ | ADM 3305 (F), Comp. App. in Apparel Des. |
| 3 | 3 |
| ART 2311, Art History II | ADM 4310 (S), Apparel Product Dev.$^*$$^*$ |
| 3 | 3 |
| TOTAL | Guided Elective |
| 12 | ADM 4389 (S) Pro. Pract. Fash. Design$^*$ |
| TOTAL | 3 |
| TOTAL | 15 |
| TOTAL | 14 |

| **FOURTH YEAR** | |
| Fall | Spring |
| ADM 4390 (SS), Internship$^*$$^*$ | Individual or Group Behavior$^*$ |
| 3 | 3 |
| ADM 4391 (SS), Internship$^*$$^*$ | Human Sciences Elective$^*$ |
| 3 | 3 |
| ADM 3354, Business and Prof Spech | ADM 4350 (S), Apparel Portfolio Dev.$^*$$^*$ |
| 3 | 3 |
| ADM 3305 (F), Comp. App. in Apparel Des. | ADM 4310 (S), Apparel Product Dev.$^*$$^*$ |
| 3 | 3 |
| Guided Elective | ADM 4389 (S) Pro. Pract. Fash. Design$^*$ |
| 6 | 3 |
| TOTAL | TOTAL |
| 15 | 12 |
| TOTAL | 122 |

| **SUMMER** | |
| ADM 4390 (SS), Internship$^*$$^*$ | ADM 4391 (SS), Internship$^*$$^*$ |
| 3 | 3 |
| TOTAL—122 | TOTAL—122 |

$^*$ Choose from Core Curriculum requirements.  
$^*$ Prerequisite applies.  
$^*$ Concurrent enrollment is required.  
+ HS Core; choose 1 course from: ADRS 2310, NS 1325, HDFS 2322, PPF 3301  
(F) Offered fall semester only; (S) offered spring semester only; (SS) offered summer only.
Curriculum for Combined Bachelor of Interior Design and M.S. in Environmental Design

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<tbody>
<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
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<td>ART 1310 or 2311, Art Hist. Survey I or II</td>
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<td>I D 1380, Interiors I</td>
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<tr>
<td>POLS 2302, Amer. Public Policy</td>
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<td>HIST 2300, History of U.S. to 1877</td>
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**SECOND YEAR**

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<td>Natural Lab Science*</td>
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<tr>
<td>I D 3387, Computer Aided Drafting I*</td>
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<td>I D 2383, Interiors III*</td>
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<td>I D 3381, Lighting Systems*</td>
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**THIRD YEAR**

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<tbody>
<tr>
<td>COMS 3358, Business and Prof. Comm.</td>
<td>3</td>
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<tr>
<td>I D 3311, Interior Materials*</td>
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<tr>
<td>PHOT 2310, Basic Photography</td>
<td>3</td>
</tr>
<tr>
<td>I D 3382, Period Furnishing I*</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 2351, Arch. Construction II*</td>
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<td>TOTAL</td>
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<td>SUMMER</td>
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<td>I D 4307, Internship</td>
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<td>ECO 2305, Prin. of Economics</td>
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**FOURTH YEAR**

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<tbody>
<tr>
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<td>HUSC 3214, Human Sciences Seminar*</td>
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<tr>
<td>RHIM 4316, Hospitality Mgt. Marketing*</td>
<td>3</td>
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<tr>
<td>OR A 3301, Intro. to Marketing</td>
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<tr>
<td>I D 4606, Collaboration Studio*</td>
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<td>TOTAL</td>
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<tr>
<td>TOTAL</td>
<td>12</td>
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<tr>
<td>*** Graduate Program: Requirements for admission to the graduate program include completion of all academic coursework in the first three years, departmental and Graduate School applications, and submission of GRE scores and portfolio. No grade below a C will be accepted in any graduate course; a student must maintain a 3.0 GPA.</td>
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**SUMMER SESSION**

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<td>CEED 6570, Env. Design Tech. and Dev.</td>
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**FIFTH YEAR**

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<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>CEED 5378, Research Methods I</td>
<td>3</td>
</tr>
<tr>
<td>CEED 6000, Master’s Thesis</td>
<td>6</td>
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<tr>
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<tr>
<td>TOTAL</td>
<td>6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>159</td>
</tr>
</tbody>
</table>

* Choose from Core Curriculum requirements.  
^ Prerequisite  
# Must take concurrent

**Career Positions**

Career positions in fashion design. Senior day planning and fashion show production. S.

**Interior Design (I D)**

**Undergraduate Courses**

<table>
<thead>
<tr>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1380. Introduction to Interior Design (3:3:0)</td>
</tr>
<tr>
<td>1382. Interiors I (3:1:4)</td>
</tr>
<tr>
<td>2380. Interiors II (3:1:4)</td>
</tr>
<tr>
<td>2383. Interiors III (3:1:4)</td>
</tr>
<tr>
<td>3190. Preinternship Seminar (1:1:0)</td>
</tr>
<tr>
<td>3311. Interior Materials (3:2:3)</td>
</tr>
<tr>
<td>3325. Study Tour in Interior Design (3:3:0)</td>
</tr>
<tr>
<td>3381. Lighting Systems (3:2:2)</td>
</tr>
<tr>
<td>3382. Period Furnishings I (3:3:0)</td>
</tr>
<tr>
<td>3383. Period Furnishings II (3:3:0)</td>
</tr>
<tr>
<td>3385. Advanced Design Processes (3:1:4)</td>
</tr>
<tr>
<td>3387. Computer Aided Drafting for Interior Designers I (3:1:4)</td>
</tr>
<tr>
<td>4000. Individual Study (V1-6)</td>
</tr>
<tr>
<td>4104. Senior Portfolio Seminar (1:1:0)</td>
</tr>
<tr>
<td>4307. Internship in Interior Design (3:1:6 each)</td>
</tr>
<tr>
<td>4383. Computer-Aided Drafting for Interior Designers II (3:1:4)</td>
</tr>
<tr>
<td>4385. Advanced Internals (3:1:4)</td>
</tr>
</tbody>
</table>
August, or December graduation. Advanced experiences in residential and nonresidential design that integrate problem solving skills, building systems, techniques of graphic expression, materials and specifications, and aesthetic sensibility. S.

4606. Collaboration Studio (6:1:8). Prerequisite: A grade of C or higher in ID 3385. An interdisciplinary studio for the design profession that addresses the process and skills necessary for collaboration. F.

Consumer Economics and Environmental Design (CEED)

Graduate Courses

5301. Graduate Research Seminar (3:3:0). Introduction to philosophies, technologies, and processes involved in research and graduate study related to the student's major area of specialization.

5307. Internship (3:1:6). Supervised internship experiences in established career-related positions in the student's major area of specialization. May be repeated for credit up to 6 hours.

5310. Readings (3:3:0). A comprehensive and critical review of literature and research data related to current issues in the student's major area of specialization.

5311. Individual Study in Environmental Design and Consumer Economics (3:3:0). May be repeated for credit.

5378. Research Methods I (3:3:0). Positivistic, interpretive, and critical modes of research inquiry in the student's major area of specialization.

5379. International Issues for Families and Households (3:3:0). Analysis of relevant social, economic, and political developments pertinent to individuals and family welfare approached from a global perspective.

5381. Interior Design Analysis (3:3:0). Implications from the social sciences as applied to analyzing causes and arriving at possible solutions to problems related to housing and interiors in contemporary society.


5384. Advanced Lighting Systems (3:3:0). Prerequisite: ID 3381 or equivalent. Advanced study and application of lighting systems.

5388. Design of Interior Environments for Physically and Mentally Challenged Populations (3:3:0). Adaptation and evaluation of proximate environments to meet the needs of the physically and mentally challenged.

6000. Master's Thesis (V1-6).

6330. Research Fund Development (3:3:0). Exploration of processes for preparing research ideas for presentation to individuals, groups, and/or organizations. Study of research proposal characteristics, how proposals are reviewed, strategies for success, and public versus private funding sources.


6374. Family Economics (3:3:0). Economic status of families at all income levels; factors influencing their standard of living; interrelationships with the economy.


6376. Family and Personal Consumption Behavior (3:3:0). Emphasis on factors involved in individual and family consumption. Concepts related to levels and standards of living and quality of life will be examined.

6378. Research Methods II (3:3:0). Prerequisite: CEED 5378 or equivalent and 3 credit hours of statistics. Application of statistical packages to analyze data and interpret results. Includes mainframe and micro applications.


6389. Environmental Design Studio (3:3:0). Development of and/or response to specific environmental design programs. Study of design processes, including visual presentations that exemplify designs solutions for programs. Students will exhibit design projects.

7000. Research (V1-12).

8000. Doctor's Dissertation (V1-12).
Department of Human Development and Family Studies

Faculty
Anisa H. Zvonkovic, Ph.D., Chairperson
Professors: Bell, Caldera, Fischer, Haley, Hart, O’Boyle, Reifman, Scott, Zvonkovic
Associate Professors: Cleveland, Colwell, Crawford, Feng, Fitzpatrick, Lindsey, McCarty, Mulso, Sorell
Assistant Professors: Behrens, Sharp, Trejos
Instructors: Johnson, Nathan, Powell

About the Program
This department supervises the following degree programs:
- Bachelor of Science in Human Development and Family Studies
- Master of Science in Human Development and Family Studies
- Doctor of Philosophy in Human Development and Family Studies

Undergraduate Program
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, and family studies. Graduates of the department may enter a variety of human services vocations and/or pursue graduate studies. Students interested only in selected aspects may elect to minor in the department curriculum or they may choose electives while pursuing another major course of study. A student may minor in HDFS by completing 18 hours of selected coursework. The specific courses for the HDFS minor are approved by Academic Advising Services 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.

Many courses offer perspectives on interpersonal 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., violence). Courses at the upper-division level provide professional training for students seeking employment in such diverse occupations as 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. Students will be required to pass a background check. 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 areas in which courses are offered in the department. These areas include childhood, adolescence-adult development, family relationships, or application-research. Students may specialize in one or more of these areas by taking departmental elective courses from the desired areas.

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.

Core Curriculum. All students in the department must complete the university’s Core Curriculum requirements. 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 either ADRS 2310 (Understanding Alcohol, Drugs, and Addictive Behavior), NS 1325 (Nutrition, Foods, and Healthy Living), or PFP 3301 (Personal and Family Finance).

Students majoring in human development and family studies must take the following core courses for a total of 21 credit hours: HDFS 2300, Gender Roles: Life Span Developmental Perspective; HDFS 2303, Life Span Human Development; HDFS 3301, Theories of Human Development and the Family; HDFS 3320, Contemporary 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); ENGL 2311, Introduction to Technical Writing; APS 2300 Communication, Civility, and Ethics; and either MATH 2300 (Statistical Methods), PSY 3400 (Statistical Methods), or SOC 3391 (Introduction to Social Research 1).

Specialization Areas. Students must select a total of 18 hours from A, B, and C in the following list:

A. Human Development and Family Studies Area – Choose 2 Courses (minimum 6 hrs.)
- HDFS 2322 Partnering: The Development of Intimate Relations
- HDFS 3306 Child and Adolescent Guidance
- HDFS 3310 Prenatal and Infant Development
- HDFS 3411 Laboratory Experiences With Infants and Toddlers
- HDFS 3312 Development During Childhood
- HDFS 3413 Laboratory Experiences With Young Children
- HDFS 3316 Development in Adolescence
- HDFS 3317 Problems of Adolescence
- HDFS 3318 Development in Young Adulthood
- HDFS 3319 Development in Middle Adulthood
- HDFS 3321 Human Sexuality Through Family Life Cycle
- HDFS 3322 Family in the Community
- HDFS 3326 Families in Crisis
- HDFS 3331 Parenting
- HDFS 3332 Aging in the Family
- HDFS 4306 Preparing Environments for Children

B. Application/Research Area – Choose one course for 3 hrs.
- HDFS 2320 Basic Interpersonal Skills
- HDFS 3360 Family Life Education and Ethics
- HDFS 4000 Individual Study
- HDFS 4310 Managing Early Childhood Programs
- HDFS 4314 Community Practicum in HDFS
- HDFS 4320 Research in HDFS
- HDFS 4343 Advanced Topics in HDFS
- HDFS 4390 Program Development and Evaluation
C. Department Electives – Choose 9 credit hours of electives from A and B or the following courses. Some students may want to concentrate their electives in one or two areas to demonstrate a specialization.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ADRS 2125 Seminar in Addiction</td>
<td>3</td>
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<tr>
<td>ADRS 2327 Substance Abuse Prevention</td>
<td>3</td>
</tr>
<tr>
<td>ADRS 3325 Family Dynamics of Addiction</td>
<td>3</td>
</tr>
<tr>
<td>ADRS 3329 Addiction, Recovery, and Relationships</td>
<td>3</td>
</tr>
<tr>
<td>ADRS 4325 Treatment of Addictive Disorders</td>
<td>3</td>
</tr>
<tr>
<td>ADRS 4329 Eating Disorders</td>
<td>3</td>
</tr>
<tr>
<td>CFAS 4331 Introduction to Marriage and Family Therapy</td>
<td>3</td>
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</table>

W S 2300 Introduction to Women’s Studies

Human Development and Family Studies (HDFS)

Undergraduate Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2300. Gender Roles: Life Span Developmental Perspectives (3:3:0)</td>
<td></td>
</tr>
<tr>
<td>Introduction to gender role concepts and the impact of gender and gender roles systems on individual and family developmental processes. F, S. (W S 2301)</td>
<td></td>
</tr>
<tr>
<td>2303. [TECA 1354] Developmental Assessment of Young Children (3:3:1)</td>
<td></td>
</tr>
<tr>
<td>Prerequisite: 2.5 GPA. Discusses the goals, benefits, and uses of assessment techniques in tracking development of young children. Emphasizes integration of family/professional perspectives in the development process. F, S.</td>
<td></td>
</tr>
<tr>
<td>2310. [TECA 1311] Introduction to Early Childhood (3:3:0)</td>
<td></td>
</tr>
<tr>
<td>Prerequisite: 2.5 GPA. 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. F, S.</td>
<td></td>
</tr>
<tr>
<td>2320. Basic Interpersonal Skills (3:3:0)</td>
<td></td>
</tr>
<tr>
<td>The study and application of interpersonal skills as they relate to various age levels and social contexts. F, S.</td>
<td></td>
</tr>
<tr>
<td>2322. Partnering: The Development of Intimate Relationships (3:3:0)</td>
<td></td>
</tr>
<tr>
<td>Intimate relationship development from adolescence through adulthood with an emphasis on relationship processes, diversity in types of partnering, and developmental-contextual variations in relationships. F, S.</td>
<td></td>
</tr>
<tr>
<td>3301. Theories of Human Development and the Family (3:3:0)</td>
<td></td>
</tr>
<tr>
<td>Prerequisite: 2.5 GPA. The major theories in human development and family studies. Course focuses on the meaning of theory to individual and family development over the lifespan. Implication of theory and program development and services are reviewed. (Writing Intensive)</td>
<td></td>
</tr>
<tr>
<td>3306. Child and Adolescent Guidance (3:3:0)</td>
<td></td>
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<tr>
<td>Prerequisite: 2.5 GPA and HDFS 3301. Development of strategies for promoting self-discipline, creative capacities, and positive relationships with children and adolescents. F, S.</td>
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</tr>
<tr>
<td>3310. Prenatal and Infant Development (3:3:0)</td>
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</tr>
<tr>
<td>Prerequisite: 2.5 GPA and 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. F, S.</td>
<td></td>
</tr>
<tr>
<td>3312. Development During Childhood (3:3:0)</td>
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<tr>
<td>Prerequisite: 2.5 GPA and HDFS 3301. Examination of psychomotor, social-emotional, and cognitive-language development during childhood. F, S.</td>
<td></td>
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<tr>
<td>3316. Development in Adolescence (3:3:0)</td>
<td></td>
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<tr>
<td>Prerequisite: 2.5 GPA and HDFS 3301. Enhancing the psychosocial, social-emotional, and cognitive-language development of adolescents within their interactions with peers, adults, and the culture. F, S.</td>
<td></td>
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<tr>
<td>3317. Problems of Adolescence (3:3:0)</td>
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</tr>
<tr>
<td>Prerequisite: 2.5 GPA. Overview of problems associated with the adolescent years and training in use of helping skills appropriate for adolescent populations. S.</td>
<td></td>
</tr>
<tr>
<td>3318. Development in Young Adulthood (3:3:0)</td>
<td></td>
</tr>
<tr>
<td>Prerequisite: 2.5 GPA. Examination of individual developmental processes during the transition to adulthood and the first two decades of adult life. F.</td>
<td></td>
</tr>
</tbody>
</table>

Curriculum for B.S. in Human Development and Family Studies

This plan assumes that the student is exempt from any additional foreign language requirement. If a student must take two semesters of a single foreign language, the hours may count towards the 21 hours of electives.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>FIRST YEAR</td>
<td></td>
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</tr>
<tr>
<td>HDFS 3301, Theories of Hum. Dev.</td>
<td>3</td>
<td>Psychology of Adolescence</td>
</tr>
<tr>
<td>HDFS Elective</td>
<td>3</td>
<td>Technology and Applied Science</td>
</tr>
<tr>
<td>HDFS 3350, Dev. in Cross-Cult. Pers.</td>
<td>3</td>
<td>Arts</td>
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<tr>
<td>HDFS 3320, Contemporary Family</td>
<td>3</td>
<td>Minor or Elective</td>
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<tr>
<td>Human Science Core</td>
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<tbody>
<tr>
<td>SECOND YEAR</td>
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</tr>
<tr>
<td>HDFS 3301, Theories of Hum. Dev.</td>
<td>3</td>
<td>Psychology of Adolescence</td>
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<tr>
<td>HDFS Elective</td>
<td>3</td>
<td>Technology and Applied Science</td>
</tr>
<tr>
<td>HDFS 3350, Dev. in Cross-Cult. Pers.</td>
<td>3</td>
<td>Arts</td>
</tr>
<tr>
<td>HDFS 3320, Contemporary Family</td>
<td>3</td>
<td>Minor or Elective</td>
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<tr>
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<td>TOTAL 14</td>
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<th>Spring</th>
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<tbody>
<tr>
<td>THIRD YEAR</td>
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</tr>
<tr>
<td>HDFS Elective (Group B)</td>
<td>3</td>
<td>Psychology of Adolescence</td>
</tr>
<tr>
<td>HDFS Elective (Group A, B, or C)</td>
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<td>Minor or Elective</td>
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<tr>
<td>TOTAL</td>
<td>15</td>
<td>TOTAL 15</td>
</tr>
</tbody>
</table>

TOTAL—122 hours

* Choose from Core Curriculum requirements
^ Prerequisites apply

Students may choose courses in the HDFS Electives for career certifications such as Child Care Director, Child Life Specialist, Certified Family Life Educator, EC and FCSE Post-Baccalaureate Teacher Certification, etc. See an advisor for specific courses.

3319. Development in Middle Adulthood (3:3:0) Prerequisite: 2.5 GPA. Examination of individual developmental processes from the mid-life transition through the middle years of adult life. S.

3320. The Contemporary Family (3:3:0) Prerequisite: 2.5 GPA. 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. F, S.

3321. Human Sexuality Through Family Life Cycle (3:3:0) Prerequisite: 2.5 GPA. Human sexuality from a life cycle perspective, with an emphasis on developmental, familial, and societal factors that influence individual sexuality. F, S. (W S 3321)

3322. The Family in the Community (3:3:0) Prerequisite: 2.5 GPA. Study of community resources as they relate to welfare of children and families. F, S.

3324. Dynamics of Family Interaction (3:3:0) Prerequisite: 2.5 GPA. 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). F, S.

3326. Families in Crisis (3:3:0) Prerequisite: 2.5 GPA and 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. F, S.
Curriculum for B.S. in Human Development and Family Studies with Teacher Certification in Family and Consumer Sciences

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 grades 8-12. Students seeking teacher certification must meet all requirements outlined in the College of 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.

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
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</thead>
<tbody>
<tr>
<td>HUSC 1100 or IS 1100</td>
<td>ENGL 1302, Adv. Coll. Rhetoric 3</td>
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<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
<td>HDFS Elective 3</td>
</tr>
<tr>
<td>Mathematics Elective*</td>
<td>I D 1380, Intro. to Interior Design 3</td>
</tr>
<tr>
<td>FCSE 2102, Intro. to Fam. and Cons. Sci.</td>
<td>POLS 3202, Amer. Public Policy 3</td>
</tr>
<tr>
<td>POLS 3201, Amer. Govt. Org.</td>
<td>Mathematics or Logical Reasoning* 3</td>
</tr>
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<td>CFAS 2300, Comm., Civility, &amp; Ethics</td>
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<tr>
<td>Visual and Performing Arts*</td>
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<tr>
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**SECOND YEAR**

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Natural Lab Science*</td>
<td>HDFS Elective 3</td>
</tr>
<tr>
<td>English Literature (choose any)*</td>
<td>HDFS 3310, prenatal and Infant Dev. 3</td>
</tr>
<tr>
<td>HDFS 3301, Theories of Human Dev.</td>
<td>PFP 2325 (S) or 3301 3</td>
</tr>
<tr>
<td>HIST 2300, History of U. S. to 1877</td>
<td>ENGL 2311, Intro. to Tech. Writing 3</td>
</tr>
<tr>
<td>AUM 1303 (F), Clothing Const.</td>
<td>Science of Nutrition 4</td>
</tr>
<tr>
<td>EDGE 2300 or HDFS 3350</td>
<td>HIST 2301, History of U. S. Since 1877 3</td>
</tr>
<tr>
<td>TOTAL 19</td>
<td>TOTAL 19</td>
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**THIRD YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCSE 3301, Foundations of FCSE*</td>
<td>HDFS Elective 3</td>
</tr>
<tr>
<td>HDFS 3311, Dev. During Childhood*</td>
<td>ENGL 1302, Adv. Coll. Rhetoric 3</td>
</tr>
<tr>
<td>HDFS Elective</td>
<td>HDFS 3311 or 3413 4</td>
</tr>
<tr>
<td>HDFS 3380, Research Methods in HDFS</td>
<td>EDSE 4300, Field Exp. &amp; Prof. App. (S)* 3</td>
</tr>
<tr>
<td>HDFS 3320, Contemporary Family</td>
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<tr>
<td>EDIT 3318, Adv. Tech. in Education</td>
<td>TOTAL 19</td>
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<tr>
<td>TOTAL 19</td>
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</table>

**FOURTH YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCSE 4308 (F), Res. and EVA. in FCS**#</td>
<td>FCSE 4601 (S), Student Teaching* 6</td>
</tr>
<tr>
<td>FCSE 4306 (F), Occupational FCS**#</td>
<td>FCSE 4601 (S), Student Teaching* 6</td>
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<tr>
<td>HDFM 3460, Food Syst. Management</td>
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</tr>
<tr>
<td>TOTAL 15</td>
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</tbody>
</table>

**TOTAL—137 hours**

* Choose from Core Curriculum requirements.
** Admission to Teacher Certification (Education) Program and a minimum of 2.5 GPA required (apply prior semester).
# Concurrent enrollment and acceptance into Teacher Certification Program (apply prior semester); 2.7 GPA minimum.
*# Prerequisites apply.
# Must take concurrently.

3331. Parenting (3:3:0). Prerequisite: 2.5 GPA. Basic principles and skills for parent effectiveness. Includes strategies for inclusion of parents in the developmental-educational processes of the child. F, S.

3332. Aging in the Family (3:3:0). Prerequisite: 2.5 GPA. Needs that arise from changes in family relationships, living arrangements, income, and employment. F, S.

3350. Development in Cross-Cultural Perspective (3:3:0). Prerequisite: 2.5 GPA. Critical examination of developmental and family theory research across a diverse range of cultures. F, S.

3360. Family Life Education and Ethics (3:3:0). Prerequisite: 2.5 GPA. A problem-based approach to community family life education, with particular emphasis on teaching methodologies and professional ethics.

3390. Research Methods in Human Development and Family Studies (3:3:0). Prerequisite: 2.5 GPA. Introduction to methods of research in human development and family studies. F, S. (Writing Intensive)

Bachelor of Science: Early Childhood Teacher Certification

The early childhood specialization prepares professionals to work with children from infancy through fourth 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 fourth 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. Students seeking teacher certification must meet all requirements outlined in the College of 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.

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>HUSC 1100 or IS 1100</td>
<td>ENGL 1302, Adv. Coll. Rhetoric 3</td>
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<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
<td>HDFS 3310, Prenatal and Infant Dev. 3</td>
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<tr>
<td>MATH 1320, College Algebra</td>
<td>MATH 2370, Elem. Analysis I*</td>
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<tr>
<td>MATH 1320, College Algebra</td>
<td>MATH 2370, Elem. Analysis I*</td>
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<tr>
<td>POLS 3201, Amer. Govt. Org.</td>
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<tr>
<td>GEOG 1300 or 2351</td>
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<tr>
<td>HDFS 2111, Intro. to Early Childhood</td>
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**SECOND YEAR**

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<tbody>
<tr>
<td>English Elective</td>
<td>HDFS 3311 or 3413 4</td>
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<tr>
<td>MATH 2370, Elem. Analysis I*</td>
<td>HDFS 3301, Theories of Infant Dev. 3</td>
</tr>
<tr>
<td>POLS 2302, Amer. Public Policy</td>
<td>ART 3372, Rethinking Art Educ. 3</td>
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**THIRD YEAR**

<table>
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<tbody>
<tr>
<td>EDEL 4300, Teaching Social Studies #</td>
<td>HDFS 3306, Child and Adolescent Care 3</td>
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<tr>
<td>EDEL 4360, Teaching Mathematics #</td>
<td>HDFS 3306, Child and Adolescent Care 3</td>
</tr>
<tr>
<td>EDEL 4375, Teaching Science #</td>
<td>HDFS 4311, Experiences with Infants 4</td>
</tr>
<tr>
<td>EDEL 4380, Literacy in Content Areas #</td>
<td>HDFS 4314, Exp. with Young Child 4</td>
</tr>
<tr>
<td>TOTAL 18</td>
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**FOURTH YEAR**

<table>
<thead>
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<th>Fall</th>
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<tbody>
<tr>
<td>EDEL 4360, Teaching Social Studies #</td>
<td>EDEL 3351, Found. of Reading Inst. 3</td>
</tr>
<tr>
<td>EDEL 4370, Teaching Mathematics #</td>
<td>EDEL 3352, Lang. Lit. Acquisition # 3</td>
</tr>
<tr>
<td>EDEL 4375, Teaching Science #</td>
<td>EDEL 3353, Nat. Lab. (Physical Science)*</td>
</tr>
<tr>
<td>EDEL 4380, Literacy in Content Areas #</td>
<td>EDEL 3354, Nat. Lab. (Physical Science)*</td>
</tr>
<tr>
<td>TOTAL 12</td>
<td>TOTAL 18</td>
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</tbody>
</table>

**TOTAL—137 hours**

* Choose from Core Curriculum requirements.
# Concurrent enrollment and acceptance into Teacher Certification Program (apply prior semester); 2.7 GPA minimum.
* Prerequisites apply.
+ HS Core; choose 1 course from: ADRS 2310, NS 3325, HDFS 2322, PFP 3301

Please review the standards in choosing sciences courses at the Web site (www.sbec.state.tx.us). Educator Standards EC-Grade 4 Science:
a. Lie: PSS 2401, PSS 1411, BIOL 1402, GEOB 1305/1105
b. Earth & Space: GEOG 1401, ATMO 1300/1100, GEOL 1313/1101, ASTR 1400, ASTR 1401
c. Physical: PHYS 3400, PHYS 1401, CHEM 1305/1105

ALL COURSES MUST BE COMPLETED WITH A GRADE OF “C” OR BETTER.

3411. Supervised Experiences with Infants and Toddlers (4:2:4). Prerequisite or concurrent: HDFS 3310 and 2.5 GPA. Supervised experi-ences with infants and toddlers. (State law requires students to pass a background check.) (Writing Intensive)

3413. Supervised Experiences with Young Children (4:2:4). Prerequisite or concurrent: HDFS 3312 and 2.5 GPA. Supervised experi-ences with young children. (State law requires students to pass a background check.) (Writing Intensive)

4000. Individual Study (V1-6). Prerequisite: 2.5 GPA and written consent of supervising faculty member. Teaching assistantships, independent coursework, or student-initiated research experience. May be repeated once for credit. F, S.
Graduate Program / Human Development and Family Studies

These programs have prepared students for careers as university faculty, full-time researchers, medical school faculty, and human service providers.

The M.S. and Ph.D. programs in human development and family studies focus on families and individuals within families as they develop across the life span. Both degree programs offer flexibility in study that encourages students to pursue research in early childhood, adolescent development, adult development, and gerontology as well as in related substantive issues, including risk-taking behaviors, dating relationships, gender issues, program planning and evaluation, addictions, marriage, parenting, family violence, divorce, and blended families.

Graduate minors are also available in women’s studies and adolescent and young adult risk-taking, which are interdisciplinary programs coordinated by graduate faculty within the department.

The M.S. degree requires a minimum of 30 hours of graduate coursework and 6 hours of thesis research. The Ph.D. degree requires a minimum of 70 hours of graduate coursework—12 hours of which are leveling requirements—plus at least 12 hours of dissertation research. Up to 30 transfer hours may be applied toward doctoral program requirements upon the approval of the student's committee and the Graduate School.

Applicants should contact the department concerning admission requirements, programs of study, and financial assistance. Admission to a graduate degree program requires the recommendation of the department and the Graduate School.

GP–IDEA Gerontology Concentration. In collaboration with the Great Plains Interactive Distance Education Alliance (GP–IDEA), the department offers an online specialization in gerontology within the M.S. in Human Development and Family Studies and a postbaccalaureate certificate program in gerontology. The master's concentration requires a total of 36 hours comprised of eight core courses and four elective courses. The certificate requires 21 hours comprised of five core courses and two elective courses. The gerontology offerings are designed to provide students with the core competencies identified by the Association for Gerontology in Higher Education.

Students are admitted to either the concentration or certificate program based on the same admission requirements and process as other department concentrations. Students may take required and elective online courses from Texas Tech (home institution) and from offerings of other collaborating institutions (host). Universities collaborating on the gerontology program are Colorado State University, Iowa State University, Kansas State University, Oklahoma State University, and Texas Tech University.

The master's program consists of eight required three-credit courses (listed below) plus 12 credits of electives. The certificate program consists of five required three-credit courses, indicated by an asterisk (*) in the listing below. The remaining six credits can be taken from other core courses or from gerontology electives. Up to three credits of practicum experience may be included in either the master's or the certificate program.

- **Perspectives in Gerontology:** An overview of current aging issues including the current focus of gerontology theory and research, critical social and political issues in aging, the interdisciplinary focus of gerontology, current career opportunities, and aging in the future. 

- **Adult Development:** This course explores the biological, psychological, and social factors that are associated aging. Although the focus is on the later years, information is presented from a life-span developmental framework. Empirical studies are reviewed and their strengths, limitations and implications for normative and optimal functioning are discussed. 

- **Physical Health and Nutrition in Aging:** This course identifies the basic physiologic changes during aging and their impacts in health and disease. The focus will be on successful aging with special emphasis on physical activity and nutrition. Practical application to community settings is addressed.

- **Economics, Public Policy, and Aging:** Policy development in the context of the economic status of the elderly populations. Retirement planning and the retirement decision; Social Security and public transfer programs for the elderly; intrafamily transfers to/from the elderly; private pensions; financing medical care for the elderly; prospects and issues for the future.

- **Environments and Aging:** Examination of attributes of physical environments that support special needs of older people and application of this knowledge to the design and management of housing, institutional settings, neighborhoods and communities.

- **Aging in the Family:** Theories and research related to personal, family, and societal adjustments in later life affecting older persons and their intergenerational relationships. Related issues including demographics also are examined through the use of current literature.

- **Program Evaluation and Research Methods:** Overview of program evaluation, research methods, and grant writing in gerontology. Includes application of quantitative and qualitative methods in professional settings.

- **Professional Seminar in Gerontology:** An integrative experience in which students will strengthen skills in ethical decision-making and behavior and apply those skills in related areas such as advocacy, professionalism, and family and workplace issues. Students from a variety of professions will apply unique perspectives to topics of common interest.

**Graduate Courses**

4306. Preparing Environments for Children (3:3:0). Prerequisite: 2.5 GPA and HDFS 3411 or 3413. 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. F, S.

4310. Managing Early Childhood Programs (3:3:0). Prerequisite: 2.5 GPA. Survey of principles and procedures for managing and implementing various types of childcare and early childhood programs.

4314. Community Practicum in Human Development and Family Studies (3). Prerequisite: 2.5 GPA and senior standing. Supervised experiences in established career-related positions; focus selected on basis of professional interest (some sites may require a background check). May be repeated once for credit. F, S.

4320. Research in Human Development and Family Studies (3:3:0). Prerequisite: 2.5 GPA and HDFS 3390 or consent of instructor. Supervised faculty-initiated research experience in selected areas. May be repeated twice for credit. F, S.

4343. Advanced Topics in Human Development and Family Studies (3:3:0). Prerequisite: 2.5 GPA. 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). Prerequisite: 2.5 GPA. Knowledge and experience in the practice of program development and evaluation. Class evaluates an ongoing program.

5101. Teaching College Human Development and Family Studies (1). Strategies and direction in teaching college-level human development and family studies courses including supervision,
advise and assistance, and review of teaching materials. May be repeated one time for credit. Pass-fail grading.

5110. Colloquium in Human Development and Family Studies (1:1:0). Prerequisite: Consent of instructor. Presentations of current research and discussions of the profession by department and visiting faculty. May be repeated for credit.


5310. Theories of Human Development (3:3:0). Introduction to the application of concepts and theories in human development.

5311. Problems in Human Development and Family Studies (3:3:0). May be repeated for credit.

5313. Psychosocial Development (3:3:0). In-depth study of social, emotional, and psychological growth with emphasis on the development of personal and interpersonal competency.

5314. Infant Development (3:3:0). Analysis of empirical research regarding development processes during the first two years of life.


5320. Interpersonal and Family Dynamics (3:3:0). Group processes; factors influencing personal and family adjustment.

5321. Family Theory (3:3:0). A comprehensive exploration of theory in family studies. The role of theory in empirical investigation; conceptual frameworks; strategies of theory building; examination of systems theory and a spectrum of other models useful in the interdisciplinary study of individual, couple, and family behavior.


5344. Aging and the Family (3:3:0). Detailed examination of the family relationships of adults in late life. Emphasis on intergenerational issues and the enhancement of development and family life in later years.

5349. Quantitative Methods I in Human Development and Family Studies (3:3:0). An introduction to the quantitative methods and statistics necessary to conduct research with children and families through a developmental perspective.

5351. Research Methods in Individual and Family Studies (3:3:0). Study of research strategies and techniques relevant to human development, family studies, and marriage and family therapy including experience in conducting research investigations.


5353. Issues and Research in Human Development and Family Studies (3:3:0). History, philosophy, and current issues relevant to the areas of family studies and human development. May be repeated for credit under various topics.


5380. Relationship Development (3:3:0). Theory and research related to the formation of initial impressions of others and the development of interpersonal relationships.

5381. Individual and Family Measurement (3:3:0). Detailed examination of measurement methods appropriate for individual and family research, consideration of strengths and weaknesses of each, and experience in development and application of measures.

6000. Master’s Thesis (V1-6).


6330. Family Problems (3:3:0). Examines theoretical and empirical contributions to an understanding of treatment of family problems within a family systems perspective.

6352. Quantitative Methods II in Human Development and Family Studies (3:3:0). Prerequisite: HDFS 5349. The second course in a four-course sequence focusing on methods for conducting research through a developmental perspective. Family data and the general linear model will be explored.

6363. Advanced Topics in Human Development (3:3:0). Prerequisite: Consent of instructor. Current topics in human development across the life course. May be repeated for credit under various topics.


6365. Quantitative Methods IV in Human Development and Family Studies (3:3:0). Prerequisite: HDFS 5349 and 5351. This course will provide students with an overview of qualitative research methods in HDFS and will include exposure to qualitative data collection and analyses of data from multiple family members.

6370. Analyzing Developmental Data (3:3:0). Prerequisite: Research methods, introductory statistics, or consent of instructor. Statistical methods for analyzing individual and family change over time and time ordered processes of interactional data.

6371. Practicum in Human Development and Family Studies (3:3:0). Supervised experiences in professional positions. May be repeated for credit up to 9 hours.

6373. Advanced Topics in Family Studies (3:3:0). Prerequisite: Consent of instructor. Current topics in family studies. May be repeated for credit under various topics.

6390. Program Development and Evaluation (3:3:0). Reviews evaluation issues, critiques evaluation research, and undertakes planning and evaluation of original programs.

7000. Research (V1-12).

8000. Doctor’s Dissertation (V1-12).
Department of Nutrition, Hospitality, and Retailing

Faculty

Lynn Huffman, Ph.D., Chairperson

Professors: Harp, Hoover, Huffman, Reed, Spalholz

Associate Professors: Adams, Blum, Boyce, Boylan, Dodd, Fowler, Roman-Shriver, Shriver, Stout

Assistant Professors: Binkley, Goh, Lauderdale, Wu, Yuan

Instructors: Barko, Edwards, Fagan, Hlavaty, Kloiber, Kolyesnikova, Sanchez, Ward

About the Program

This department supervises the following degree programs:

- Bachelor of Science in Nutritional Sciences
- Bachelor of Science in Restaurant, Hotel, and Institutional Management
- Bachelor of Science in Retailing
- Bachelor of Science in Nutritional Sciences
- Bachelor of Science in Restaurant, Hotel, and Institutional Management
- Doctor of Philosophy in Nutritional Sciences
- Doctor in Philosophy in Hospitality Administration

In addition to the regular degree programs, this department provides a nine-month post-baccalaureate dietetic 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 nutrition, hospitality management, and retailing. To accomplish this mission, the department offers the following program areas: nutritional sciences; restaurant, hotel, and institutional management; and retailing.

Undergraduate Program

Bachelor of Science in Nutritional Sciences

The mission of the nutritional sciences program is to prepare individuals who will make a contribution to professions related to nutritional sciences and to society as a whole through quality education, research, and service. This program emphasizes the role of nutrition in the health and well being of people. The concentration prepares competent professionals for nutrition and dietetic careers in hospitals, schools, colleges, food service, business, and government agencies. Completion of courses for the Specialized Certificate in Hospitality, Nutrition, and Food Science offers students the opportunity to secure a family and consumer sciences teacher certification to teach nutrition in secondary schools. Nutritional sciences courses also contribute to the liberal education of all students who enroll in nutritional sciences classes.

Concentrations

A degree in nutritional sciences offers the following concentrations:

- General Dietetics. The Didactic Program in Dietetics (DPD) at Texas Tech is accredited by the Commission on Accreditation for Dietetics Education (CADE) and is designed to provide the student with an academic program that “provides for the achievement of knowledge and skills requirements for entry-level dietitians” as outlined by CADE. A verification statement signed by the program director is given to students who successfully complete all DPD requirements. A grade of C or better is required for all nutritional sciences, support, and human sciences core courses. CADE accredited graduates from the DPD are eligible to apply for an internship (such as the post-baccalaureate internship offered at Texas Tech). After successful completion of both an undergraduate and a supervised practice program, the student is eligible to take the national examination given by the Commission of Dietetic Registration (CDR) and, after passing a national exam, become a Registered Dietitian (R.D.). 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.

- Preprofessional Health Careers. This option offers an academic path for individuals interested in medicine, optometry, pharmacy, physical therapy, and other allied health options.

- Teacher Certification. This option offers a career path for those interested in teaching nutrition at the junior high school and high school levels. Students complete a broad base of nutrition courses along with those that lead to teacher certification. Graduates will be eligible for a Specialized Certificate in Hospitality, Nutrition, and Food Science. Students seeking certification must meet all requirements outlined in the College of Education section of this catalog. Admission requirements for the teaching program include the completion of approximately 60 hours with an overall 2.5 GPA or better and a satisfactory level of performance on the THEA 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 concentration 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.

- Nutritional Sciences Minor. A student may minor in nutritional sciences by completing a minimum of 18 hours of selected coursework. Specific courses for the nutritional sciences minor are finalized and approved by the student in conjunction with the major and minor advisors. Required courses: NS 1301, 2420, 2310; choose 3 from NS 3325, 3340, 4330, 4350, and 4380.

Bachelor of Science in Restaurant, Hotel, and Institutional Management (RHIM)

The mission of the Restaurant, Hotel, and Institutional Management (RHIM) 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.

Concentrations

A degree in restaurant, hotel, and institutional management offers the following concentrations:

- Hospitality Management. The RHIM program prepares students for management career opportunities in the hospitality industry. The curriculum includes courses in nutritional sciences, arts and sciences, and both core and elective courses in RHIM. Classroom laboratory experiences keep pace with changes in the hospitality field and the required 800 hours of work experience allows students to become familiar with the hospitality industry. A 400-hour hospitality industry internship outside of Lubbock, which can count toward the 800-hour work experience, is also required. 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.
• **Teacher Certification.** This option offers a career path for those interested in teaching hospitality at the junior high school and high school levels. Students complete a broad base of hospitality management courses and 800 hours of hospitality work experience along with those that lead to teacher certification. Graduates will be eligible for a Specialized Certificate in Hospitality, Nutrition, and Food Science. Students seeking certification must meet all requirements outlined in the College of Education section of this catalog. Admission requirements for the teaching program include the completion of approximately 60 hours with an overall 2.5 GPA or better and a satisfactory level of performance on the THEA 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 concentration 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.

• **Restaurant, Hotel, and Institutional Management Minor.** A student may minor in restaurant, hotel, and institutional management by completing 18-19 hours of selected coursework. 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.

### Bachelor of Science in Retailing

The mission of the retailing program is to prepare individuals who will make a contribution to the retail industry and to society as a whole through quality education, research, and service. The retailing program’s primary goal is to provide an innovative and challenging multidisciplinary curriculum that combines a creative approach to problem solving with an understanding of business principles to educate students to fill entry-level leadership positions as professionals aware of the role retailing plays in the enterprise system.

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. Retailing courses emphasize integration of theory, team building, leadership, industry application, and career planning strategy. Coursework outside the major includes study in technology, communication, marketing, management, accounting, and economics. An internship program, retail lecture series, industry sponsored course projects, and a strong alumni base afford students the opportunity to interface with a dynamic combination of retail executives and organizations throughout their academic study.

The curriculum emphasizes work-related experiences, internship opportunities, and career placement. A 10-week, 300- to 400-hour supervised internship in the retail industry is required of each student with a retailing major. The supervised internship experience is planned jointly between the faculty and student. RTL 3389, Professional Practices in Retailing, is required the spring semester prior to enrollment in RTL 3690, Internship in Retailing. A 150-hour externship at the managerial level is required as a capstone experience.

### Retailing Minor

A student may minor in retailing by completing 18 hours of selected coursework. Specific courses for the RTL minor are finalized and approved by the student in conjunction with the major and minor advisors. Courses include RTL 1340, 2340, 2350, and 9 hours of RTL upper-division courses.

### Nutritional Sciences (NS)

*(To interpret course descriptions, see page 8.)*

#### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Offered By</th>
</tr>
</thead>
<tbody>
<tr>
<td>1201</td>
<td>Introduction to Dietetics (2:2:0)</td>
<td></td>
<td>F</td>
</tr>
<tr>
<td>1301</td>
<td>Introduction to Nutrition (3:3:0)</td>
<td>An introduction to nutrition and its role in human health. For nutrition majors and minors only.</td>
<td>S</td>
</tr>
<tr>
<td>1325</td>
<td>[BIOL 1322, HECO 1322] Nutrition, Foods, and Healthy Living (3:3:0)</td>
<td>An introduction to the nutrients, their content in food, energy utilization, and the role of diet in health and disease.</td>
<td>F, S</td>
</tr>
<tr>
<td>1410</td>
<td>Science of Nutrition (4:3:2)</td>
<td>Study of the nutrients found in foods and utilization of those nutrients by the body: Designed to carry the basic principles of nutritional science.</td>
<td>F, S</td>
</tr>
<tr>
<td>2310</td>
<td>[HECO 1315] Principles of Food Preparation (3:2:2)</td>
<td>Application of scientific principles to food preparation.</td>
<td>F, S</td>
</tr>
<tr>
<td>2420</td>
<td>Nutrition (4:3:2)</td>
<td>Prerequisite: NS 1301. Sources and roles of nutrients and their importance to human health. For nutrition majors and minors only.</td>
<td>E</td>
</tr>
<tr>
<td>3310</td>
<td>Essentials of Dietetic Practice (3:2:2)</td>
<td>Prerequisite: NS 2420. Role of dietician in modern health care system. Techniques of assessment, nutrition planning, and documentation. Legal aspects of dietetic practice.</td>
<td>F</td>
</tr>
<tr>
<td>3320</td>
<td>Nutrition and Diet Therapy for Allied Health Professionals (3:3:0)</td>
<td>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.</td>
<td>F</td>
</tr>
<tr>
<td>3325</td>
<td>Sports Nutrition (3:3:0)</td>
<td>Prerequisite: NS 1301, 1325, or 1410. Nutrition concepts and applied nutritional practices for the competitive and amateur athlete and physically active individual.</td>
<td>F</td>
</tr>
<tr>
<td>3340</td>
<td>Nutrition in the Lifecycle (3:3:0)</td>
<td>Prerequisite: NS 2420 and ZOOL 2402. Factors that affect diet and nutrition throughout the life cycle.</td>
<td>F, S</td>
</tr>
<tr>
<td>3350</td>
<td>Child Nutrition (3:3:0)</td>
<td>Nutritional needs of young children in relation to mental and physical development; cultural, social, and psychological aspects of food and dietary patterns.</td>
<td>F</td>
</tr>
<tr>
<td>3402</td>
<td>Survey of Biochemistry (4:4:0)</td>
<td>Prerequisite: CHEM 2103, 2303 or 3105 and 3305. Survey of general biochemistry.</td>
<td>E</td>
</tr>
<tr>
<td>3411</td>
<td>Dietetic Counseling Strategies (4:3:1)</td>
<td>Prerequisite: NS 3310. Application of interviewing, counseling, and educational techniques in dietetics, including individual and group methods.</td>
<td>S</td>
</tr>
<tr>
<td>4000</td>
<td>Individual Study (V1-6)</td>
<td>Prerequisite: Written consent of supervising faculty member. May be repeated for up to 6 hours credit.</td>
<td>F</td>
</tr>
<tr>
<td>4120</td>
<td>Medical Terminology (1:1:0)</td>
<td>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.</td>
<td>S</td>
</tr>
<tr>
<td>4130</td>
<td>Field Work in Food and Nutrition (1:0:3)</td>
<td>Corequisite: NS 4330. Preplanned experiences with evaluation of student performance in hospitals, community health centers, clinics, and volume feeding establishments. May be repeated once for credit.</td>
<td>F</td>
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</tbody>
</table>

**Graduate Program**

The department supervises degree programs leading to Master of Science and Doctor of Philosophy degrees. The Master of Science degree requires a minimum of 33 semester hours, including a thesis or 39 hours for a nonthesis plan. Courses must be chosen in consultation with the major professor. Students without appropriate background in the chosen specialization will be required to take undergraduate leveling courses designated by the department. The Doctor of Philosophy degree requires a minimum of 60 hours beyond the master’s degree, including at least 18 hours in the specialization area.

The department also offers a nine-month dietetic internship program. Selected credits earned during the program may apply to an optional master’s or doctoral degree. Twelve hours of graduate credit are required in supervised experience in health and food service facilities. Upon completing the internship, the student is eligible to take the Commission of Dietetic Registration written examination to become a registered dietician.

Applicants should contact the program graduate advisor concerning admission requirements and programs of study. Admission to a graduate degree program requires the recommendation of the department as well as the approval of the graduate dean.
**Nutritional Sciences: Preprofessional Health Careers Curriculum**

<table>
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<tr>
<th><strong>FIRST YEAR</strong></th>
<th><strong>Spring</strong></th>
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<tbody>
<tr>
<td>HUSC 1100 or 1 S 1100</td>
<td>ZOOL 2402, Anatomy &amp; Physiology*</td>
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<td>MATH 1301, Calculus I</td>
<td>ENGL 1302, Adv. Coll. Rhetoric*</td>
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<td>CHEM 1307, 1107, Prin. of Chem. I.</td>
<td>CHEM 1309, 1108, Prin. of Chem. II.</td>
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<tr>
<th><strong>SECOND YEAR</strong></th>
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<tbody>
<tr>
<td>HIST 2300, History of U.S. to 1877</td>
<td>HIST 2301, History of U.S. Since 1877</td>
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<tr>
<td>BIOL 1403 (F), Biology I</td>
<td>NS 3340, Nutrition in Life Cycle*</td>
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<tr>
<td>NS 2310, Prin. of Food Preparation</td>
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<tr>
<td>CHEM 3305, 3105, Organic Chem.</td>
<td>CHEM 3306/3106, Organic Chem.*</td>
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<tbody>
<tr>
<td>PHYS 1403, General Physics I</td>
<td>Phys 1404, General Physics II</td>
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<tr>
<td>NS 3310 (F), Ess. of Dietetic Practice*</td>
<td>NS 3411 (S), Dietetic Couns. Strat.*</td>
</tr>
<tr>
<td>NS 3402 (F), Survey of Biochemistry*</td>
<td>NS 4320 (S), Nutritional Biochem.*</td>
</tr>
<tr>
<td>COMS 2320 or 3325, Oral Comm.</td>
<td>NS 4350 (S), Medical Nutrition*</td>
</tr>
<tr>
<td>HUSC 3214, Human Sciences Seminar</td>
<td>NS 4351 (S), Medical Nutrition Therapy*</td>
</tr>
<tr>
<td>MBIO 3401, Prin. of Microbiology</td>
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<tr>
<th><strong>FOURTH YEAR</strong></th>
<th><strong>Spring</strong></th>
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</thead>
<tbody>
<tr>
<td>NS 4340 (F), Medical Nutr. Therapy*</td>
<td>NS 4350 (S), Emerging Issues*</td>
</tr>
<tr>
<td>NS 4330/4130 (F, Comm. Nutrition)</td>
<td>NS 4341 (S), Medical Nutr. Therapy*</td>
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<tr>
<td>RHM 4360, Exp. Methods w/Foods*</td>
<td>NS 4350 (S), Cultural Foods*</td>
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<td>Human Sciences Elective^</td>
<td>Visual &amp; Performing Arts*</td>
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<td>Humanities Elective*</td>
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<td>TOTAL 16</td>
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</table>

NOTE: Students are expected to have competency in computer usage. * Choose from Core Curriculum requirements. ^ Prerequisites apply. + HS Core; choose 1 course from: ADRS 2310, HDFS 2322, PFP 3301, (F) offered fall semester only; (S) offered spring semester only.

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**Nutritional Sciences: General Dietetics Curriculum**

<table>
<thead>
<tr>
<th><strong>FIRST YEAR</strong></th>
<th><strong>Spring</strong></th>
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<tr>
<td>HUSC 1100 or 1 S 1100</td>
<td>ENGL 1302, Adv. Coll. Rhetoric*</td>
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<td>ENGL 1301, Ess. Coll. Rhetoric</td>
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<td>Mathematics Elective*</td>
<td>CHEM 1309/1108*</td>
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<td>CHEM 1307/1107*</td>
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<td>NS 1201 (F), Intro to Detics</td>
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<tr>
<td>HIST 2300, History of U.S. to 1877</td>
<td>HIST 2301, History of U.S. Since 1877</td>
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<tr>
<td>ZOOL 2402 (F), Nutrition*</td>
<td>NS 3340, Nutrition in the Life Cycle*</td>
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<td>NS 4240 (F), Nutrition*</td>
<td>RHM 3322 (S), Hospitality Control II*</td>
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<tr>
<td>RHM 3460, Food Syst. Manage, I*</td>
<td>RHM 3470, Food Syst. Manage, II*</td>
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<td>FDS 3301 or 3303</td>
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<tr>
<td>RHM 3341, Hospitality Management*</td>
<td>NS 3411 (S), Dietetic Counseling Strat.*</td>
</tr>
<tr>
<td>HUSC 3214, Human Sciences Seminar</td>
<td>RHM 3390, Purchasing in Hosp. Ind.*</td>
</tr>
<tr>
<td>NS 3310 (F), Ess. of Dietetic Practice*</td>
<td>NS 4309 (S), Nutritional Biochemistry*</td>
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<tr>
<td>TOTAL 16</td>
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<table>
<thead>
<tr>
<th><strong>FOURTH YEAR</strong></th>
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<tbody>
<tr>
<td>NS 4340 (F), Medical Nutritional Ther. I*</td>
<td>NS 4350 (S), Emerging Issues*</td>
</tr>
<tr>
<td>NS 4330/4130 (F, Comm. Nutr. I)</td>
<td>NS 4341 (S), Medical Nutr. Therap. I*</td>
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<tr>
<td>RHM 4360, Exp. Methods w/Foods*</td>
<td>COMS 2300 or 3358</td>
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<tr>
<td>Human Sciences Elective*</td>
<td>NS 4360 (S), Cultural Foods*</td>
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<tr>
<td>Humanities Elective*</td>
<td>Visual &amp; Performing Arts*</td>
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<td>TOTAL 16</td>
<td>TOTAL 15</td>
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</table>

TOTAL—127 hours

NOTE: Students are expected to have competency in computer usage. * Choose from Core Curriculum requirements. ^ Prerequisites apply. + HS Core; choose 1 course from: ADRS 2310, HDFS 2322, PFP 3301, (F) offered fall semester only; (S) offered spring semester only.

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4320. **Nutritional Biochemistry (3:3:0).** Prerequisite: NS 2420 and 3402. Concepts of normal nutrition in relation to the chemistry and physiology of the human body.

4330. **Community Nutrition (3:3:0).** Prerequisite: NS 4130. 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).** Prerequisite: NS 3310, 3340, 3402, and ZOOL 2402. 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: NS 4340. 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: NS 4240 and senior standing. Readings, discussion, and analysis of trends and developments in food science and nutrition.

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. (F Writing Intensive)

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**Graduate Courses**

5000. Independent Study in Nutrition (V 1-6). Independent study in nutrition. May be repeated for credit.

5118. Seminar (1:1:0). May be repeated for credit.

5300. **Perspectives in Food and Nutrition (3:3:0).** Foundations of food and nutrition concepts. Does not apply to food and nutrition degree plan. May be repeated for credit.

5302. **Human Metabolism in Nutrition (3:3:0).** Concepts of normal nutrition in relation to the chemistry and physiology of the human body. May not be counted toward a food and nutrition degree.

5303. **Community Nutrition (3:3:0).** Study of nutrition-related problems in the community and various resources, activities, agencies, and programs involved in health promotion and disease prevention. May not be counted toward NS degree.

5304. **Medical Nutrition Therapy I (3:3:0).** Nutritional assessment and oral, enteral, and parenteral nutrition support. Pathophysiology, medical management, nutritional assessment, and nutritional therapy as they relate to protein energy malnutrition, trauma, obesity, diabetes, and endocrine disorders. May not be counted toward NS degree.

5305. **Medical Nutrition Therapy II (3:3:0).** 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. May not be counted toward NS degree.

5306. **Experimental Methods with Foods (3:2:3).** Investigation of the physical and chemical factors influencing quality in food. May not be counted toward NS degree.

5307. **Emerging Issues in Food and Nutrition (3:3:0).** Readings, discussion, and analysis of trends and developments in food science and nutrition. May not be counted toward NS degree.

5308. **Cultural Aspects of Food (3:3:0).** A study of the interaction of food and culture in various societies. May not be counted toward NS degree.

5310. **Nutrition of the Aged (3:3:0).** Nutrition needs and factors affecting nutrition of the aged.

5311. **Problems in Nutrition (3:3:0).** May be repeated for credit.

5320. **Resource Management in Dietetics (3:3:0).** Prerequisite: Consent of instructor. Materials and human resources management in administration and clinical aspects of dietetics.

5321. **Dietetic Counseling Strategies (3:3:0).** Application of interviewing, counseling, and educational techniques in dietetics including individual and group methods. May not be counted toward NS degree.

5327. **Carbohydrates and Lipids in Nutrition (3:3:0).** Nutritional roles and metabolism of lipids and carbohydrates and metabolic responses to various dietary practices and diseases.
### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Semester</th>
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<tbody>
<tr>
<td>2308</td>
<td>Hotel Operations (3:2:3). Principles and practices of managerial functions relating to the operation of hotel and motel facilities. F, S.</td>
<td>3</td>
<td>Spring</td>
</tr>
<tr>
<td>2310</td>
<td>Introduction to Hospitality Management (3:2:1). Analyzes the nature of work, people, and the interrelationships within the hospitality industry. Explores various career options. F, S.</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>2312</td>
<td>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. F, S, SSII.</td>
<td>3</td>
<td>Spring</td>
</tr>
<tr>
<td>2350</td>
<td>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.</td>
<td>3</td>
<td>Fall</td>
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<tr>
<td>3000</td>
<td>Internship in Hospitality (VI-6). Prerequisite: RHIM 3100, sophomore standing and 2.5 GPA. Experiences in hospitality settings. May be repeated for a maximum of six hours credit. F, S, SSII, SSIII.</td>
<td>3</td>
<td>Spring</td>
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<tr>
<td>3100</td>
<td>Introduction to Internship in Hospitality (1:1:0). Introduction to concepts and expectations of the internship experience. F, S.</td>
<td>1</td>
<td>Fall</td>
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<tr>
<td>3303</td>
<td>Computers in the Hospitality Industry (3:2:3). Prerequisite: Demonstrated computer competency. Examination and application of software and systems specific to the hospitality industry.</td>
<td>3</td>
<td>Spring</td>
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<tr>
<td>3308</td>
<td>Hotel Group Sales and Services (3:3:0). Emphasis on the function of convention and meeting sales and service departments.</td>
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**Nutritional Sciences: Family and Consumer Sciences Teacher Certification**

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<th>Semester</th>
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<td>ENGL 1301, Ess. Coll. Rhetoric</td>
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<tr>
<td>Mathematics Elective*</td>
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<td>POLS 1301, Amer. Govt. Org.</td>
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<tr>
<td>CHEM 1305/1105, Chem &amp; Society I</td>
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<td>PSY 1300 or EDSE 2300</td>
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<tr>
<td>FCSE 2102, Intro. to FCS</td>
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**SECOND YEAR**

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<tr>
<td>ZOOL 2302, Human Anatomy &amp; Physiol.</td>
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<tr>
<td>ENGL 2311, Intr. to Technical Writing</td>
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<tr>
<td>RHIM 3460, Food Syst. Manage. I</td>
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<tr>
<td>NS 2310, Princ. of Food Preparation</td>
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**THIRD YEAR**

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<tr>
<td>NS 3325, Foods Nutrition</td>
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<tr>
<td>RHIM 3341, Hospitality Management</td>
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<td>FSCS 3303, Food Sanitation</td>
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<tr>
<td>FCSE 3301, Foundations of FCSE</td>
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<td>3</td>
<td>Fall</td>
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<tr>
<td>Visual &amp; Performing Arts*</td>
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**FOURTH YEAR**

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<td>FCSE 4308 (F), Research and Eval.**</td>
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<tr>
<td>FCSE 4306 (F), Occ. Fam. &amp; Con. Sci.**</td>
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<tr>
<td>NS 4330 (F), Community Nutrition</td>
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<tr>
<td>HUSC 3214, Human Sciences Seminar</td>
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<td>RHIM 4360, Experimental Foods</td>
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**TOTAL—133 hours**

**NOTE:** Students are expected to have competency in computer usage.

- Choose from Core Curriculum requirements
- HS Core; choose 1 course from: ADRS 2310, HDFS 2322, PFP 3301
- ** Admission to Teacher Certification (Education) Program and a minimum 2.5 GPA required (www.edu.ttu.edu)
- (F) Offered fall semester only; (S) offered spring semester only

### Restaurant, Hotel, and Institutional Management (RHIM)

**Undergraduate Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Semester</th>
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</thead>
<tbody>
<tr>
<td>2308</td>
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<td>Fall</td>
</tr>
<tr>
<td>2312</td>
<td>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. F, S, SSII.</td>
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<td>Spring</td>
</tr>
<tr>
<td>2350</td>
<td>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.</td>
<td>3</td>
<td>Fall</td>
</tr>
<tr>
<td>3000</td>
<td>Internship in Hospitality (VI-6). Prerequisite: RHIM 3100, sophomore standing and 2.5 GPA. Experiences in hospitality settings. May be repeated for a maximum of six hours credit. F, S, SSII, SSIII.</td>
<td>3</td>
<td>Spring</td>
</tr>
<tr>
<td>3100</td>
<td>Introduction to Internship in Hospitality (1:1:0). Introduction to concepts and expectations of the internship experience. F, S.</td>
<td>1</td>
<td>Fall</td>
</tr>
<tr>
<td>3303</td>
<td>Computers in the Hospitality Industry (3:2:3). Prerequisite: Demonstrated computer competency. Examination and application of software and systems specific to the hospitality industry.</td>
<td>3</td>
<td>Spring</td>
</tr>
<tr>
<td>3308</td>
<td>Hotel Group Sales and Services (3:3:0). Emphasis on the function of convention and meeting sales and service departments.</td>
<td>3</td>
<td>Fall</td>
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### Curriculum for B.S. in Restaurant, Hotel, and Institutional Management with Teaching Certification in Family and Consumer Sciences

#### FIRST YEAR

<table>
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<tr>
<th>Fall</th>
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<tr>
<td>HUSC 1100 or IS 1100</td>
<td>ENGL 1302, Adv. Coll. Rhetoric^* 3</td>
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<td>ENGL 1301, Ess. Coll. Rhetoric 3</td>
<td>Mathematics Elective^* 3</td>
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<td>POLS 2302, Amer. Public Policy 3</td>
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<td>POLS 1301, Amer. Govt. Org. 3</td>
<td>NS 1410, Science of Nutrition 4</td>
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<tr>
<td>RHIM 2310, Intro. to Hosp. Management</td>
<td>RHIM 2308, Hotel Operations 3</td>
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<td>Visual &amp; Performing Arts 3</td>
<td>ECO 2305 Prin. of Economics 3</td>
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<td>FCSE 2102, Intr. to Fam. &amp; Con. Sci. 1</td>
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#### SECOND YEAR

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<tbody>
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<td>HIST 2300, History of U.S. to 1877 3</td>
<td>HIST 2301, History of U.S. Since 1877 3</td>
</tr>
<tr>
<td>RHIM 3308, Hotel Group Sales &amp; Serv. 3</td>
<td>COMS 3358, Bus. &amp; Prof. Comm. 3</td>
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<td>ENGL 2311, Intro. to Tech. Writing 3</td>
<td>English Literature (choose any) 3</td>
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<td>RHIM 3460, Food Sys. Management I 4</td>
<td>RHIM 3390, Purchasing in Hosp. Ind. 3</td>
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<tr>
<td>Human Sciences Core Elective^ 3</td>
<td>RHIM 3470, Food Syst. Manage. II 4</td>
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<td>RHIM 3350, Travel and Tourism 3</td>
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#### THIRD YEAR

<table>
<thead>
<tr>
<th>Fall</th>
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<tbody>
<tr>
<td>RHIM 3320, Facilities Management 3</td>
<td>EDLL 4382, Reading, Writing, Second.** 3</td>
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<td>ANSC 3404, Cons. Select./Juil. 4</td>
<td>FCSE 4302 (S), Prof. Applica. in FCS** 3</td>
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<tr>
<td>RHIM 3341, Hospitality Management 3</td>
<td>RHIM 3322 (S), Hospitality Control II 3</td>
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<tr>
<td>RHIM 3321 (F), Hospitality Control I 3</td>
<td>EDGE 4310, Learning, Cog. Inst.** 3</td>
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<tr>
<td>FDSC 3303, Food Sanitation 3</td>
<td>EDSE 4322, Diversity &amp; Learning** 3</td>
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<td>FCSE 3301, Foun. of FCS Educ. 3</td>
<td>RHIM 3100, Pre-Internship 1</td>
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<tr>
<td>TOTAL</td>
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<tr>
<td>INTERNSHIP</td>
<td>16</td>
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<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHIM 3000, Internship (should be away from Lubbock) 2</td>
<td></td>
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<tr>
<td>TOTAL</td>
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#### FOURTH YEAR

<table>
<thead>
<tr>
<th>Fall</th>
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</thead>
<tbody>
<tr>
<td>FCSE 4308 (F), Res. &amp; Eval. FCS^** 3</td>
<td>FCSE 4304 (S), Inst. Mgmt. in FCS** 3</td>
</tr>
<tr>
<td>RHIM 4415, Adv. Food Product. Manage. 4</td>
<td>RHIM 4301 (S), Student Teaching** 3</td>
</tr>
<tr>
<td>RHIM 4316, Hospitality Mgmt. Market. 3</td>
<td>TOTAL 12</td>
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<tr>
<td>HUSC 3214, Human Sciences Seminar 2</td>
<td>RHIM elective&lt; 3</td>
</tr>
<tr>
<td>FCSE 4306 (F), Occupational FCS^** 3</td>
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</tr>
<tr>
<td>RHIM 4313, Legal Asp. of Hosp. Ind. 3</td>
<td>TOTAL—125 hours</td>
</tr>
<tr>
<td>TOTAL</td>
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</tbody>
</table>

NOTE: Students are expected to have competency in computer usage.

#### INTERNSHIP

| RHIM 3000, Internship in Hospitality^ 2 |

TOTAL—137 hours

NOTE: Two hours of RHIM 3000, Internship, must be taken after RHIM 3110 and before last semester.

* Prerequisites apply.
* Choose from Core Curriculum requirements.
+ HS core; choose 1 course from: ADRS 2310, HDFS 2322, PFP 3301
** Admission to Teacher Certification (Education) Program and minimum 2.5 GPA required (www.educ.ttu.edu)
(F) Offered fall semester only; (S) offered spring semester only

#### SECOND YEAR

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>RHIM 3320, Facilities Management 3</td>
<td>ANSC 3404, Cons. Select./Juil. 3</td>
</tr>
<tr>
<td>COMS 3358, Bus. and Pro. Comm. 3</td>
<td>RHIM 3390, Purchasing in Hosp. Ind. 3</td>
</tr>
<tr>
<td>RHIM 3341, Hospitality Management^ 3</td>
<td>RHIM 3358, Human Res. in Serv. Ind. 3</td>
</tr>
<tr>
<td>RHIM 3321 (F), Hospitality Control I 3</td>
<td>RHIM 3322 (S), Hospitality Control II 3</td>
</tr>
<tr>
<td>FDSC 3303, Food Sanitation 3</td>
<td>RHIM 4312, Beverage Control Man.^ 3</td>
</tr>
<tr>
<td>RHIM 3300, Intro. to Internship in Hosp. 1</td>
<td>TOTAL 16</td>
</tr>
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</table>

#### INTERNSHIP

| RHIM 3000, Internship in Hospitality^ 2 |

TOTAL—125 hours

NOTE: Students are expected to have competency in computer usage.

#### TWO YEARS

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>RHIM 4322 (F), Hosp. Cost Control III^ 3</td>
<td>RHIM 4300, Practicum^## 3</td>
</tr>
<tr>
<td>RHIM 4415, Adv. Food Product. Manage.^ 4</td>
<td>RHIM elective&lt; 3</td>
</tr>
<tr>
<td>HUSC 3214, Human Sciences Seminar^ 2</td>
<td>RHIM 4313, Legal Asp. of Hosp. Ind. 3</td>
</tr>
<tr>
<td>RHIM elective&lt; 3</td>
<td>TOTAL 12</td>
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<td>TOTAL</td>
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</table>

TOTAL—125 hours

NOTE: Students are expected to have competency in computer usage.

#### TWO YEARS

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>RHIM 3320, Facilities Management 3</td>
<td>ANSC 3404, Cons. Select./Juil. 3</td>
</tr>
<tr>
<td>COMS 3358, Bus. and Pro. Comm. 3</td>
<td>RHIM 3390, Purchasing in Hosp. Ind. 3</td>
</tr>
<tr>
<td>RHIM 3341, Hospitality Management^ 3</td>
<td>RHIM 3358, Human Res. in Serv. Ind. 3</td>
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<tr>
<td>RHIM 3321 (F), Hospitality Control I 3</td>
<td>RHIM 3322 (S), Hospitality Control II 3</td>
</tr>
<tr>
<td>FDSC 3303, Food Sanitation 3</td>
<td>RHIM 4312, Beverage Control Man.^ 3</td>
</tr>
<tr>
<td>RHIM 3300, Intro. to Internship in Hosp. 1</td>
<td>TOTAL 16</td>
</tr>
<tr>
<td>TOTAL</td>
<td>16</td>
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</table>

### Related Courses

- 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.
- Hospitality Control I (3:3:0): Introduction to hospitality control devices needed to measure fiscal success.
- Hospitality Control II (3:3:0): Prerequisite RHIM 3321. Application of fiscal control devices in the hospitality industry. Includes computer applications in industry situations.
- Special Topics in Hospitality (3:3:0): Semester long study of a specific topic pertinent to the hospitality industry.
- Customer Relations for Hospitality Enterprises (3:3:0): Prerequisite: RHIM 2310. Evaluation of various facets of customer relations as they impact the hospitality industry.
- 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.
- 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.
- Club and Resort Management (3:3:0): Principles and practices of the general managerial procedures utilized in private clubs and resorts.
- Human Resources in the Service Industry (3:3:0): Explore human relations theories as they pertain to managing in the hospitality industry.
- Managed Services in the Hospitality Industry (3:3:0): Analysis of on-site food service management and its importance to the hospitality industry.
- 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.
- 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.
### Curriculum for B.S. in Retailing

#### FIRST YEAR

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>Husc 1100 or Is 1100</td>
<td>ENGL 1302, Adv. Coll. Rhetoric(^{\wedge}) 3</td>
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<tr>
<td>Math</td>
<td>Math 3</td>
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<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
<td>ECO 2302 or 2305, Prim. of Eco. 3</td>
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<tr>
<td>rtl 1340, intro. to Retailing</td>
<td>Human Sciences Elective* 3</td>
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<tr>
<td>Polls 1301</td>
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<td>Total 13</td>
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#### SECOND YEAR

<table>
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<tr>
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<tr>
<td>Hst 2300, History of U.S. to 1877</td>
<td>Hst 2301, History of U.S. from 1877 3</td>
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<tr>
<td>Ba 3302, Financial/Managerial Acct.</td>
<td>Natural Science 4</td>
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<tr>
<td>or Rhim 3321, Cost Control I(^{(S)})</td>
<td>Polls 2302, Amer. Public Policy 3</td>
</tr>
<tr>
<td>Ensl 2311, Intro. to Technical Writing</td>
<td>Ba 3303, Foundations of Finance or Rhim 3322, Cost Control II* 3</td>
</tr>
<tr>
<td>Rtl 2350, Retail Promotion*(^{(S)})</td>
<td>Natural Science 4</td>
</tr>
<tr>
<td>Total 16</td>
<td>Visual &amp; Performing Arts* 3</td>
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#### THIRD YEAR

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<tbody>
<tr>
<td>Rtl 3340, Intern. Retailing*(^{(S)})</td>
<td>Coms 3358, Bus. and Pro. Comm. 3</td>
</tr>
<tr>
<td>Rtl 3380, Retail Buying &amp; Control*(^{(S)})</td>
<td>Rtl 3389 (S), Practices in Rtl.* 3</td>
</tr>
<tr>
<td>Fdc 3303, Food Sanitation</td>
<td>Ba 3301, Marketing Conc. &amp; Strat. 3</td>
</tr>
<tr>
<td>Ba 3305, Organizations Mgt. or Rhim 3341, Hospitality Mgt.*</td>
<td>or Rhim 4316, Hospitality Mgt. Mkt.* 3</td>
</tr>
<tr>
<td>Total 12</td>
<td>Elective or Minor 3</td>
</tr>
<tr>
<td>Total 15</td>
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#### INTERNSHIP

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<tbody>
<tr>
<td>Rtl 3690 (S), Internship in Retailing*(^{(S)})</td>
<td>Husc 2314, Human Sciences Seminar*(^{(S)}) 2</td>
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<tr>
<td>Rtl 4320, Category Mgt.</td>
<td>Rtl 4360, Retail Management*(^{(S)}) 3</td>
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<tr>
<td>Rtl 4321, Elective or Minor</td>
<td>Rtl 4320, Hospitality Mgt.* 3</td>
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#### EXTERNSHIP

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<tbody>
<tr>
<td>Rtl 4392 (S), Externship in Retailing*</td>
<td>Total—122 hours</td>
</tr>
</tbody>
</table>

* Choose from Core Curriculum requirements.

\(^{(S)}\)Offered in spring semester only; (S) offered summer sessions only.

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4000. Individual Study (V1-6). Prerequisite: Written consent of supervising faculty member. May be repeated for up to 6 hours credit. F, S, SSI, SSSI.

4300. Practicum (3:3:0). Prerequisite: RHIM 3000, graduating senior’s final semester and 800 hours of work experience completed. 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. F, S, SSI, SSSI.

4312. Beverage Control Management (3:3:0). Prerequisite: RHIM 3460. Selection, storage, and service of beverages with emphasis on inventory control, sales promotion, and profitability. F, S.


4316. Hospitality Management Marketing (3:3:0). Prerequisite: 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. F, S, SSI.


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. F, S.

4325. Hospitality Field Study Tour (3:1:4). Study of international/domestic hospitality operations. May be repeated once for credit. S.


4360. Experimental Methods with Food (3:2:3). Prerequisite: RHIM 3460 or NS 2310. Investigation of the physical and chemical factors influencing quality of food in personal and commercial settings; consideration of proportionality, manipulations of ingredients, and additives in preparation.

4415. Advanced Food Production Management (4:2:6). Prerequisite: RHIM 3470, FDSC 3303, and junior or senior standing. Examination of maximum responsibility of management of actual food service operation based on sound managerial principles and successful food production and service techniques. Register through departmental office. F, S, SSIII. (Writing Intensive)

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Graduate Courses

5001. Internship in the Hospitality Industry (V1-6). Prerequisite: Consent of instructor. Internship experience in career-related positions in the hospitality industry.

5100. Seminar (1:1:0).

5300. Perspective in Restaurant Hotel and Institution Management (3:3:0). Foundation concepts in hospitality management. May be repeated for credit. Does not apply to a graduate degree.

5301. Colloquium in Hospitality Management (3:3:0). Introduction to philosophies and processes involved in graduate study in the hospitality sector.

5308. Hotel Management (3:3:0). An assessment of organizational and operational issues relating to the lodging industry. Students will examine current trends in the hotel industry and determine appropriate strategies for managing change.

5310. Sensory Evaluation of Food Products (3:2:3). Principles and techniques of sensory evaluation of food products in personal and professional settings.

5311. Problems in Restaurant, Hotel, and Institutional Management (3:3:0). May be repeated for credit.

5316. Hospitality and Service Marketing (3:3:0). Examination of marketing theories and specific applications to the hospitality and service industry. Concentrates on differences of marketing concepts in service vs. products market.


5325. Hospitality Field Study Tour (3:1:4). Study of international/domestic hospitality operations. May be repeated once for credit.

5332. Hospitality Control (3:3:0). Managerial concepts that apply to the hospitality industry using the uniform system of accounts for lodging, restaurant, and club industries.


5340. Hospitality Consumer Behavior (3:3:0). Analysis of hospitality customers with emphasis on application of theoretical based research.

5341. Strategic Management in the Hospitality Industry (3:3:0). Prerequisite: Completion of RHIM core. Examination of strategy formulation, content development, implementation, and evaluation at the unit and multi-unit level.

5350. Travel and Tourism (3:3:0). A study of principles and concepts of travel and tourism behavior. Emphasis on tourism theories, history, planning, development, and research techniques.

5353. Introduction to Restaurant, Hotel, and Institutional Management Issues and Research (3:3:0). Analysis of issues and methods of research related to the study of food, equipment, design, consumer acceptance, concept development, cost analysis, and operational efficiency.

5355. Human Resources in the Hospitality Industry (3:3:0). In-depth study of human resource management in the service industry. Emphasis on employment issues, labor relations, and government regulations.

5370. Food Systems Management (3:3:0). Examination of current trends in food service operations and technology. Emphasis on the functional subsystems of procurement, preparation, service and delivery, and sanitation and maintenance.

5375. Operations Management for Service Industries (3:3:0). Integration of quantitative production, operations methods,
and traditional qualitative management in both the unit and multi-unit service operations.

5385. **Focus Group Research Methods** (3:3:0). Exploration of focus group methodology to develop problem solving and decision-making skills.

6000. **Master’s Thesis** (V1-6).

6001. **Internship in Hospitality Administration** (V1-6). Prerequisite: Admission to doctoral program and consent of instructor. Internship experience in career-related position in the hospitality industry.

6100. **Seminar** (1:1:0).

6300. **Perspectives in Hospitality Administration** (3:3:0). Foundation concepts in hospitality management. May be repeated for credit. Does not apply toward graduate credit.

6308. **Advanced Lodging and Leisure** (3:3:0). Examines the lodging industry from a strategic management standpoint. Discussions and research will focus on industry interrelationships with economic, social, political, and financial entities.

6316. **Advanced Hospitality Marketing** (3:3:0). An advanced investigation into the theories, strategies, and marketing policies influencing the corporate level decision making process and how they apply to the day to day operations of hospitality companies.

6320. **Franchising and Entrepreneurship in the Hospitality Industry** (3:3:0). Examines managerial strategies and processes in starting, growing, and revitalizing hospitality businesses.

6322. **Financial Management In Hospitality Administration** (3:3:0). Investigation of theories, strategies, and financial policies influencing corporate decisions in operations of domestic and international hospitality.

6330. **Theoretical Developments in Hospitality** (3:3:0). Review and analysis of the history of the theoretical developments in the hospitality industry including a comparison with other disciplines.

6332. **Advanced Hospitality Control** (3:3:0). Investigation of strategic cost management that includes financial and managerial accounting concepts relevant to the hospitality industry.

6340. **Organizational Management in Hospitality Administration** (3:3:0). The study and practice of the latest concepts related to leadership and supervision in hospitality management.

6345. **Hospitality Business Ethics** (3:3:0). Develop the cognitive skills and integrative abilities necessary to recognize moral distinctions which occur in the daily operations of businesses in the light of personal values and professional codes of ethics.

6346. **Category Management in the Hospitality Industry** (3:3:0). The role of category management strategies and best practices in the effective implementation of customer service in the hospitality industry.

6350. **Advanced Travel and Tourism** (3:3:0). An in-depth study of tourism supply, demand, policy, planning, development and marketing at the local, regional, state, national and international levels. Economic, social, political, and environmental considerations of tourism management and development will be a focus. Tourism-related research and experiences with tourism organizations and agencies are components of the course.

6370. **Advanced Food Systems Management** (3:3:0). An examination of current technologies and processes in food industry related operations with emphasis on the subsystems of concept, and product development, production, and marketing.

6380. **Grants and Project Funding** (3:3:0). Examination and application of the processes related to grants and sponsored projects, including identification of sources of funding, proposal development, and grant administration.


7000. **Research** (V1-12).

8000. **Doctor’s Dissertation** (V1-12).

### Retailing (RTL)

#### Undergraduate Courses

1340. **Introduction to Retailing** (3:3:0). Basic principles, concepts, and practices in the operation of retail organizations. F, S.

2340. **Contemporary Issues in Retailing** (3:3:0). Prerequisite: RTL 1340. Introductory survey of fundamental principles and current issues that affect retailing; emphasis on related influences from government, economics, technology, and society. F, S.

2350. **Retail Promotion** (3:3:0). Prerequisite: RTL 1340. Comprehensive study of the principles and practices of merchandise communication through the interaction and coordination of sales promotion, personal selling, visual merchandising, advertising, special events, and public relations. F, S.

3340. **International Retailing** (3:3:0). Prerequisite: RTL 2340, ENGL 2311; prerequisite or corequisite: ECO 2302 or 2305. Cultural differences, world markets, and political constraints encountered in international retailing strategy. F, S. (Writing Intensive)


3380. **Retail Buying and Control** (3:3:0). Prerequisite: RTL 2340, 6 hours of math, and RHM 3322 or BA 3302. The application of planning, purchasing, and controlling inventories. F, S.

3389. **Professional Practices in Retailing** (3:3:0). Prerequisite: RTL 2350, 3380, and departmental approval; enrollment proceeds RTL 3690. Principles of professional practices focusing on legal, ethical, and human resource workplace issues and effective managerial strategies. S.

3690. **Internship in Retailing** (3:3:0). Prerequisite: RTL 3340; rising senior standing and departmental approval. Supervised applications of concepts, principles, and techniques learned in the classroom; emphasis on student participation in the retailing industry. Experiential workplace component must include a minimum of 300 hours of joint faculty-employer supervised employment. S.

4000. **Individual Study** (V1-6). Prerequisite: Written consent of supervising faculty member prior to registration. Individual study or research under the guidance of a retailing faculty member to enhance the degree program. May be repeated for up to 6 hours credit. F, S, SSI, SSII.

4300. **Retailing Field Study Tour** (3:1:4). Study of international/domestic retailers and manufactures. May be re-peated once for credit. S.

4320. **Retail Category Management** (3:3:0). Prerequisite: RTL 2340; prerequisite or corequisite: RTL 3380. The application of category management strategies using industry software with emphasis on product selection, shelf merchandising, promotion, and pricing. F, S

4330. **Retailing Research** (3:3:0). Prerequisite: RTL 3340, 3380. Comprehensive overview of research in the retailing process; emphasis on application-oriented techniques and processes for implementation. Required discussion. F, S. (Writing Intensive, Service-Learning)

4360. **Retail Management** (3:3:0). Prerequisite: RTL 3340, COMS 3358, BA 3301 or RHIM 4316, or BA 3305 or RHIM 3341. Capstone course with emphasis on interrelated functions in retail management examined through case study and problem-based academic service-learning team projects. Required discussion. F, S. (Writing Intensive, Service-Learning)

4392. **Retail Externship** (3:1:4). Prerequisite: completion of all program requirements; final semester; pro-gram approval of employment site. Completion of 150 hours of joint faculty-employer supervised management-level employment.
About the College

The College of Mass Communications is one of the largest mass communications undergraduate programs in the United States and one of 107 programs in the nation accredited by the Accrediting Council on Education in Journalism and Mass Communications. The college is recognized as a leader among the nation’s elite mass communications education for undergraduate majors who must adapt to rapid changes in information/communications industries. The college emphasizes its internship opportunities and job placement services through its Career Center.

The college seeks to prepare students to become leaders in their respective professions. Our courses provide students with the opportunity to think critically and to communicate effectively. The college supervises the following degree programs:

- Bachelor of Arts in Advertising
- Bachelor of Arts in Electronic Media and Communications
- Bachelor of Arts in Journalism
- Bachelor of Arts in Public Relations
- Bachelor of Arts in Photocommunications
- Bachelor of Arts in Mass Communications
- Doctor of Philosophy in Mass Communications

The undergraduate and graduate programs prepare students for careers in professional areas of mass communications and/or to pursue additional graduate degrees.

Undergraduate Program

The College of Mass Communications is accredited by the Accrediting Council on Education in Journalism and Mass Communications (ACEJMC). The college operates under the general policy of the ACEJMC, which requires students to take a minimum of 80 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.

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 introduction to mass communications, mass media theories and society, mass communications law, and news writing, the minimum number of semester hours required by the college for the B.A. degree has been set at 122 hours. The minimum number of hours that can be taken within the college is 39.

First-semester freshmen enrolling in the college must meet the university-wide admission requirements and present ACT or SAT scores when entering the college. Students enrolling in the college for the first time will be designated as general mass communications students. Students enrolled in other colleges at Texas Tech may transfer into the college after earning at least 12 semester credit hours (excluding CLEP courses) with an adjusted GPA of 2.75 or greater. The change from the general mass communications status, which is not a major, to a specific major will be accomplished after the following requirements have been met:

1. Completed the ACT or SAT examination with scores submitted to the college.
2. Made at least a C in ENGL 0301 (if required), 1301, and 1302.
3. Completed the college’s economics requirement with a grade of C or better.
4. Completed the college’s mathematics requirement with a grade 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, advertising is ADV 3310, public relations is PR 3310, electronic media and communications is EM&C 3300, and photocommunications is PHOT 3310.
6. Passed the college’s grammar, spelling, and punctuation exam.

Core Curriculum Requirements. The Core Curriculum requirements ensure breadth in each academic program. These requirements have been incorporated into the college’s undergraduate degree programs as per the state of Texas requirements listed in the Undergraduate Academics section of this catalog. Students should consult with an advisor in the Advising Center in Mass Communications (MC 113) prior to each registration period to ensure all requirements are being met in a manner consistent with timely graduation.

Course Load. A normal full-time course load is 15-19 hours per semester. In calculating the course load, the associate dean of undergraduate students will consider all active correspondence courses as a part of the course load. Course loads in excess of 19 hours require approval by the associate dean of 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 term or a total of 15 hours in both terms.

Correspondence Courses. Approval for courses to be taken by correspondence must be obtained in the Advising Center (MC 113). All course prerequisites must be met to be granted enrollment. In all programs no more than 6 hours of correspondence coursework may be completed during the final 30 hours of the degree. Students must have junior status to enroll in a 3000- or 4000-level correspondence course. Courses counting toward a major or minor in the College of Mass Communications may not be taken by correspondence.

Catalog Selection. Students will use the catalog issued for the year in which they are first officially admitted to the college, or a more recent catalog if approved. However, if they later transfer to another college, they must use the catalog of the other college, except as noted.
institution or another college at Texas Tech and then desire readmission to the college, they will use the catalog in effect when they are readmitted. 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). Approval from the associate dean of undergraduate students 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. Semester credit hours for a course in which a grade of D is earned may not be applied toward fulfillment of the major, adjunct, minor, or teaching field requirements for any degree program.

Grading Practices. The college conforms to university grading practices as set forth in the Undergraduate Academics section of 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 approved by the associate dean of undergraduate students.

Second Bachelor’s Degree. Permission to enroll in courses to pursue a second bachelor's degree must be obtained at the Advising Center (MC 113). No second bachelor's degree is conferred until the candidate has completed at least 24 semester credit hours in residence, in addition to the courses counted toward the first bachelor's degree. Credit by examination courses will not satisfy the 24-hour residence requirement. A second bachelor's degree sought by a student who did not graduate from a public Texas university must include the required Core Curriculum.

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 respective 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 requesting permission to transfer from another academic institution must meet the university-wide admission requirements. Transfer students must present ACT or SAT scores when entering the college. No more than 12 hours of journalism or mass communications courses will be accepted in transfer. Students requesting permission to transfer from another college at Texas Tech must have an adjusted GPA of 2.75 or better. In addition, they must provide the Advising Center (MC 113) with a transcript of all academic work. Approval will be granted at the Advising Center. The college will determine the applicability of any transferred credit to academic programs within the college. All transfer students will enter under the catalog in force at the time of transfer. The last 30 hours prior to graduation must be completed while enrolled in the college.

Final 30 Credit Hours. The final 30 semester credit hours of a degree program must be completed with Texas Tech enrollment. A maximum of 6 of these credit hours may be taken by Texas Tech correspondence. Credit for courses taken without prior approval from the associate dean of undergraduate students may not be applied to degree program requirements.

Degree Plan and Intention to Graduate. Students are encouraged to declare a major and minor with the Advising Center as soon as their academic goals are clearly defined. Students must declare a major and minor upon completing 60 hours of coursework. In addition, the Intention to Graduate form must be submitted upon completion of 80 hours of coursework. Students who have completed 80 or more hours will have a hold placed on their records until they file the Intention to Graduate form.

Other general rules for all students, regardless of major, enrolling in mass communications courses are as follows:

1. The student 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 grade of 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 an adjusted 2.75 GPA at the end of the semester before entering the second required course in the major-minor sequence or enrolling in an internship or practicum in their major.
5. The required second course in the major-minor sequence is JOUR 3312 for news-editorial journalism, JOUR 3314 for broadcast journalism, ADV 3312 for advertising, EM&C 3380 for electronic media and communications, P R 3312 for public relations, and PHOT 3316 for photocommunications.
6. Students must pass the college's grammar, spelling, and punctuation exam prior to enrolling in the first writing course (JOUR 2310).
7. No course may be repeated for credit unless so designated.
8. No course required by the college 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 college 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 college if prerequisites are not stated.
12. Junior standing (at least 60 hours) is required for all 4000-level courses in the college if prerequisites are not stated.
13. All students in majors and sequences are required to select a minor outside the college and complete a minimum of 18 semester hours, at least 6 of which must be on the junior-senior level (3000-4000 level).
14. Students in any major or sequence in the college must pass 12 hours of English courses.
15. Major or minor mass communications courses may not be taken by correspondence.
16. Students who register for a course in which they have not passed the prerequisite with a grade of C or better will be dropped from the course.
17. Courses used for majors in the college may not be counted toward fulfilling the college's general degree requirements.

**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 to teach. 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, 3310, 3312, 3380, 3390, 4350, 4370, PHOT 2310, MCOM 1300, 3300, and 3320. Passing the grammar, spelling, and punctuation exam prior to enrolling in JOUR 2310 is required.

**Minors.** Students selecting a minor in mass communications are required to pass the college's grammar, spelling, and punctuation exam, pass ENGL 1301 and 1302 with grades of C or higher and have a 2.75 adjusted GPA prior to enrolling in the first writing course in the college (JOUR 2310) if required for specific minor selected. A general Mass Communications minor consists of a minimum of 21 hours and must include 6 hours of junior and senior level courses. At least 12 of the 21 hours must be taken in residence. Specific required courses include MCOM 1300, 3300, 3320, and 12 hours from ADV 3310, EM&C 3300, 3308, 3310, JOUR 2300, 2310, PHOT 2310, and P R 3310. Additional minors are available in advertising, electronic media and communications, journalism, photocommunications, and public relations and are listed in each supervising department.

**General Degree Requirements**

Requirements for the degree of Bachelor of Arts apply to all baccalaureate degrees offered through the college unless specifically shown to the contrary.

**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, individual or group behavior, and natural sciences. It also provides the factual basis and 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 minor may be used to satisfy these requirements. Except for the humanities and 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 (excluding ENGL 2311, 2371, 3365, 3366, 3367, 3368, 3371, 3372, 3373, 4300, 4360, 4365, 4366, 4367, 4373, and 4378 because they are not literature courses). However, ENGL 2311 may be used as equivalent to fulfilling 3 hours of this requirement.
- **Oral Communication** ........................................ 3
  CFAS 2300, COMS 1300, 2300 or 3358, CH E 2306, MGT 3373 (may not be taken by correspondence), and PETR 3308. Public relations majors are required to take COMS 3358.
- **Foreign Language** ................................................. 6-16
  A student must complete 6 hours at the 2000 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 Advising Center of the college. 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 of undergraduate students. For more information, consult the Department of Classical and Modern Languages and Literatures.
- **Mathematics and Logical Reasoning** .................... 6
  All mathematics courses 1300 and above (except 3430) may be used. Only one of MATH 1300, 1320, and 1420 may apply. Only one of MATH 1330 and 1430 may apply. 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: AEAC 3401, 1 E 3341, MATH 3303, PSY 3400, and SOC 3391. MATH 2300 is required for all mass communications majors and will satisfy 3 hours of this requirement.
- **Natural Science** ................................................ 8
  Two courses including matching labs must be selected from natural laboratory sciences listed in the Core Curriculum options.
- **Technology and Applied Science** ............................ 3
  Courses must be selected from the list of Core Curriculum options. 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.
- **Individual or Group Behavior** ............................... 6
  All majors in the College of Mass Communications are required to complete an economics requirement (ECO 2305 or ECO 2301 and ECO 2302). If ECO 2305 is taken, the other 3 hours of individual or group behavior may come from the Core Curriculum options. 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** .................................................. 3
  Fulfilled by 3 hours of English literature required for English requirement. Mass communications majors may not use JOUR 3350 to satisfy any part of this requirement.
- **Visual and Performing Arts** ................................ 3
  Selected from Core Curriculum requirements approved list. Photocommunications majors are required to take ART 1302 or 1303
### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1300</td>
<td>[COMM 1307] 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.</td>
</tr>
<tr>
<td>3300</td>
<td>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.</td>
</tr>
<tr>
<td>3320</td>
<td>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.</td>
</tr>
</tbody>
</table>

### Multicultural Requirement
Courses must be selected 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
To satisfy the College of Mass Communications requirement of 1 hour of personal fitness and wellness, students are to complete successfully any PF&W course. Also accepted as fulfilling the requirement are AERS 1105, 1106, MILS 1101, 1102, and ESS 1103, a DAN, or a student-designed activity course. Students more than 25 years of age are exempt. Any student who has served honorably in the U.S. Armed Forces a minimum of 90 days may receive semester credit 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 1 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 122 semester credit hours. The minor must be selected from outside the College of Mass Communications.

The minor may be any departmental minor, an established interdisciplinary minor, or a student-initiated interdisciplinary minor (with approval of the associate dean of undergraduate students of the college).

Many departments and programs have residency requirements for minors. See departmental or program listings for specific information. Courses used to fulfill the writing intensive requirement are to be taken in residence.

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 39 hours, including 6 hours of intensive writing courses. At least 18 hours of the major subject must be in courses at the junior-senior level. For the minor, a minimum of 18 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 the Advising Center.

A minimum of 40 hours of junior and senior work must be presented. Not more than 8 hours may be counted except for students offering exercise and sport sciences activity courses and wellness as well as exercise and sport sciences activity courses may be counted for credit hours. The minor must be selected from outside the College of Mass Communications.

### Graduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>5160</td>
<td>Proseminar in Mass Communications (1:1:0). Designed to bring together students and faculty for professional and academic interchange with emphasis on research interests of faculty and advanced graduate students. Pass-fail only.</td>
</tr>
<tr>
<td>5320</td>
<td>Mass Communications Law (3:3:0). A study of the legal problems facing journalists, broadcasters, and advertisers including libel, privacy, and regulation of telecommunications media and commercial speech.</td>
</tr>
<tr>
<td>5347</td>
<td>Studies in International Communications (3:3:0). A critical examination of the structure, control, and performance of the media systems of nations and regions.</td>
</tr>
<tr>
<td>5349</td>
<td>Administration of Communications Media (3:3:0). For mass communications majors only. Problems of executive planning and management of newspapers, magazines, and broadcast media.</td>
</tr>
<tr>
<td>5362</td>
<td>Seminar in Mass Communications (3:3:0). A comprehensive exploration of theory and research into the social, psychological, and economic problems affecting modern mass communications.</td>
</tr>
<tr>
<td>5366</td>
<td>Seminar in Mass Communications Theory (3:3:0). In-depth study of the theory and epistemology of mass communications. Integration, comparison, and extension of theories with respect to a specific problem area including practice in development of research hypotheses.</td>
</tr>
<tr>
<td>5370</td>
<td>Internship in Mass Communications (3). Prerequisite: Consent of instructor. Supervised experience in an established career-related area of mass communications. May not be substituted for MCOM 6050.</td>
</tr>
<tr>
<td>5374</td>
<td>Data Analysis (3:3:0). Prerequisite: MCOM 5364. The use and interpretation of statistics for data analysis. Covers the selection of statistical techniques, the use of statistics packages, and the interpretation of results.</td>
</tr>
<tr>
<td>6000</td>
<td>Master's Thesis (V1-6). In-depth study of and research into effective teaching methods for mass communications faculty in their specialized fields.</td>
</tr>
<tr>
<td>6010</td>
<td>Mass Communications Pedagogy (V1-3). In-depth study of and research into effective teaching methods for mass communications faculty in their specialized fields.</td>
</tr>
<tr>
<td>6315</td>
<td>Contemporary Issues in Communications Technology (3:3:0). Seminar in the social, political, and economic impacts of communications technologies. Topics include diffusion of innovations, global communications systems, and audience research.</td>
</tr>
<tr>
<td>6316</td>
<td>Integrated Communications Campaigns (3:3:0). Seminar in managing and analyzing the success of integrated communications campaigns.</td>
</tr>
<tr>
<td>6330</td>
<td>Seminar in Media and Sport (3:3:0). This course examines the interaction of mass media and sport, including the related history; media economics; and the use of media by athletes, teams, and organizations.</td>
</tr>
<tr>
<td>6364</td>
<td>Selected Research Methods (3:3:0). Prerequisite: Instruction in statistics or permission. Rotating research methods course focusing on experimental, survey, content analysis or others. May be repeated twice when topics vary.</td>
</tr>
<tr>
<td>7000</td>
<td>Research (V1-12).</td>
</tr>
<tr>
<td>8000</td>
<td>Doctor's Dissertation (V1-12).</td>
</tr>
</tbody>
</table>
Department of Advertising

Faculty
Donald W. Jugenheimer, Ph.D., Chairperson
Professors: Hudson, Jugenheimer
Assistant Professors: Richard, Bradley, Gangadharbatia, Ortiz
Instructors: Rodriguez, West

About the Program
The advertising program in the College of Mass Communications develops leaders in advertising communications. Our students gain an understanding of the creative and business-related aspects of advertising, including copywriting, sales, graphic production, creative strategy, and media planning. The department also hosts industry professionals who speak to students about internships and careers in advertising.

Minors. Students selecting a minor in advertising are required to pass the college's grammar, spelling, and punctuation exam; pass ENGL 1301 and 1302 with grades of C or higher; and have a 2.75 adjusted GPA prior to enrolling in the first writing course (JOUR 2310). A minor in advertising consists of a minimum of 21 hours. At least 12 of the 21 hours must be taken in residence. Specific requirements for the advertising minor include ADV 3310, 3312, 3351, 3361, 4312, JOUR 2310, and MCOM 3380.

Additional minors are listed in each supervising department and are available in electronic media and communications, general mass communications, journalism, photocommunications, and public relations.

Advertising Curriculum
First Year  Second Year  Third Year  Fourth Year
MCOM 1300  ADV 3310  ADV 3351, 3381  ADV 4312
ECO 2305 or  MCOM 3300  MCOM 3380  MCOM elective
2301 and 2302  ADV 3312  B A 3301  MCOM elective
MATH 2300, or ADV 3314  MCOM 3220  B A 3302 or
1330 and 1331, PFP 3301
or 2345
Students majoring in advertising are required to complete 39 semester hours within the college, including the following: ADV 3310, 3312, 3351, 3361, 4310, 4312, and MCOM 3380.

Advising (ADV)
(To interpret course descriptions, see page 8.)

Undergraduate Courses

3310. 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.

3312. Advertising Writing (3:2:3). Prerequisite: ADV 3310, JOUR 2310, and a 2.75 adjusted 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 3310 and MATH 2300 or 1330 and 1331 or 2345 and a 2.75 adjusted GPA. 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 3310, 3312. Computer proficiency with the major software packages in Adobe Creative Suite 2, including Illustrator, InDesign and Photoshop. Must be taken after or concurrently with ADV 3351. Analysis of the creative aspects of advertising, strategy, copy, layout, typography, and production. Provide practical application of how to plan and execute effective print and broadcast messages.

3390. Internship in Advertising (3). Prerequisite: Junior or senior standing; ADV 3351 or 3361, 2.75 adjusted GPA, and 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 once for credit.

4304. Advanced Creative Strategy (3:3:0). Prerequisite: ADV 3361 and consent of 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 (3:3:0). Prerequisites: Completion, with grade of C or higher, of ADV 3310, 3312, 3351, 3361, JOUR 2310, and MCOM 3380. Integration of advertising research, message and media strategies and techniques, with special application to campaign planning and execution. 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.

Graduate Courses

5326. Advertising and the Consumer (3:3:0). Survey and analysis of current behavioral science findings as related to advertising.

6315. Special Topics in Advertising (3:3:0). A rotating topics course examining theory, research, economics, ethics, performance and practice of advertising. May be repeated twice when topics vary.

7000. Research (V1-12).
Faculty

L. Todd Chambers, Ph.D., Chairperson
Professor: Harp
Associate Professors: Chambers, Reeves
Assistant Professors: Cummins, Miller, Youngblood
Instructor: Galvez

About the Program

This department supervises degree programs for electronic media and communications as well as photocommunications.

Electronic Media and Communication. Designed to prepare students for survival in the new converged media environment, the Electronic Media and Communication (EM&C) program blends professional courses in broadcasting, digital production, and writing into a broad liberal arts education.

This is not simply a skills-oriented program. Instead, the program is devoted to outfitting students for leadership positions in electronic media industries.

To develop a profound understanding of the historical and cultural dimensions of electronic media, the EM&C core curriculum explores the social, technological, economic, and political contexts of mass communications. Then, in electives, students choose from a menu of courses that emphasize critical thinking, professionalism, management, and writing.

Minor. Students selecting a minor in EM&C are required to pass the college’s grammar, spelling, and punctuation exam; pass ENGL 1301 and 1302 with grades of C or higher; and have a 2.75 adjusted GPA prior to enrolling in the first writing course (JOUR 2310). A minor in photocommunications consists of a minimum of 21 hours. At least 12 of the 21 hours must be taken in residence. Specific required courses include the following: PHOT 3310, 3316, 3330, 3335, 4300 or 4303; JOUR 2310; and 3 hours from ADV 3310, EM&C 3300, 3308, 3310, and P R 3310.

Photocommunications Program. The photocommunications program is designed to train students for careers in commercial photography, editorial assignments and photojournalism, digital photography, and digitally based visual media positions.

The program provides training in both conventional film-based and digital photography. Students will study black and white film shooting, processing, and darkroom printing, as well as the use of color films and digital media. Camera formats taught include 35mm, medium format, and large format. Both natural light and studio shooting situations are presented. Digital photography is addressed from both a camera and software aspect.

Electronic Media and Communications Curriculum

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<tr>
<th>First Year</th>
<th>Second Year</th>
<th>Third Year</th>
<th>Fourth Year</th>
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<tbody>
<tr>
<td>MCOM 1300</td>
<td>EM&amp;C 3300</td>
<td>EM&amp;C 3380</td>
<td>EM&amp;C 4320</td>
</tr>
<tr>
<td>MATH 2300</td>
<td>MCOM 3300</td>
<td>EM&amp;C writing</td>
<td>EM&amp;C elective</td>
</tr>
<tr>
<td>or 2345</td>
<td>MCOM 3320</td>
<td>EM&amp;C elective</td>
<td>EM&amp;C elective</td>
</tr>
<tr>
<td>ECO 2305 or JOUR 2310</td>
<td>MCOM elective</td>
<td>MCOM elective</td>
<td></td>
</tr>
<tr>
<td>2301 and 2302</td>
<td>EM&amp;C 3308</td>
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</table>

Students majoring in electronic media and communications are required to complete 39 semester hours within the college, including the following courses: MCOM 1300, 3300, 3320; JOUR 2310; EM&C 3300, 3308, 3380, 4320; one course from EM&C 3370, 4370, or 4375; and at least 9 hours from EM&C courses. Also required are ECO 2305 or both ECO 2301 and 2302, and MATH 2300 or 2345.

Photocommunications Curriculum

<table>
<thead>
<tr>
<th>First Year</th>
<th>Second Year</th>
<th>Third Year</th>
<th>Fourth Year</th>
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</thead>
<tbody>
<tr>
<td>ECO 2305 or 2301, 2302</td>
<td>PHOT 3310, 3316</td>
<td>PHOT 3330, 3335</td>
<td>PHOT 4300 or 4303</td>
</tr>
<tr>
<td>MCOM 1300</td>
<td>PHOT 2310</td>
<td>JOUR 3312</td>
<td>PHOT 4312</td>
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<tr>
<td>MATH 2300</td>
<td>MCOM elective</td>
<td>or EM&amp;C 3370</td>
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<tr>
<td>or 2345</td>
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<td>or 4303</td>
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</table>

Students majoring in photocommunications are required to complete 39 semester hours within the college, including the following courses: PHOT 3310, 3316, 3330, 3335, 4300, 4303 or 4300 (different area of study), and 4312; JOUR 2310; MCOM 1300, 3300, and 3320; and one course from JOUR 3312 and 3316 or EM&C 3370. Also required are ART 1302 or 1303, ECO 2305 or both ECO 2301 and 2302, and MATH 2300 or 2345.

Electronic Media and Communications (EM&C)

Undergraduate Courses

3100. Electronic Media Activities (1:0:3). Prerequisite: Sophomore standing and consent of instructor. Laboratory in broadcast and multimedia activities; limited to 3 hours for majors and minors, 1 hour for others. Must be taken pass-fail.

3308. Visual Communications (3:3:0). Prerequisite: Sophomore standing. An introduction to photographic techniques and visual design, including message interpretation, evaluation, recent trends, theories of visual perception, and use of images in media.

3310. Introduction to Electronic Media and Communications (3:3:0). Prerequisite: Sophomore standing. Basic instruction in the origins, development, regulation, and social responsibilities of broadcasting and cable communications. Examines new technology and telecommunications systems.

3315. Principles of Digital Media Production (3:3:1). Prerequisite: Sophomore standing, EM&C 3300, JOUR 2310. Provides students with the working knowledge required for basic production, digital graphics, video, and audio.

3333. Multimedia Development (3:3:0). Prerequisite: ADV 3310; EM&C 3300, 3315; P R 3310 and JOUR 2310 or consent of instructor; 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.

3335. Video Production and Editing (3:3:1). Prerequisite: EM&C 3315 or JOUR 3314. 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.

3340. Programming and Promotion for Electronic Media (3:3:0). Prerequisite: EM&C 3300, MATH 2300 or 2345, JOUR 2310. A comprehensive study of programming and promotion in the electronic media covering audience analysis, plus historical development and current programming practices and promotions.


3355. Ethnicity, Race, Gender in Media (3:3:0). Examines issues surrounding ethnic, racial, and gender differences in media production and content from historical and contemporary perspectives.

3370. Writing for Electronic Media (3:3:1). Prerequisite: EM&C 3300, JOUR 2310. 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. (Writing Intensive)

3380. Advertising for Electronic Media (3:3:0). Prerequisite: ADV 3351 for advertising majors; EM&C 3300, JOUR 2310, MATH 2300, and an adjusted 2.75 GPA for EM&C majors. 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 Electronic Media and Communications (3). Prerequisite: Junior or senior standing, EM&C 3340 or 3380 for sales or promotion, EM&C 3315 for production, 2.75 adjusted GPA, and recommendation of faculty member and internship coordinator. Minimum of 160 hours supervised employment in media or communications organization. Weekly reports, interviews, and term paper.

4300. Senior Projects in Electronic Media and Communications (3). Prerequisite: Senior standing, 9 hours of EM&C courses, and consent of instructor prior to registration. May be repeated once for credit with different emphasis.

4315. Advanced Web Production (3:2:3). Prerequisite: EM&C 3315 or JOUR 3310. Preparation and dissemination of media content to mass and niche audiences. Use advance production tools to personalize and manage Web content.


4325. Media Economics (3:3:0). Prerequisite: EM&C 3300 and MATH 2300 or consent of instructor. 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.

4370. Writing for Series Television (3:3:0). Prerequisite: EM&C 3300 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: EM&C 3300 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: EM&C 3315 or JOUR 3314 or consent of instructor. Techniques in writing and producing television features, documentaries, and related programming. Emphasis on pre- and post-production activities from research to final video editing.

4390. Electronic Media and Communications Practicum (3). Prerequisite: Junior or senior standing; consent of EM&C chairperson prior to enrolling. 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.

6315. Special Topics in Electronic Media (3:3:0). A rotating topics course examining sociopolitical impacts of communications technologies, economics of information industries and theoretical challenges of media convergence. May be repeated twice when topics vary.

7000. Research (V1-12).

Graduate Courses

6315. Special Topics in Photographic Media (3:3:0). A rotating topics course examining sociopolitical impacts of communications technologies, economics of information industries and theoretical challenges of media convergence. May be repeated twice when topics vary.

7000. Research (V1-12).

Photocommunications (PHOT)

Undergraduate Courses

2310. [COMM 1318] Principles of Photography (3:3:0). Prerequisite: Sophomore standing and at least a 2.0 overall GPA. This course will cover the fundamentals of photography and photo appreciation. Students will a need a 35mm SLR camera with manual capabilities. No prior photography experience required.

3311. Photography I (3:3:0). Prerequisite: Photocommunications major, sophomore standing. This class will cover the use of a 35mm digital SLR camera with manual capabilities.

3316. Photography II (3:3:0). Prerequisite: PHOT 3310, JOUR 2310, and at least a 2.75 adjusted GPA. Students will learn the use of medium and large format cameras. Studio and location lighting skills will be covered for commercial photography situations.

3330. Digital Photography I (3:3:0). Prerequisite: PHOT 3310 or instructor's consent. Students will learn to use image editing software typically tailored to the needs of photographers. Digital workflow will be discussed. This is a software class.

3335. Digital Photography II (3:3:0). Prerequisite: PHOT 3330. Students will deal with the issues surrounding the production of accurate digital prints. Color management issues and calibration will be covered.

3390. Internship in Photocommunications (3:3:0). Prerequisite: PHOT 3310 and 3316, 2.75 adjusted GPA, and 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, interviews, and term paper required. Must be taken pass-fail.

4300. Special Problems in Photography (3). Prerequisite: PHOT 3316 or consent of instructor. This course is for individual or group study of areas of photography (i.e., documentary, advertising, history) or development of photography projects. May be repeated twice for credit when topics vary.

4303. Color Photography (3:2:3). Prerequisite: PHOT 3316. Study of color negative film, transparencies, printing, filtration, and analysis. Laboratory work includes color printing, negative and transparency film processing.

4312. Senior Portfolio (3:1:4). Prerequisite: Senior standing. Students will create a professional portfolio and promotional materials. The business and legal aspects of photography will be discussed.

Graduate Courses

6315. Special Topics in Photographic Media (3:3:0). A rotating topics course examining sociopolitical impacts of communications technologies, economics of information industries and theoretical challenges of media convergence. May be repeated twice when topics vary.

7000. Research (V1-12).
Department of Journalism

About the Program

The journalism program prepares students for meaningful careers in the leading news organizations of our day. Steeped in traditional journalism values, journalism classes emphasize the importance of storytelling, clarity, conciseness, accuracy, and fairness in reporting.

Augmenting journalism education based in valued traditions, the College of Mass Communications journalism faculty and staff work with news organizations in the Southwest to provide students meaningful internships and other career-advancing opportunities.

During the last few semesters of their studies, journalism majors tend to focus on print, broadcast or Web journalism. However, all majors get exposure to the unique attributes of each media environment, and they take at least one class in which they get experience telling stories in all three environments.

Minors. Students selecting a minor in journalism are required to pass the college’s grammar, spelling, and punctuation exam; pass ENGL 1301 and 1302 with grades of C or higher; and have a 2.75 adjusted GPA. The study and practice of journalism values, journalism classes emphasize the importance of storytelling, clarity, conciseness, accuracy, and fairness in reporting.

Students in this sequence are enrolled as journalism majors and are required to complete 39 semester hours within the college, including the following courses: JOUR 2300, 2310, 3310, 3312, 3380, 3390, 4350, 4370, MCOM 1300, 3300, 3320, and PHOT 2310. Also required are ECO 2305 or 2301 and 2302, and MATH 2300 or 2345.

Journalism Curriculum

**Journalism Major.** Students majoring in news-editorial (journalism) are required to complete 39 semester hours within the college, including the following courses: JOUR 2300, 2310, 3310, 3312, 3380, 3390, 4350, 4370, MCOM 1300, 3300, 3320, and PHOT 2310. Also required are ECO 2305 or 2301 and 2302, and MATH 2300 or 2345.

**Broadcast Concentration.** Students in this sequence are enrolled as journalism majors and are required to complete 39 semester hours within the college, including the following courses: JOUR 2300, 2310, 3310, 3312, 3314, 4350, 4370, 4390, EM&C 3335, MCOM 1300, 3300, and 3320. Also required are ECO 2305 or 2301 and 2302, and MATH 2300 or 2345.

**Online Concentration.** Students in this sequence are enrolled as journalism majors and are required to complete 39 semester hours within the college, including the following courses: JOUR 2300, 2310, 3310, 3312, 3314, 4350, 4370, 4390, EM&C 3335, MCOM 1300, 3300, and 3320. Also required are ECO 2305 or 2301 and 2302, and MATH 2300 or 2345.

**Online Journal concentration.** Students in this sequence are enrolled as journalism majors and are required to complete 39 semester hours within the college, including the following courses: JOUR 2300, 2310, 3310, 3312, 3314, 4350, 4370, 4390, EM&C 3335, MCOM 1300, 3300, and 3320. Also required are ECO 2305 or 2301 and 2302, and MATH 2300 or 2345.

**Journalism (JOUR) Undergraduate Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>2300</td>
<td>Principles of Journalism (3:3:0)</td>
<td>An overview of the broad field of journalism for journalism and non-journalism majors. Extensive use of current literature as springboards for discussion of trends, movements, and principles of journalism.</td>
</tr>
<tr>
<td>2310</td>
<td>News Writing (3:2:3)</td>
<td>Prerequisite: Students must have a 2.75 GPA; C or better in ENGL 0301 (if required), 1301, and 1302; sophomore standing; and pass the grammar, spelling, and punctuation exam. Evaluation of news, news gathering methods, and writing. Required lab.</td>
</tr>
<tr>
<td>3310</td>
<td>News Presentation I (3:2:3)</td>
<td>Prerequisite: JOUR 2300 and 2310. Contemporary design and production of news package delivery, including newspaper, magazine, video and web formats.</td>
</tr>
<tr>
<td>3312</td>
<td>Reporting (3:2:3)</td>
<td>Prerequisite: JOUR 2310 and a 2.75 adjusted GPA. Discussion and practice in interviewing; reporting; and writing various types of stories, including meetings, conventions, accidents, and other general news stories. (Writing Intensive)</td>
</tr>
<tr>
<td>3314</td>
<td>Broadcast Journalism (3:2:3)</td>
<td>Prerequisite: JOUR 2310, 3310, and a 2.75 adjusted 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)</td>
</tr>
<tr>
<td>3315</td>
<td>Digital News Packaging (3:2:3)</td>
<td>Prerequisite: JOUR 3314. Single video camera news production process; location shooting; and audio, lighting, electronic graphics, and postproduction applications for creating and manipulating digital video news packages.</td>
</tr>
</tbody>
</table>
| 3316        | Magazine Writing (3:3:0) | Prerequisite: JOUR 2310. 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, JOUR 3312, or PR 3312. Covers the contemporary design and production of mass media publications, including newsletters, annual reports, pamphlets, newspapers and magazines. Secondary emphasis on desktop publishing technologies.


3380. Editing (3:2:3). Prerequisite: JOUR 2310, 3310, 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; 2.75 adjusted GPA; and 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). Prerequisite: Junior standing. The nature of public opinion and propaganda; the role of the press in its formation and how the press is influenced by public opinion.

4350. Multiplatform News Delivery (3:2:3). Prerequisite: JOUR 4370 and either JOUR 3380 or EM&C 3335 or 4315. Capstone course on production of news in print, online, and broadcast environments.

4370. Advanced Reporting (3:2:3). Prerequisite: JOUR 2310, 3310, 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: Junior or senior standing; JOUR 3314, 3312, 3310; 2.75 adjusted GPA; and recommendation of faculty member and internship coordinator. Minimum of 160 hours supervised employment in media or communications organization. Weekly reports, interviews, and term paper.

Graduate Courses

5315. Special Topics in Journalism (3:3:0). Prerequisite: JOUR 3312 or consent of instructor. A course in the reporting of selected topics. Topics will rotate. Lecture and discussion implemented through off-campus reporting assignments. May be repeated once when topic varies.

6315. Special Topics in Journalism (3:3:0). A rotating topics course examining theory and research into ethical, political and organizational issues affecting news gathering, reporting and journalistic performance. May be repeated twice when topics vary.

7000. Research (V1-12).
Department of Public Relations

Faculty

D. Coy Callison, Ph.D., Chairperson

Professors: Hudson, M. Parkinson
Associate Professor: Callison
Assistant Professors: Gallagher, Seltzer, Wigley, Zhang
Instructor: L. Parkinson, Rodriguez

About the Program

Widely recognized as one of the fastest growing fields worldwide and recently eighth on the Forbes list of “where the jobs are,” public relations has become the most popular program in the College of Mass Communications and has more than 400 undergraduate majors.

Minors. Students selecting a minor in public relations are required to pass the college’s grammar, spelling, and punctuation exam; pass ENGL 1301 and 1302 with grades of C or higher; and have a 2.75 adjusted GPA prior to enrolling in the first writing course (JOUR 2310). A minor in public relations consists of a minimum of 21 hours. At least 12 of the 21 hours must be taken in residence. Specific required courses include JOUR 2310, PR 3310, 3312, 3341, 4312, MCOM 3380, and ADV 3310. Additional minors are listed in each supervising department and are available in advertising, electronic media and communications, general mass communications, journalism, and photocommunications.

Public Relations Curriculum

<table>
<thead>
<tr>
<th>First Year</th>
<th>Second Year</th>
<th>Third Year</th>
<th>Fourth Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECO 2305 or 2301 &amp; 2302</td>
<td>ADV 3310</td>
<td>PR 3312</td>
<td>B A 3302 or MCOM elective</td>
</tr>
<tr>
<td>MATH 2300, or 1330 and 1331, or 2345</td>
<td>P R 3310</td>
<td>P R 3341</td>
<td>PFP 3301</td>
</tr>
<tr>
<td>MCOM 3300</td>
<td>JOUR 2310</td>
<td>B A 3301</td>
<td>P R 4312</td>
</tr>
<tr>
<td>MCOM 3320</td>
<td>MCOM 3380</td>
<td>COMS 3358</td>
<td>MCOM elective</td>
</tr>
<tr>
<td>MCOM 1300</td>
<td>MCOM 3380</td>
<td>MCOM 3380</td>
<td>MCOM elective</td>
</tr>
</tbody>
</table>

Students majoring in public relations are required to complete 39 hours within the college, including the following courses: P R 3310, 3312, 3341; MCOM 1300, 3300, 3320, 3380; ADV 3310; and JOUR 2310. Also required are ECO 2305 or both ECO 2301 and 2302; MATH 2300 or MATH 1330 and 1331 or MATH 2345; B A 3301, B A 3302 or PFP 3301; and COMS 2300 or 3358.

Public Relations (P R)

Undergraduate Courses

3310. 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 (3:3:1). Prerequisite: P R 3310, JOUR 2310, and an adjusted 2.75 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 Graphics and Production (3:3:1). Prerequisite: ADV 3310 and 3312, or P R 3310 and 3312. Design, composition, layout, typography and production applied to public relations; use of computer as a layout and design tool for visual communications.

3390. Internship in Public Relations (3). Prerequisite: Junior or senior standing; JOUR 2310, P R 3310, 3312; 2.75 adjusted GPA; and 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.

4308. Public Relations Management (3:3:0). Prerequisite: MCOM 3380, P R 3341. Case analysis research literature, presentations, special reports, examination of contemporary issues, functions, management, organizational issues, integrated communication problems.

4312. Public Relations Campaigns (3:3:0). Prerequisites: Completion, with grade of C or higher, of P R 3310, 3312, 3341, JOUR 2310, and MCOM 3380. Public relations campaign planning, preparation, and presentation in problem-solving mode. Setting objectives; executing research projects; evaluating creative media promotion; and preparing public relations plans, messages, budgets.

Graduate Courses

5340. Foundations of Public Relations (3:3:0). Public relations history, principles, theory, writing, and critiques of cases and campaigns.

5343. Public Relations Problems and Cases (3:3:0). Use of contemporary public relations problems and cases to study planning, strategy, and tactics, including the organization, execution, and control of the PR function in organizations.

6315. Special Topics in Public Relations (3:3:0). A rotating topics course examining theory, research, and application related to planning, implementation and evaluation in public relations. May be repeated twice when topics vary.

7000. Research (V1-12).
College of Visual and Performing Arts

Jonathan Marks, D.F.A., Interim Dean
224 Administration | Box 45060 | Lubbock, TX 79409-5060
T 806.742.0700 | F 806.742.0695 | www.vpa.ttu.edu

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About the College
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 professions 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. 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.

Undergraduate Program
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 Undergraduate Academic 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 120-138 semester hours. The minor (if applicable) may be any departmental minor from outside the major, an established interdisciplinary minor, or a student-initiated interdisciplinary or multidisciplinary 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. The major subject they will be required to complete a minimum of 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 36-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 dean. 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 within the individual departments. Students should consult an advisor for specific requirements of their degree programs.

Course Load. A normal course load is 15-19 hours per long semester. A student must be enrolled for a minimum of 12 hours to be considered full time. 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.

Admission. Students seeking admission to a specific school or department within the college should consult “Admission Requirements for Specific Colleges” in the Undergraduate Admissions section of this catalog.

Admission of Transfer Students. Students requesting permission to transfer from another academic institution must meet the university-wide admission requirements. Students requesting permission to transfer from another college at Texas Tech must have an adjusted cumulative GPA of at least 2.0. Any student requesting to transfer into the College of Visual and Performing Arts must provide the CVPA Student Division Office (AD 218) with official transcripts of all academic work, both high school and college, and must meet any admission requirements of the units in the college as stated in the paragraph above. The CVPA Student Division Office grants final approval. The College of Visual and Performing Arts will determine the applicability of any transferred credit to academic programs in the college. All transfer students will enter under the catalog in force at the time of transfer. The last 30 hours prior to graduation must be completed while enrolled in the college.

Correspondence Courses. A Texas Tech resident student may apply coursework completed at a distance through Distance Education toward a bachelor’s degree with prior approval of the academic dean (218 Administration Building). A student who has failed a course taken in residence may take that course or a degree plan alternative through the Division of Outreach and Distance Education with prior approval of the academic dean.

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 in the Admissions section of this catalog) by obtaining written approval from the dean’s office. Approval is required to take an examination 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 Undergraduate Academics section of 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. Out-of-state students must meet Texas Tech Core Curriculum requirements. 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.

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 dean as soon as their academic goals are clearly defined. Students must file degree plans after completing 60 to 70 hours of coursework 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 College of Education section of this catalog 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.

Undergraduate Degrees

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.

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>6-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td></td>
</tr>
<tr>
<td>Literature</td>
<td></td>
</tr>
<tr>
<td>Natural Science</td>
<td></td>
</tr>
<tr>
<td>Oral Communication</td>
<td></td>
</tr>
<tr>
<td>COMS 1300, 2300 or 3358, CFAS 2300, CH E 2306, MGT 3373, PETR 3308.</td>
<td></td>
</tr>
</tbody>
</table>
The Bachelor of General Studies (B.G.S.) is a unique program for students who wish to study multiple fields in equivalent depth. As an interdisciplinary liberal arts degree, it requires similar but slightly different general requirements as the Bachelor of Arts degree. Instead of a major and minor, the student selects three concentration areas, each of which meets the minimum requirements of an existing departmental or interdisciplinary minor. Together, the three concentration areas (minor fields) formulate a coherent specialization of interest to the student that is unavailable elsewhere in the university as an organized program of study. The student chooses the three concentrations in consultation with the College of Visual and Performing Arts academic advisor and, as necessary, the departmental or program advisors overseeing the minor areas. At least two of the three concentration areas must reside in the College of Visual and Performing Arts. Each concentration area consists of a minimum of 18 hours in the chosen discipline, for a total of 54 hours minimum across the three areas. Through these self-selected concentration areas combined with forming an integrated specialization and receiving a liberal arts foundation, the B.G.S. degree can prepare a student to pursue an intellectual and/or artistic interest, a career goal, or further study at the graduate or professional level.

**Declaration of Major.** Students declare the general studies major in the College of Visual and Performing Arts just as they do any major. A visit with the academic advisor (806.742.0700) is the best place to start, followed by visits to program advisors representing the three intended concentration areas.

**Graduation Requirements.** Requirements for the B.G.S. degree in the College of Visual and Performing Arts are as follows:

- 120 credit hours minimum.
- Minimum total of 40 junior/senior hours.
- Three concentration areas to total at least 54 hours, each comprising an existing departmental or interdisciplinary minor of at least 18 hours each; minimum 6 jr./sr. hours in each concentration; courses may be credited in only one concentration area; at least two of the concentration areas must come from the College of Visual and Performing Arts.
- Optional research project as independent studies within concentration area(s).
- Specified general degree requirements as shown.

<table>
<thead>
<tr>
<th>Category</th>
<th>Total for Degree</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities</td>
<td>8-11</td>
<td></td>
</tr>
<tr>
<td>Individual or Group Behavior**</td>
<td>3-6</td>
<td></td>
</tr>
<tr>
<td>Mathematics and Logical Reasoning</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Natural Laboratory Science</td>
<td>8-11</td>
<td></td>
</tr>
<tr>
<td>Technology and Applied Science</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Oral Communication</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Professional Education</td>
<td>86-89</td>
<td></td>
</tr>
<tr>
<td>Multicultural Requirement*</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Professional Program (Select One)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theatre Arts</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>Visual Studies</td>
<td>(leading toward teacher certification)</td>
<td></td>
</tr>
<tr>
<td>Communication Design</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>Studio Art</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>Total for Degree</td>
<td>120-138</td>
<td></td>
</tr>
</tbody>
</table>

* No additional hours required if satisfied within the requirements for the art and theatre majors.

**Bachelor of Fine Arts**

The curriculum leading to the Bachelor of Fine Arts (B.F.A.) degree provides highly professional programs in theatre arts, visual studies, communication design, and studio art. A minor is not required for this degree program. If an optional minor is elected, a course may not be credited in the requirements for both the major and minor.

<table>
<thead>
<tr>
<th>Category</th>
<th>Total for Degree</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Oral Communication</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mathematics and Logical Reasoning</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Foreign Language</td>
<td>0-2</td>
<td></td>
</tr>
</tbody>
</table>

**Bachelor of Music**

Bachelor of Music degrees are offered with majors in music performance (MUPF), music composition (MUCP), music theory (MUTH), and music (MUTC-leading to teacher certification). A minor is not required for this degree program. If an optional minor is elected, a course may not be credited in the requirements for both the major and minor.

<table>
<thead>
<tr>
<th>Category</th>
<th>Total for Degree</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
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<td></td>
</tr>
<tr>
<td>Oral Communication</td>
<td>3</td>
<td></td>
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<tr>
<td>Mathematics and Logical Reasoning</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Foreign Language</td>
<td>0-16</td>
<td></td>
</tr>
</tbody>
</table>
Entering students are expected to have had four semesters of credit in a single foreign language in high school. Students who do not meet this requirement will be required to complete one year (or the equivalent) of a single foreign language taken at the college level. For more detailed information, refer to the “Foreign Language Requirement” listing in the Undergraduate Academics section of this catalog.

| Humanities | 3 |
| Technology and Applied Science | 8 |
| Required Political Science and History | 3 |
| Individual or Group Behavior | 12 |
| Multicultural Requirement* | 3 |

Three hours of coursework chosen from the Core Curriculum requirements approved list. This course may be used to satisfy another General Degree requirement.

**Music Courses for Major (Select One)**

- MUPF .......................................................... 85-92
- MUCP .......................................................... 96
- MUTH .......................................................... 87
- MUTC .......................................................... 75-76

**Professional Education** .................................................. 21

*No additional hours required if satisfied within the requirements for music majors.

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**‘3+3’ Early Admission Joint Program With Texas Tech School of Law**

Honors students in good standing who are working toward the B.A., B.S., B.F.A., B.M., or B.G.S. degree in the College of Visual and Performing Arts, the College of Arts and Sciences, or the Honors College may gain early admission to the Texas Tech University School of Law by completing coursework totaling a minimum of 100 semester hours in their undergraduate college and then completing the first year of coursework at the Texas Tech School of Law. To be eligible to participate in this program, students must meet all of the following criteria:

- Have an undergraduate GPA of at least 3.5.
- Have an LSAT score that places them in the top half nationwide.
- Have a SAT score of at least 1300 or an ACT score of at least 29.
- Be enrolled in the Honors College and making satisfactory progress toward a Visual and Performing Arts, Arts and Sciences, or Honors College degree (B.A., B.S., B.F.A., B.M., or B.G.S.) consistent with the regulations established by the colleges.
- Submit an Honors certification form to the Honors College at the time of application to the Law School.

Of the minimum 100 semester hours of undergraduate work, at least the last 30 must be completed in residence at Texas Tech. This minimum will apply to transfer students from other higher education institutions, provided they have satisfactorily completed the work outlined in the freshman and sophomore years or its equiva-

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**Graduate Program / Visual and Performing Arts**

Admission to graduate programs in the College of Visual and Performing Arts is a two-step process with requirements established by both the Graduate School and the school or department in which the student plans to study. The student should note carefully any particular requirements for admission established by the school or department in which he or she plans to major and contact the graduate advisor of the unit for more detailed information.

**Ph.D. in Fine Arts**

A multidisciplinary doctoral program leading to the Ph.D. degree in Fine Arts is offered by the faculties in the College of Visual and Performing Arts. The general aim of this program is to develop leadership in the fine arts. Accordingly, the curriculum involves a multidisciplinary approach to make candidates aware of the full scope and educational interrelatedness of the arts.

The program requires a minimum of 48 semester hours of graduate coursework beyond the master’s degree—33 in the major area and 15 in a multidisciplinary core of art, music, philosophy, and theatre arts. In addition, the program requires at least 12 hours enrollment in dissertation.

Work in the major area ordinarily involves required coursework along with an individualized curriculum that allows the candidate to pursue a professional goal relating to personal interests and competencies.

Each candidate will write a formal dissertation, ordinarily in the major area; however, students with appropriate backgrounds may be permitted to do interdisciplinary dissertations. The nature of the dissertation project may vary among three plans: traditional or interdisciplinary research, research devoted to solving a professional problem, or research based on an internship experience. Regardless of the project chosen, however, the research will culminate in a formal document submitted to the dean of the Graduate School.

In addition to meeting the Graduate School’s minimal requirements for admission, applicants must also be approved by their major departments and by the Visual and Performing Arts Graduate Committee. All applicants for the program must have completed a master’s degree or its equivalent with emphasis in some area of the arts.

**Core Courses**

| ART 5310 | Historical and Critical Perspectives in the Visual Arts (3:3:0) |
| ART 5314 | Visual Arts in Contemporary Context (3:3:0) |
| MUSI 5310 | Historical, Critical Perspectives in Music (3:3:0) |
| MUSI 5314 | Music in Contemporary Context (3:3:0) |
| PHIL 5310 | History of Aesthetics (3:3:0) |
| PHIL 5314 | Contemporary Aesthetics (3:3:0) |
| TH A 5310 | Historical and Critical Perspectives in Theatre Arts (3:3:0) |
| TH A 5314 | Theatre Arts in Contemporary Context (3:3:0) |

**Fine Arts Management**

The associate dean of the college counsels a focus in Fine Arts Management within the Master of Arts degree program in Interdisciplinary Studies. This flexible option allows students to develop management leadership for fine arts institutions and governmental agencies. Courses are available in business administration and public administration, as well as in the arts. For a description of this program, see “Interdisciplinary Studies” within the Graduate School section of this catalog or contact the Associate Dean for Graduate Studies in the College of Visual and Performing Arts.
School of Art

Faculty

Christina (Tina) Fuentes, M.F.A., Interim Director

Professors: Dingus, Fuentes, Glover, Morrow, Tate, Waters, Wink

Associate Professors: W. Cannings, Check, Fehr, Flueckiger, Germany, Granados, Martin, Slagle, Steele, Tedeschi

Assistant Professors: Akins-Tillet, Chua, Cortez, Elko, Elliott, D. Fowler, Lindsay, Tierney, VenHuizen, Yoo

Adjunct Faculty: S. Cannings, C. Fowler, Hartsfield, Milosevich, B. Wheeler, J. Wheeler

About the Program

This school supervises the following degree programs:

- Bachelor of Fine Arts in Visual Studies (leading to teacher certification)
- Bachelor of Fine Arts in Communication Design
- Bachelor of Fine Arts in Studio Art
- Bachelor of Arts in Art History
- Master of Art Education
- Master of Fine Arts in Art
- Doctor of Philosophy in Fine Arts with a major in Art

The school's degree programs are accredited by the National Association of Schools of Art and Design.

Undergraduate Program

Mission Statement. The School of Art is committed to providing a stimulating and challenging environment that will develop creative and scholarly potential in students, support faculty members in the pursuit of excellence in teaching and research, serve public and professional constituencies, and promote 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, critical discourse, and interdisciplinary opportunities. The school offers students the opportunity to minor in art history, studio art, or fine art photography. Nonmajors who desire experience 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.

Art Foundations. All students majoring in art are required to take 22 hours of Art Foundations courses in the areas of studio art and art history. These courses consist of the following: ART 1100, Introduction to Art; ART 1303, Drawing I: Introduction; ART 2304, Drawing II: Introduction; ART 1302, Design I: Introduction; ART 2303, Design II: Introduction; ART 1310, Art History Survey I; ART 2311, Art History Survey II; and ART 3312, Art History Survey III.

Advanced Placement. Entering art majors may be considered for advanced placement in the Art Foundations program through the College Board Advanced Placement Program (AP), International Baccalaureate (IB), or the School of Art Foundations Portfolio Review. Art majors who score a 4 or 5 on the College Board Exams in drawing portfolio, two-dimensional design portfolio, or three-dimensional design portfolio will receive credit for Drawing I, and/or Design I, and/or Design II (3-dimensional design) (ART 1302, 1303, 2303). Students also may be considered for advanced

Visual and Performing Arts (VPA)

(To interpret course descriptions, see page 8.)

Undergraduate Course

3301. Critical Issues in Arts and Culture (3:3:0). Analysis of music, visual arts, theatre and dance as fundamental to contemporary society and relationship of arts to broader social context.

Graduate Course

5300. Topics in the Visual and Performing Arts (3:3:0). Prerequisite: Consent of instructor. Focused study of topics relevant to the arts, including, but not limited to, history, theory, and current issues such as arts management, interdisciplinary investigation, or cultural/sociological constructs. May be repeated for credit with different topic.
Art. Hours applied to the minor area of study may not include courses used to fulfill requirements in the student’s major. A 2-D studio art minor consists of ART 1302, 1303, 2304, and 9 hours in either drawing, painting, or printmaking. A 3-D studio art minor consists of ART 1303, 2303, 2304, and 9 hours in either ceramics, jewelry design and metalsmithing, or sculpture. For both the 2-D and 3-D studio art minors the remaining 9 hours will be determined by the School of Art academic advisor. Six of the 18 required hours must be taken at the junior or senior level in residency.

**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 1302, 1303, 3325, 3329, 3319 (or ART 1309), 3326 (may be repeated). All advanced hours must be taken in residence.

### Undergraduate Degrees

#### Bachelor of Fine Arts

**Visual Studies Major**

The Bachelor of Fine Arts in Visual Studies (leading toward art teacher certification) prepares graduates for the realities facing teachers today. The program emphasizes contemporary theories and social issues in art and education, including race, class, and gender inequalities, intercultural concerns, community activism, critical awareness, antibias methods, and alternative resources. Grounded in social theories, the coursework emphasizes visual cultures and contemporary art. Prior to student teaching, students participate in field practica in public schools and community settings, as well as with alternative populations such as children from low socioeconomic environs and incarcerated youth, children, and adults with differing abilities.

The B.F.A. degree with a visual studies major requires 76 semester hours of studio art and art history, 36-42 semester hours of professional education, and 38-51 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 134 credit hours. A minimum of 40 credit hours of junior and senior level courses are required for graduation.

**Semester Hours**

- **English** ................................................................. 6
- **Oral Communication** ........................................... 3
- **COMS 1300, 2300, or 3358, CFAS 2300**
- **Mathematics and Logical Reasoning** ................... 6
- **Only one of MATH 1330 and 1430 may apply. All other mathematics courses 1320 and above (except 3430) may be used. PHIIL 2310 or 4310 may be used to satisfy 3 hours of this requirement.**
- **Natural (Laboratory) Science** ................................. 8
- **Technology** ........................................................... 0
- **ART 3362 satisfies this requirement.**
- **U.S. 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.**
- **Political Science (POLS 1301 and 2302)** .................. 6
- **CLEP allowed.**
- **Humanities** .......................................................... 3
- **Foreign Language** .................................................. 0-10
- **Entering students are expected to have had four semesters credit of a single foreign language in high school. Students who do not meet this requirement will be required to complete one year (or the equivalent) of a single foreign language taken at the college level. For more detailed information, refer to the “Foreign Language Requirement” listing in the Undergraduate Academics section of this catalog.**
- **Multicultural Requirement** .................................... 0
- **ART 1310, 2311, 3310, 3311, 3315, 3317, 3318, and 4315 satisfy this requirement.**
- **Individual or Group Behavior** ................................. 0-3
- **ART 3311 or 4315 may be used to fulfill this requirement.**
Professional Education Requirement

All-Level Certification

EDSE 4310 .................................................. 3
EDSE 4322 .................................................. 3
EDLL 4382 .................................................. 3
ART 4362 .................................................. 3
ART 4365 .................................................. 3
ART 4001 .................................................. 3
ART 4000 .................................................. 3

Art Courses

Studio Foundations ........................................... 13
ART 1100, 1302, 1303, 2303, 2304

Art History Foundations ..................................... 9
ART 1310, 2311, 3312

Visual Studies Core ........................................... 15
ART 3301, 3362, 3364, 3365, 4361

2-Dimensional Studio Art .................................... 9
Choice of three ART 3323, life drawing; ART 3321, painting;
ART 3308, printmaking; or ART 3325, photography

3-Dimensional Studio Art .................................... 9
Choice of three ART 3300 or 3301, ceramics; ART 3333, metals;
and ART 3337, sculpture

Art Electives* ........................................... 3
3 semester credit hours of 3000 level or above

Studio Area of Emphasis* ................................... 12
12 semester credit hours of 3000/4000 level courses

Upper-Level Art History* ................................... 6
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 undergraduate faculty advisor.

Bachelor of Fine Arts

Communication Design Major

The Bachelor of Fine Arts in Communication Design addresses problem-seeking and problem-solving skills. Importance is placed upon conceptual development and the integration of form and information for the purpose of effective visual communication including current technological advances.

In addition, emphasis is placed on civic responsibility and the role of the graphic designer in the community. A curriculum that is responsive in this way will inevitably empower and foster critical thinking. Students hone not only their artistic and professional skills, but also their understanding of the fundamental issues of today’s society and what they, as professional artists, can do in service to others.

The communication design curriculum consists of 82 semester hours of art and art history courses and 38-51 semester hours of general requirements as stipulated by the College of Visual and Performing Arts. The minimum number of hours required for majors in communication design is 120 with a minimum of 40 upper-level credit hours required for graduation.

Admission to Major. Admission to the communication design program is a two-step process: (1) apply to Texas Tech University and (2) apply to the communication design program for acceptance. Admission to Texas Tech University does not guarantee admission to the communication design program.

Majors are selected each year in the spring semester by a selective portfolio review and interview process. Students prepare for the review by enrolling in ART 2388 (Design Process) in the spring of their freshman year. Prerequisites for this course include ART 1303 and 1302. To register for ART 2388, students must be enrolled concurrently in ART 2304 and 2303, if not taken previously. The student presents the work produced in Design Process to the communication design faculty in mid-April.

The communication design area is a limited access program and the process is highly competitive. If a student is not accepted, he or she has the option to reapply the following spring. The program can be completed in four years unless a student is not accepted and opts to reapply, thereby increasing the matriculation time by one year.

The curriculum is based on a series of carefully sequenced classes that must be taken in order. Some courses are offered only in the fall while others are offered only in the spring. If a sequenced course is missed, the student will not be allowed to progress in the emphasis area until that course is taken and completed.

Preportfolio Review. Once accepted, one additional portfolio review occurs prior to enrollment in ART 4382 (Portfolio Development). Students are required to present their work once again to the communications design faculty. Students must successfully pass the review before being granted entrance into the final portfolio class. If a student does not pass the review, prescription courses will be assigned before enrollment is granted.

Semester Hours

English............................................................................ 6
Mathematics and Logical Reasoning ................................ 6
Only one of MATH 1300, 1320, and 1420 may apply. Only one of MATH 1330 and 1430 may apply. All other mathematics courses 1320 and above (except 3430) may be used. PHI 2310 or 4310 may be used to satisfy 3 hours of this requirement.

Oral Communication.................................................. 3
COM 1300, 2300, or 3358, CPAS 2300

U.S. History (HIST 2300 and 2301) ............................... 6
Students normally will enroll in HIST 2300 and 2301, although any U.S. history course will satisfy this requirement. CLEP allowed.

Political Science (POLS 1301 and 2302) ........................... 6
CLEP allowed.

Natural (Laboratory) Science ........................................ 8
Technology..................................................................... 0

Courses in major will satisfy this requirement.

Humanities................................................................. 3

Foreign Language ..................................................... 0-10
Entering students are expected to have had four semesters credit of a single foreign language in high school. Students who do not meet this requirement will be required to complete one year (or the equivalent) of a single foreign language taken at the college level. For more detailed information, refer to the "Foreign Language Requirement" listing in the Undergraduate Academics section of this catalog.

Other-Level Requirement .......................................... 0

U.S. History (HIST 2300 and 2301) ............................... 6
Only one of MATH 1300, 1320, and 1420 may apply. Only one of MATH 1330 and 1430 may apply. All other mathematics courses 1320 and above (except 3430) may be used. PHI 2310 or 4310 may be used to satisfy 3 hours of this requirement.

Individual or Group Behavior .................................... 0-3
ART 3311 or 4315 may be used to fulfill this requirement.

Art Courses

Studio Foundations ................................................. 13
ART 1100, 1302, 1303, 2303, 2304

Art History Foundations .......................................... 9
ART 1310, 2311, 3312

Upper-level Art History ............................................ 3

Communication Design Emphasis & Electives .................. 45

Studio Art Electives ................................................. 12

Bachelor of Fine Arts

Studio Art Major

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 38-51 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 Art Foundations 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 120. A minimum of 40 credit hours of junior- and senior-level courses are required for graduation. Upon completion of the Studio and Art History Foundations courses, students select an area of emphasis from ceramics, 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. Graduating studio art majors are required to participate in a group exhibition during the spring semester of their graduating year.
English ........................................................................................................ 6
Mathematics and Logical Reasoning ......................................................... 6
Foreign Language .................................................................................... 6
**English 1301, 1302**

Only one of MATH 1300, 1320, and 1420 may apply. Only one of MATH 1340 and 1430 may apply. All other mathematics courses 1320 and above (except 3430) may be used. PHIL 2310 or 4310 may be used to satisfy 3 hours of this requirement.

**Oral Communication** .......................................................................... 3

**U.S. History (HIST 2300 and 2301)** ....................................................... 6

Students normally will enroll in HIST 2300 and 2301, although any U.S. history course will satisfy this requirement. Credit by examination for part of this requirement is available.

**Political Science (POLS 1301 and 2302)** .................................................. 6

Credit by examination for part of this requirement is available.

**Natural (Laboratory) Science** ................................................................. 8

**Technology** ............................................................................................ 3

Courses in major will satisfy this requirement.

**Humanities** ............................................................................................ 3

**Foreign Language** .................................................................................. 6

Entering students are expected to have had four semesters of credit of a single foreign language in high school. Students who do not meet this requirement will be required to complete one year (or the equivalent) of a single foreign language taken at the college level. For more detailed information, refer to the “Foreign Language Requirement” listing in the Undergraduate Academics section of this catalog.

**Multicultural Requirement** ................................................................. 0

ART 1310, 2311, 3310, 3311, 3315, 3317, 3318, and 4315 satisfy this requirement.

**Individual or Group Behavior** ............................................................... 0-3

**Humanities** ............................................................................................ 3

**Foreign Language** .................................................................................. 6

Entering students are expected to have had four semesters of credit of a single foreign language in high school. Students who do not meet this requirement will be required to complete one year (or the equivalent) of a single foreign language taken at the college level. For more detailed information, refer to the “Foreign Language Requirement” listing in the Undergraduate Academics section of this catalog.

**Multicultural Requirement** ................................................................. 0

ART 1310, 2311, 3310, 3311, 3315, 3317, 3318, and 4315 satisfy this requirement.

**Individual or Group Behavior** ............................................................... 0-3

**Art Courses**

**Studio Foundations** ........................................................................... 13

ART 1100, 1302, 1303, 2303, 2304

**Art History Foundations** ..................................................................... 9

ART 1310, 2311, 3312

**Upper-level Art History** ...................................................................... 6

If either ART 3311 or 4315 is not included in upper-level art history requirements, an additional 3 hours of Individual or Group Behavior must be included under Core Curriculum requirements.

**Life Drawing/Digital** ............................................................................ 6

ART 3323 and 3324 or 3329

**2-Dimensional Studio Art** .................................................................. 6

Choice of two: ART 3321, painting; ART 3308, printmaking; and ART 3325, photography.

**3-Dimensional Studio Art** .................................................................. 9

Choice of three: ART 3300 or 3301, ceramics; ART 3333, metals; and ART 3336 or 3337, sculpture

**Studio Area of Emphasis** .................................................................... 21

21 credit hours of which 18 must be upper level

**Studio Art Electives** ............................................................................ 9

May include area of emphasis with approval of major advisor. 9 credit hours 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.

**Bachelor of Arts**

**Art History Major**

Students working toward the Bachelor of Arts degree with an art history major must complete 22 hours of Art Foundations courses, 30 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 3 semester hours of senior thesis), and other requirements for the B.A. degree (see below). Prior to the last semester of the senior year, students are required to take 6 hours in a focus area in preparation for the senior thesis (3 credit hours). An art history major may complete either a traditional 18-hour minor or an 18-hour interdisciplinary research minor, subject to approval by the art history area advisor, in a field or fields outside of the School of Art. The minimum number of hours required for majors in art history is 120.

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.

1302. [ARTS 1311] 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.

1304. [ARTS 1312] Design II: 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.

1309. [ARTS 1301, 1313] 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.


2303. [ARTS 1312] Design II: Introduction (3:0:6). Prerequisite: ART 1302 or concurrent enrollment. Emphasis on the three-dimensional concept of design. Students learn to apply verbal skills needed in advanced visual arts. Outside assignments.

2304. [ARTS 1317] Drawing II: Introduction (3:0:6). Prerequisite: ART 1303. Exploration of 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.
Graduate Program

Master of Art Education
The Master of Art Education (M.A.E.) degree program is comprised of a minimum of 36 semester hours of graduate work that includes 12 semester hours of art education core courses; 9-12 semester hours of related art courses; 6-9 semester hours as a minor (taken outside the school or with the option of classes within the School of Art); and a minimum of 6 semester hours of thesis, professional project, or studio problem leading to an art exhibition. The M.A.E. graduate coordinator will evaluate applicants who have met the minimum entrance requirements of the Graduate School. The applicant for the M.A.E. degree may be asked to submit a portfolio and/or slides of his or her art and, if possible, examples of student art to the preview committee. On the basis of these requirements, the preview committee will make recommendations concerning the acceptance of students to the M.A.E. degree program and will determine and prescribe any leveling work to be completed before or after acceptance. Teacher certification is available with an additional 18 hours of coursework and student teaching. Students applying for the Master of Art Education degree program do not need to submit scores for the Graduate Record Examination.

Master of Fine Arts
The Master of Fine Arts degree (M.F.A.) is the recognized terminal degree in the practice of art. It is offered with a major in art and requires a minimum of 60 semester hours of graduate work. Specialization is possible in the areas of ceramics, jewelry design and metal-smithing, painting, photography, printmaking, or sculpture. Drawing may be selected as a secondary studio option or studio elective. Admission to the M.F.A. program normally presumes that students hold a Bachelor of Fine Arts degree in studio art. A graduate preview committee, composed of three graduate faculty members in the school, will examine a portfolio of the student’s work and hold a personal interview, if feasible, with each student who meets the minimum entrance requirements of the Graduate School. On the basis of these examinations, the preview committee will make recommendations concerning acceptance to the M.F.A. program and will determine and prescribe any leveling work to be completed before or after acceptance. Students applying for the Master of Fine Arts degree program do not need to submit scores for the Graduate Record Examination.

Ph.D. in Fine Arts
Within the Doctor of Philosophy degree in Fine Arts, the major in the School of Art (the art major) is titled “Critical Studies and Artistic Practice.” This major examines diverse discourses in the visual arts, exploring their transdisciplinary margins as well as their disciplinary strengths. In addition to the Fine Arts Core of 15 hours, students enroll in a Critical Studies and Artistic Practice core of 12 hours, consisting of interdisciplinary topics in the visual arts. Beyond the two groups of core classes, students must complete a minimum of 33 hours of individualized coursework, including 12 hours of dissertation work. Individualized coursework may be chosen, with consent of the advisor, from two of the following fields: history of art, art education, critical studies, museum studies, arts administration, and studio art (if the student holds an appropriate master's), as well as theatre and music. Additional course work may be undertaken; however, the State of Texas limits students to 99 hours of doctoral study.

For acceptance into the doctoral program, the applicant must have completed a master's degree, or its equivalent, with emphasis in some area of the visual arts. Every effort is made to select candidates who show strong scholarship and professional competence. Art doctoral faculty will evaluate each applicant’s professional goals and any evidence of progress toward these goals. More specific qualifications will pertain to specific career directions.

For admission into this program, the graduate art education and art history-criticism faculty review the applicant's dossier; a personal interview is recommended. Faculty submit recommendations to a three-member preview committee. If approved, the applicant is recommended by the committee to the college's Graduate Committee for acceptance into the program. Acceptance is also contingent upon satisfaction of all Graduate School requirements for admission. After admission, a specific degree plan is determined.

2388. Design Process (3:0:6). Prerequisite: ART 1303, 1302 and concurrently enrolled in art 2304 and 2303 if not previously taken.
3300. Ceramics I: Introduction to Wheel (3:0:6). Prerequisite: Art Foundations or consent of instructor. Introduction to wheel throwing, glazing and firing. Outside assignments.
3301. Ceramics I: Introduction to Handbuilding (3:0:6). Prerequisite: Art Foundations or consent of instructor. Introduction to handbuilding techniques, glazing, and firing. Outside assignments.
3308. Printmaking I: Introduction (3:0:6). Prerequisite: Art Foundations or consent of instructor. Introduction to printmaking with sections designated for waterbase screenprinting, lithography, monoprints, woodcut, or etching. Outside assignments.
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. (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. Repeatable for credit. (Writing Intensive)
3312. Art History Survey III (3:3:0). Prerequisite: ART 1309, 2311, or consent of instructor. An introduction to artistic move-
College of Visual and Performing Arts

3319. Photographic Arts of the 19th and 20th Centuries (3:3:0). Prerequisite: ART 2311 or consent of the instructor. An examination of the development of photography and its relation to the other visual arts. (Writing Intensive)

3321. Painting I: Introduction (3:0:6). Prerequisite: Art Foundations or consent of instructor. Introduction to painting concepts and techniques with designated sections for watermedia or oil. Outside assignments. Repeatable for credit.

3322. Advanced Painting (3:0:6). Prerequisite: ART 3321 or consent of instructor. Emphasis on student’s concepts and exploration of subject matter. Students select technical approaches and media with instructor consent. Outside assignments. Repeatable for credit.

3323. Drawing III: Life Drawing (3:0:6). Prerequisite: Art Foundations or consent of instructor. 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.

3324. Advanced Life Drawing (3:0:6). Prerequisite: ART 3323 or consent of instructor. 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.

3325. Photographic Arts I (3:0:6). Prerequisite: Art Foundations or consent of instructor. Introduction to creative black and white photography, exposure adjustments, film development, printing, and presentation. Outside assignments.

3326. Advanced Photographic Arts (3:0:6). Prerequisite: ART 3325 or consent of instructor. Advanced fine art photography with topics that rotate each semester between color, studio still life, alternative cameras, documentary, and book arts. Outside assignments. Repeatable for credit.

3328. Printmaking II (3:0:6). Prerequisite: Art Foundation, ART 3308 or consent of instructor. Advanced printmaking with topics that rotate each semester between in-depth study of printmaking techniques. Focus on screenprinting, lithography, intaglio, or relief printing. Outside assignments. Repeatable for credit.

3329. Introduction to Digital Imaging (3:0:6). Prerequisite: Art Foundations and basic Macintosh experience or consent of instructor. Introduction to digital image making for studio artists. Covers the creative use of drawing and photographic imaging software and a variety of input and output devices. Outside assignments.

3330. Advanced Ceramics: Wheel (3:0:6). Prerequisite: ART 3330 or consent of instructor. Emphasis on developing student’s technical expertise, conceptual skills, and problem-solving ability. Content normally different each time offered. Outside assignments. Repeatable for credit.

3331. Advanced Ceramics: Handbuilding (3:0:6). Prerequisite: ART 3301 or consent of instructor. Develops student’s technical expertise, conceptual skills, and problem-solving ability. Content normally different each time offered. Outside assignments. Repeatable for credit.

3333. Metal and Jewelry Design (3:0:6). Prerequisite: Art Foundations 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.

3334. Advanced Metal and Jewelry Design (3:0:6). Prerequisite: Art Foundations or consent of instructor. Further study of techniques used in metal-smithing and jewelry design. Development of individual direction and exploration of various media. Outside assignments. Repeatable for credit.

3336. Sculpture I: Introduction to Metal Fabrication (3:0:6). Prerequisite: Art Foundations or consent of instructor. Introduction to sculpture through the study of metal fabrication, including a variety of welding and surface coloration techniques. Forge work and casting. Outside assignments.

3337. Sculpture II: Introduction to Mixed Media (3:0:6). Prerequisite: Art Foundations or consent of instructor. Introduction to sculpture through the study of mixed media techniques and basic wood construction. Outside assignments.

3338. Advanced Sculpture: Issues in Metal Fabrication (3:0:6). Prerequisite: ART 3336 or consent of instructor. Emphasis on developing student’s technical expertise, conceptual skills, and problem solving ability. Rotating topics include kinetics and the object. Outside assignments. Repeatable for credit.

3339. Advanced Sculpture: Intermedia (3:0:6). Prerequisite: ART 3337 or consent of instructor. Emphasis on developing student’s technical expertise, conceptual skills, and problem solving ability. Rotating topics include installation and video-performance. Outside assignments. Repeatable for credit.

3340. Introduction to Theories and Practice in Art (3:3:0). Prerequisite: Art Foundations or consent of instructor. Overview of the role of the visual arts in personal, social, and institutional contexts.

3342. Technology in the Visual Arts (3:2:4). Prerequisite: Art Foundations or consent of instructor. Instructional and studio emphases on technology in the visual arts. Outside assignments.

3343. Foundations of Art in Social Institutions (3:3:0). Prerequisite: ART 3350. Examination of political, and pedagogical issues and policies of the visual arts in institutional settings. S.

3344. Visual Culture (3:2:2). Examination of contemporary thought and practice in the visual arts.

3345. Rethinking Art Education (3:2:2). Contemporary content, and teaching in the visual arts. Non-majors only.

3348. Typology (3:0:6). Prerequisite: ART 3385 and 4359. 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.

3352. Symbols (3:0:6). Prerequisite: ART 3385 and 4359. Exploration of symbols in design communication. Meaning, concept development, process, research, and problem solving are emphasized including appropriateness and responsibility to communicate effectively.


3356. Computer Design Methods II (3:3:0). Prerequisite: ART 3385 and 4359. Technical aspects of page layout, file integration, and digital production will be introduced including digital layout and page image capture.

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.

4103. Advanced Problems (1). Prerequisite: Consent of instructor. Advanced problems in an area of production in which the student has achieved competence. Repeatable for credit.

4311. Senior Thesis in Art History (3). Prerequisite: Consent of instructor. Individual course of intensive study requiring in-depth reading and substantial written projects. (Writing Intensive)

4312. Topics in 20th and 21st Century Art (3:3:0). Prerequisite: ART 3312 or consent of instructor. Major movements in modernism and post-modernism, including aesthetic and critical theories and databases. Repeatable for credit. (Writing Intensive)

4313. Medieval Art of Europe (3:3:0). Prerequisite: ART 1309, 1310, or consent of instructor. Examination of the artistic achievements of the medieval, focusing on art and architecture of the Christian faith and culture. Repeatable for credit. (Writing Intensive)

4314. History of the Book as Art (3:3:0). Prerequisite: ART 1309, 1310, or consent of instructor. Historical investigations of books that have been regarded as visual art. Repeatable for credit. (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 art styles, objects, and writing. Critical evaluation of contemporary approaches to these topics. Emphasizes Central Mexico and Maya. Repeatable for credit. (Writing Intensive)
4318. The Art of the Renaissance (3:3:0). Prerequisite: Art 1309, 2311, or consent of instructor. A study of aesthetic and intellectual directions in the Age of Humanism. Emphases: 15th Century Florence or Northern Italy and Venice. Repeatable for credit. (Writing Intensive)

4320. Experimental Drawing (3:0:6). Prerequisite: ART 3324 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 (3:0:6). 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 (3:0:6). 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.

4328. Printmaking III (3:0:6). Prerequisite: ART 3308, 3328, or consent of instructor. Problems in printing areas. Controlled projects and individual criticism. Outside assignments. Repeatable for credit.

4329. Advanced Digital Photo Imaging (3:0:6). Prerequisite: ART 3325 and 3329. 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.

4330. Senior Studio: Ceramics (3:0:6). 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. Repeatable for credit.

4334. Senior Studio: Metal and Jewelry Design (3:0:6). Prerequisite: Six hours of upper level metal and jewel design and consent of instructor. Mature, individualistic exploration directed toward developing a comprehensive, cohesive body of work for evaluation. Outside assignments. Repeatable for credit.

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 (3:0:6). 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. Repeatable for credit.

4350. Topics in Communication Design (3:0:6). Prerequisite: Art 3383 and 3384. This course will explore a specific area of interest in a particular kind of communication design problem. Repeatable for credit.

4354. Illustration (3:0:6). Prerequisite: Consent of instructor. Exploration of illstration through structured practical application. Image making, concept, style, appropriateness of imagery, and interpretation of narrative will be stressed. Repeatable for credit.

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. Repeatable for credit.

4356. Packaging (3:0:6). Prerequisite: Consent of instructor. Study and design of three-dimensional form and surface. stresses problem solving and innovative thinking as they relate to the environment and ecological concerns. Repeatable for credit.

4357. Online Media (3:0:6). Prerequisite: Art 3381, 3382, and 3386. 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. Repeatable for credit.

4358. Motion Graphics (3:0:6). Prerequisite: Consent of instructor. Explores the interactive effects of time and motion, including visual rhythm, continuity, and relationship between form and content of visual communication. Repeatable for credit.

4359. Design History (3:3:0). Prerequisite: Program acceptance. Examination of the evolution of the graphic arts. Discusses design innovators as well as styles and movements. Emphasis on 20th century.


4362. Curriculum Theory and Instruction Methodology in Art (3:3:0). Prerequisite: ART 3364, 3365, or consent of instructor. Art teaching methodologies, including curriculum design, classroom organization and management, assessment strategies, and teaching effective evaluation.

4365. Visual Studies Seminar (3:3:0). Prerequisite: Program approval. Seminar focusing on teaching theories, curriculum development, communication strategies, real-life teaching scenarios, and student teaching preparation. (Writing Intensive)

4380. Publication Design (3:0:6). Prerequisite: ART 3383, 3384, and 4357. 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 (3:0:6). Prerequisite: ART 3383, 3384, and 4357. Emphasizes the designer in the community, public awareness, and social responsibility. Stresses teamwork, communication, and interpersonal skills.

4382. Portfolio Development (3:0:6). Prerequisite: Must pass portfolio review; prior to enrollment, ART 4380, 4381, and at least one communication design elective. Emphasizes resume development, final portfolio preparation and refinement, business procedures, self-promotion, and interviewing skills.

Graduate Courses

5100. Advanced Art Unit (1). Prerequisite: Instructor approval. Individual investigation in art. May be repeated for credit.

5101. Art Seminar (1:1:0). Prerequisite: Instructor approval. Required of all graduate students admitted to the MFA program. Students must complete three seminars by graduation. Topics vary. Pass-fail grading.

5102. Teaching Studio Art in Higher Education (1:1:0). Required seminar of all studio art teaching assistants. Provides methodology and practical teaching strategies unique to teaching studio art courses.

5105. Organizing Public Forums About Art (1:0:2). Graduate students gain preprofessional experience by organizing a series of scholarly public lectures, discussions, and/or events that focus on a single theme associated with art. Each course offering is unique. May be repeated.

5304. Advanced Studio: Two-Dimensional (3). Prerequisite: Instructor approval. The development and execution of advanced two-dimensional studio problems. May be repeated for credit.

5305. Advanced Studio: Three-Dimensional (3). Prerequisite: Instructor approval. The development and execution of advanced three-dimensional studio problems. May be repeated for credit.

5309. Theories of Contemporary Art (3:3:0). Prerequisite: Instructor approval. Advanced survey of contemporary art theory and critical methods, with emphasis on the impact of the post-structuralist critique of representation.

5310. Historical and Critical Perspectives in the Visual Arts (3:3:0). Historical and critical overview of the field including introduction to major theories and methodologies; study of particular artists, works, or movements that provide insight into specific creative techniques; basic media and techniques of the field; and interdisciplinary relationships with the other arts.

5311. Art of Classical Antiquity (3:3:0). Prerequisite: Instructor approval. Examines architecture, painting, and sculpture of the Greek and Roman civilizations. Repeatable for credit.

5313. 18th and 19th Century Art (3:3:0). Prerequisite: Instructor approval. Principal developments in 18th and 19th century painting, sculpture, and architecture. Emphasis on Europe and the United States. Repeatable for credit.

5314. The Visual Arts in Contemporary Context (3:3:0). Emphasizes current issues in the field: current artistic trends, theory and criticism, organization (e.g., funding, administration), and cultural policy (e.g., education, assessment, multicultural issues, censorship).

5315. Arts of the Indian Americas (3:3:0). Prerequisite: Instructor approval. Examines art works from antiquity to the early twentieth century using a variety of traditional and current artistic theories, critical models, and methodologies.

5317. Renaissance and Baroque Art (3:3:0). Prerequisite: Instructor approval. Examination focusing upon major developments in
College of Visual and Performing Arts

Renaissance or Baroque painting, sculpture, architecture, and art criticism. Repeatable for credit.

5319. 20th-Century Visual Art (3:3:0). An examination of major developments in 20th-century painting, sculpture, graphic, and ceramic art. Repeated for credit with different emphasis.

5320. Graduate Drawing (3:6:0). Prerequisite: Instructor approval. The development and execution of advanced problems in drawing. May be repeated for credit.

5322. Graduate Painting (3:6:0). Prerequisite: Instructor approval. The development and execution of advanced problems in painting. May be repeated for credit.

5326. Graduate Photography (3:0:6). Prerequisite: Instructor approval. Experimental investigation into varied aspects of photography as creative media. May be repeated for credit.

5328. Graduate Printmaking (3:0:6). Prerequisite: Instructor approval. The development and execution of advanced problems in printmaking. May be repeated for credit.

5330. Graduate Ceramics (3:0:6). Prerequisite: Instructor approval. The development and execution of advanced problems in ceramics. May be repeated for credit.

5331. Ceramic Raw Materials (3:0:6). Prerequisite: Graduate standing and one graduate course in ceramics or consent of instructor. A specialized area of ceramics with emphasis on chemistry and formulation of clay bodies and glazes. Outside assignments and exams.

5334. Graduate Metal and Jewelry Design (3:0:6). Prerequisite: Instructor approval. The exploration of personal direction and execution of advanced problems and techniques in metalworking and jewelry design. Emphasis will vary. May be repeated for credit.

5338. Graduate Sculpture (3:0:6). Prerequisite: Instructor approval. The development and execution of advanced problems in sculpture. May be repeated for credit.

5340. Transdisciplinary Approaches to Issues in the Arts (3:3:0). Instructors from two disciplines encourage the production of new knowledge and solutions by approaching a challenging issue or topic in art from multiple critical, theoretical, and historical perspectives. Team-taught course. Each offering is unique. May be repeated with change of topic.

5360. Seminar in Art Education (3:3:0). Topics vary per course from faculty research to publication processes, ecology, technology, interpretation, and issues of power, privilege, and ideology. May be repeated for credit.


5363. Research Methods in the Visual Arts (3:3:0). Prerequisite: Instructor approval. A survey of research methods applicable to the visual arts. May be repeated for credit. Offered online.

5364. Feminist Research Methodologies in Visual Studies (3:3:0). Prerequisite: W S 5310, equivalent, or pass entrance essay exam. This interdisciplinary course focuses on the vision and methods that feminist scholars use to study feminist issues within and across a range of traditional disciplines. (W S 5320)

5366. Instructional Technology in the Visual Arts (3:3:0). Research in critical theories and the cultural implications of visual arts instructional technology in schools, museums, and alternative sites.

6000. Master's Thesis (V1-6).

6001. Master's Thesis: Professional Project (V1-6). Prerequisite: ART 5363, 9 hours of degree program coursework, and advisor approval. The professional project requires a written proposal, an oral defense of the proposal, a final written report, and an oral defense of the report. May be repeated 3 times for credit up to 6 hours.

6002. Master's Thesis: Exhibition (V1-6). Prerequisite: ART 5363, 9 hours of degree program coursework, and advisor approval. A written proposal of an artistic problem leading to an exhibition which connects to teaching and culminates in a public lecture during the exhibition opening. May be repeated 3 times for credit up to 6 hours.

6301. Master's Report (3). Repeatable for credit.

7000. Research (V1-12).

8000. Doctor's Dissertation (V1-12).

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School of Music

About the Program

The school supervises the following degree programs:

- Bachelor of Music in Performance
- Bachelor of Music in Music Composition
- Bachelor of Music in Music Theory
- Bachelor of Music in Music (leading toward teacher certification)
- Bachelor of Arts in Music
- Master of Music in Composition
- Master of Music in Performance
- Master of Music in Musicology
- Master of Music in Music Theory
- Master of Music Education
- Master of Music in Pedagogy
- Doctor of Philosophy in Fine Arts with a major in Music
- Doctor of Musical Arts in Composition
- Doctor of Musical Arts in Conducting
- Doctor of Musical Arts in Performance
- Doctor of Musical Arts in Piano Pedagogy

The school also participates in the ethnic studies and humanities minor programs. The school's degree programs are accredited by the National Association of Schools of Music.

Undergraduate Program

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 3103, 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 at 806.742.2272 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 1113, 1114, Voice. Open to both majors and nonmajors. Correct posture and studies for breath control, development of resonance, study of vowel formation, vocalization.

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.

**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.

**MUHL 3310, History of Rock and Roll.** This course focuses on hearing, understanding, and contextualizing Anglo-American rock and roll, a popular idiom rooted in the music of African Americans and rural whites.

**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 Degree 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 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 MUSI 1200, MUHL 2301, 2302, 2303, MUTH 1103 and 1303, 1104 and 1304, 2103 and 2303, 2104 and 2304, and 3303. Bachelor of Arts students are required to enroll in four semesters of ensemble and lessons. Bachelor of Arts students also take a minor and complete the general degree requirements for the Bachelor of Arts degree. A minimum total of 120 hours is required for this degree.

**Minors in Music.** A student may seek a minor in music by completing 20 to 24 hours selected in consultation with the undergraduate advisor in the School of Music.

**Residency Requirements.** Students working toward a Bachelor of Music, Bachelor of Music (leading toward teacher certification), or a Bachelor of Arts with an emphasis in music must complete a minimum of 24 hours of music in residence at Texas Tech. Minors in music require minimum of 6 hours in residence at Texas Tech. Information is available in the School of Music office.

**Admission and Assessment Requirements.** Students applying to the School of Music will be admitted as music undeclared until their audition. **Acceptance to Texas Tech University does not ensure admission as a music major.** Music majors must audition in their declared principle applied area with the appropriate faculty for acceptance into any music program. After acceptance into the School of Music, music majors will participate in applied and academic assessment during each semester of enrollment. Students must maintain a grade of C or above in every course designated as part of the major area music curriculum. Students not receiving a grade of C in such course(s), will be allowed to repeat the course(s) twice to achieve the minimum grade of C. **University policy states that a student may repeat a course for credit only one time at the normal tuition rate; those repeating a course more than once must pay an additional cost-of-education fee.** Students who do not receive a minimum grade of C in a major area course after repeating it twice will no longer be able to continue their status as a music major and must declare a major other than music. See the academic advisor in the School of Music for specific details regarding courses constituting the major area music curriculum.

The student must earn a minimum grade of C during each semester of freshman and sophomore theory to qualify for advancement. 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.

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 Visual and Performing Arts. 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.

All students whose principal instrument is not keyboard must demonstrate keyboard proficiency as determined by the school.

Refer to the curriculum tables that follow and consult with an 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 for the same or a subsequent semester. If a scheduled recital is postponed or canceled without verified good reason, the student may not reschedule during the same or a subsequent 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 the Finances section of this catalog. Applied music students are required to practice a minimum of three clock hours per week for each semester-hour credit.

All tracks have the same Core Curriculum and professional education courses.

### Core Curriculum

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Skills, ENGL 1301, 1302</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Oral Communication</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>COMS 1300, 2300, or 3358, CFAS 2300</td>
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<td></td>
</tr>
<tr>
<td>Mathematics</td>
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<tr>
<td>MATH 1300 or 1320 and MUTH 3303 counted in music hours</td>
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</tbody>
</table>
College of Visual and Performing Arts

Natural and Performing Arts
All Level, Instrumental Track
Student Teaching ........................................................................
MUED 3312 ...............................................................................
EDLL 4382 .................................................................................
EDSE 4322 .................................................................................
Semester Hours
Professional Education
Students should contact the College of Education concerning professional education course requirements for all-level certification.

Semester Hours
EDSE 4310 .............................................................................
EDSE 4322 .............................................................................
EDLL 4382 .............................................................................
MUED 3311 .............................................................................
MUED 3312 .............................................................................
Student Teaching .........................................................................
Total Hours .................................................................................

All Level, Vocal Track
Principal Instrument: MUAP 1001, 1002, 2001, 2002, 3001, (2 credit hours each) 3002 (1), 3190
Secondary Instrument: MUAP 1103, 1303, 2103, 3103, 4103
Conducting: MUAP 3206, and 3207
Piano: Must pass proficiency level equivalent to MUAP 2124 if not piano principal.
Music: MUSI 1101, 1200, 3202, 3237, 3238, 3216, 3217

Music History and Literature: MUAP 1103 and 1303, 1104 and 1304, 2103 and 2303, 2104 and 2304, 3303, MUCP 4207
Major Ensemble: 7 semesters
Total Track Hours: 73
Total Program Hours: 138

All Level, Instrumental Track
Principal Instrument: MUAP 1001, 1002, 2001, 2002, 3001, (2 credit hours each) 3002 (1), 3190
Secondary Instrument: MUAP 1103, 1104, 2103, 2104, 3103, 3104, 4103, 4104 (select 6)
Conducting: MUAP 3206, 3208
Piano: Must pass proficiency level equivalent to MUAP 2124 if not piano principal.
Music: MUSI 1101, 1200, 3202, 3237, 3238, and 3218 & 3219
or 3225 & 3226
Music History and Literature: MUAP 1103 and 1303, 1104 and 1304, 2103 and 2303, 2104 and 2304, 3303, MUCP 4207
Major Ensemble: 7 semesters
Vocal Ensemble: 1 hour
Total Track Hours: 73
Total Program Hours: 138

All Level, Keyboard Track
Principal Instrument: MUAP 1001 (1), 1105, 1002 (1), 1106, 2001 (2), 2002 (2), 3001 (2), 3002 (1), 3190
Secondary Instrument: MUAP 1103, 2103, 3103, 4103
Conducting: MUAP 3206 and 3207 or 3208
Music: MUSI 1101, 1200, 3202, 3237, 3238, and 3218 & 3219, or 3225 and 3226
Music History and Literature: MUAP 2301, 2302, 2303, 4300
Music Theory: MUAP 1103 and 1303, 1104 and 1304, 2103 and 2303, 2104 and 2304, 3303, MUCP 4207
Major Ensemble: 7 semesters
Vocal Ensemble: 1
Total Track Hours: 72
Total Program Hours: 137

Bachelor of Music Curriculum

The curriculum tables that follow are provided as a convenience to students and advisors. All music majors must plan their individual courses of study in consultation with a faculty advisor.

Music Composition Curriculum

** First Year **

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>1st Year</td>
<td>MUAP 1001, Prim. Instr. or Voice</td>
<td>MUAP 1002, Prim. Instr. or Voice</td>
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<tr>
<td></td>
<td>MUSI 1200, College Acad. Music</td>
<td>MUHL 2301, History of Music</td>
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<tr>
<td></td>
<td>MUTH 1303, Elem. Theory I</td>
<td>MUTH 1304, Elem. Theory II</td>
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<td></td>
<td>MUTH 1103, Elem. Aural Skills I</td>
<td>MUTH 1104, Elem. Aural Skills II</td>
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<td>Individual or Group Behavior</td>
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** Second Year **

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<th>Spring</th>
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<td>MUTH 2302, Hist. of Music</td>
<td>MUTH 2303, Hist. of Music</td>
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** Third Year **

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<td>MUSI 4207, Instrumentation</td>
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** Fourth Year **

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<td>MUCP 4402, Mus. Composition</td>
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<td>MUSI 4401, Mus. Composition</td>
<td>MUSI 4402, Mus. Composition</td>
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<td>MUSI 4301, Modal Counterpoint</td>
<td>MUTH 4307, Toneal Cpt. &amp; Fugue</td>
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<td>HIST 2301, U.S. Hist. Since 1877</td>
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<td>MUCP 3206, Conducting</td>
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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.

† 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.
### Performance—Piano Curriculum

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<td>MUAP 1105, Keyboard Skills 1</td>
<td>MUAP 1106, Keyboard Skills 1</td>
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<td>MUAP 1001, Piano 3</td>
<td>MUAP 1002, Piano 3</td>
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<td>MUAP 1200, College Academic Music 2</td>
<td>MUHL 2301, History of Music 3</td>
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<td></td>
<td>MUTH 1303, Elem. Theory I 3</td>
<td>MUTH 1304, Elem. Theory II 3</td>
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<td>MUTH 1103, Elem. Aural Skills I 3</td>
<td>MUTH 1104, Elem. Aural Skills II 1</td>
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<td>MUEN 3106-301, Accompanying 1</td>
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<td>MUAP 2001, Piano 4</td>
<td>MUAP 2002, Piano 4</td>
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<td>MUHL 2302, Hist. of Music 3</td>
<td>MUHL 2303, Hist. of Music 3</td>
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<td>MUTH 2303, Intermed. Theory I 3</td>
<td>MUTH 2304, Intermed. Theory II 3</td>
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<td>MUTH 2103, Intermed. Aural Skills I 1</td>
<td>MUTH 2104, Inter. Aural Skills II 1</td>
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<td>Oral Communications 3</td>
<td>Humanities 3</td>
</tr>
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<td>MUEN 3106-301, Accompanying 1</td>
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<td>MUAP 3001, Piano 4</td>
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<td>Tech. &amp; Applied Science 3</td>
<td>MUAP 3190, Jr. Recital 1</td>
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<td>MUTH 3303, Form Ana. Synth. 3</td>
<td>MUTH 3206, Conducting 2</td>
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<td>MUAP 4301, Keyboard Lit. 3</td>
<td>MUAP 4302, Keyboard Lit. 3</td>
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<td>HIST 2301, U.S. Hist. Since 1877 3</td>
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<td>TOTAL 17</td>
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</table>

Total program hours—133

* Program shown is for performance majors. Pedagogy (133 hours) or collaborative piano (133 hours) specialization students should consult the chairperson of keyboard studies.

### Performance—Organ Curriculum

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<th>Year</th>
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<td>MUAP 1001, Organ 3</td>
<td>MUAP 1002, Organ 3</td>
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<td>MUAP 1001, Piano 1</td>
<td>MUAP 1002, Piano* 1</td>
</tr>
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<td>MUAP 1200, College Academic Music 2</td>
<td>MUHL 2301, History of Music 3</td>
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<tr>
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<td>MUTH 1303, Elem. Theory I 3</td>
<td>MUTH 1304, Elem. Theory II 3</td>
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<td>MUTH 1103, Elem. Aural Skills I 3</td>
<td>MUTH 1104, Elem. Aural Skills II 1</td>
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<tr>
<td>SECOND YEAR</td>
<td>MUAP 2001, Organ 4</td>
<td>MUAP 2002, Organ 4</td>
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<td>MUHL 2302, Hist. of Music 3</td>
<td>MUHL 2303, Hist. of Music 3</td>
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<td>MUTH 2303, Intermed. Theory I 3</td>
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<td>MUAP 3003, Church Serv. Playing 2</td>
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<td>HIST 2301, U.S. Hist. Since 1877 3</td>
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Total program hours—131

* Optional for students with extensive piano background.

### Performance—Voice Curriculum

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<td>MUHL 2301, History of Music 3</td>
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<td>MUTH 1303, Sing. Diction I 3</td>
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<td>MUHL 2303, Hist. of Music 3</td>
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<td>MUTH 2303, Intermed. Theory I 3</td>
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Total program hours—135

### Performance—Wind Instrument or Percussion Curriculum

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<td>MUHL 2301, History of Music 3</td>
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Total program hours—122

* Twelve registrations in ensemble required.
Music Theory Curriculum

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<td>HIST 2300, Hist. of U.S. to 1877</td>
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<td>MUSI 4305, Modal Counterpoint</td>
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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.
† Continuation 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.

Performance—Stringed Instrument Curriculum

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<td>MUSI 1200, College Acad. Music</td>
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<tr>
<td>MUSI 1303, Elem. Theory I</td>
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<tr>
<td>MUSI 1103, Elem. Aural Skills I</td>
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<tr>
<td>ENGL 1301, Ess. Coll. Rhetoric</td>
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<td>MUEN 3104, Orch.</td>
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<table>
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<th>Spring</th>
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<tr>
<td>MUSI 2103, Intermed. Aural Skills I</td>
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<tr>
<td>Oral Communication</td>
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<tr>
<td>MUEN 3104, Orch.</td>
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<tr>
<td>Technology &amp; Applied Science</td>
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<tr>
<td>MUEN 3106, Chamber Music</td>
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<td>TOTAL 18</td>
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<tr>
<th>Third Year</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>MUAP 3001, Major Instr.</td>
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<tr>
<td>MUSI 3303, Form Ana. Synth.</td>
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<tr>
<td>HIST 2300, Hist. of U.S. to 1877</td>
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<td>3</td>
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<tr>
<td>Natural Science</td>
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<tr>
<td>MUEN 3104, Orch.</td>
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<td>1</td>
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<tr>
<td>MUEN 3106, Chamber Music</td>
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<td>1</td>
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<td>TOTAL 16</td>
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<tr>
<th>Fourth Year</th>
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<tr>
<td>MUAP 4001, Major Instr.</td>
<td>4</td>
<td>4</td>
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<tr>
<td>MUSI 4305, Modal Counterpoint</td>
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<tr>
<td>MUSI 4307, Count. &amp; Fugue</td>
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<td>POLS 1301, Amer. Govt., Org.</td>
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<td>Ensemble</td>
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<tr>
<td>MUAP 4300, Special Topics</td>
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<tr>
<td>TOTAL 13</td>
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</tr>
</tbody>
</table>

Total program hours—126

* Guitar students participate in ensemble and chamber music for six semesters each.

(Music) Student Teaching All-Level (MUAL)

Undergraduate Course

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.

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.

Undergraduate Courses

1103, 1104 [MUSI 1188, 2188] 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 [MUSI 1183, 1184]. 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.
1123, 1124 [MUSI 1114, 1115, 1181, 1182]. 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 [MUSI 1190, 2190]. Strings (1:0:2 each). Fundamentals of playing and teaching string instruments. Laboratory ensemble experience.
2123, 2124 [MUSI 2114, 2115, 2181, 2182]. 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.
3101. Dimensions of Performance (1:1:1). An interactive course open to all performers. Expressive movement, group dynam-
ics, 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.

3105. Technology for the Applied Music Teacher (1:0:2). Prerequisite: MUSI 3341 or consent of instructor. Implementation of music technologies in applied teaching studios. Topics covered include MIDI-based materials and equipment, instructional software, and audio/visual recording.

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.


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: MUSI 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.

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 understanding 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.

Graduate Courses

5001. Applied Music (V1-4).

5101. Dimensions of Performance (1:1:1). An interactive course open to all performers. Expressive movement, group dynamics, and free improvisation are used to maximize the spontaneity, confidence, and creativity of performers. May be repeated for credit.

5105. Technology for the Applied Music Teacher (1:0:2). Prerequisite: MUSI 3341, 5341, or consent of instructor. Implementation of music technologies in applied teaching studios. Topics covered include MIDI-based materials and equipment, instructional software, and audio/visual recording.

5202. Collaborative Skills for Musicians (2). Advanced study and practice of professional skills in accompanying and chamber music. These include score preparation, elements of texture and style, and relating effectively to soloists.

5205. Jazz Improvisation (2). Prerequisite: Consent of instructor. Study and application of techniques of improvisation in jazz performance. May be repeated for credit.

5302. Applied Music Literature (3). Prerequisite: The undergraduate music literature courses required on the B.M. or B.M.E. degree. Advanced study of literature for the various applied music areas. Individual research projects and class performance.

5303. Pedagogy of Applied Music (3). Advanced study in the pedagogy of applied instrumental or vocal masterworks from easy-moderate to difficult. Emphasis in the pedagogy of interpretation, technique, and memorization.

Graduate Program

The Graduate Certificate in Piano Pedagogy is designed for the professional piano teacher. The 12- to 15-hour curriculum, with flexible scheduling, provides enrichment and skill development both musically and pedagogically. It can also assist participants in qualifying as Nationally Certified Teachers of Music through Music Teachers National Association.

The Master of Music degree consists of a minimum of 30 hours of graduate work, including recitals for the performance major, thesis for the musicology or music theory major, and an original composition for the composition major. The Master of Music Education degree may be attained with a 30-hour program including a thesis or a 36-hour program without a thesis. For the performance or the accompanying-chamber music major, two public performances are required. Both performances must be judged satisfactory by the student’s applied music faculty committee. The conducting student may present either two performances or one with a paper in support of the performance. The Master of Music degree in string pedagogy or keyboard pedagogy may be attained with a 36-hour program without thesis or recitals.

The musicology specialization in the doctoral program requires one foreign language. Other specializations may or may not have this requirement, depending on the dissertation area. Except for the musicology major (one foreign language), no foreign language requirement exists for the Master of Music degrees or for the Master of Music Education degree; however, vocal performance majors must demonstrate singing proficiency in French, German, and Italian.

Some applicants for admission to graduate programs in music are required to submit scores for the General Test of the Graduate Record Examination. Students applying for the Master of Music in performance or the Doctor of Musical Arts degree programs do not need to submit these scores. Students beginning a master’s degree program take placement tests in music history and music theory, as well as in applied music if the major is performance or in music education if the major is music education. Texas Tech graduates with a bachelor’s degree in music or music education are required to take the placement examinations. All students beginning doctoral study must complete preliminary examinations. All placement and preliminary examinations are administered by the School of Music during the registration period of each semester. Deficiencies, if any, may be removed by appropriate leveling work. The prospective graduate student should also consult the Graduate Studies section of this catalog for admissions requirements.

The Doctor of Musical Arts degree is a 45-hour program oriented toward professional practice in music emphasizing the creation or performance of musical works and the application and transmission of knowledge about musical works. Specializations are in performance, conducting, composition, and piano pedagogy. A nondissertation program, the degree culminates in four doctoral performance projects which are designed to suit the professional interests and aspirations of the student. Of singular importance is the inclusion of 9 credit hours of fine arts courses drawn from visual arts, theatre, and aesthetics. Additional information may be obtained from the School of Music.

The music major in the Ph.D. degree in Fine Arts consists of a minimum of 60 semester hours, which includes fine arts requirements and electives, an individualized music curriculum, and a dissertation. Specializations are in composition, music history, theory, conducting, music education, administration, performance, and pedagogy. This program is explained in the introductory catalog section to the College of Visual and Performing Arts.
### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1201, 1202</td>
<td>[MUSI 1286, 1287] Introduction to Contemporary Music (2 each). For composition majors. 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.)</td>
</tr>
<tr>
<td>2301, 2302</td>
<td>[MUSI 1386, 2386]. 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.</td>
</tr>
<tr>
<td>3301, 3302</td>
<td>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.</td>
</tr>
<tr>
<td>4207</td>
<td>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.</td>
</tr>
<tr>
<td>4401, 4402</td>
<td>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.</td>
</tr>
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<tr>
<th>Course Code</th>
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<tr>
<td>5304</td>
<td>Techniques of String Education (3). Study of the latest trends in individual and group string instruction. Laboratory observation and analysis.</td>
</tr>
<tr>
<td>5305</td>
<td>String Methods and Etude Materials (3). Advanced studies in the materials, methods, procedures, philosophies, and/or techniques of string pedagogy. Final demonstration project, research paper, and/or recital required.</td>
</tr>
<tr>
<td>5306, 5307</td>
<td>Conducting Techniques and Analysis (3 each). Structural analysis and study of conducting problems. Individual instruction course. Participation in a major ensemble required. May be repeated with consent of instructor.</td>
</tr>
<tr>
<td>5313</td>
<td>Materials and Methods of Keyboard Instruction (3). Investigation of elementary and intermediate levels of piano methods, repertoire, and pedagogical procedures.</td>
</tr>
<tr>
<td>5314</td>
<td>Problems in Keyboard Pedagogy (3). Advanced studies in the materials, methods, procedures, philosophies, and/or techniques of keyboard pedagogy. Final demonstration project, research paper, and/or recital required.</td>
</tr>
<tr>
<td>5315</td>
<td>Techniques of Group Piano Instruction (3). Materials, methods, and procedures for teaching class piano, with particular attention to managing electronic keyboard laboratories.</td>
</tr>
<tr>
<td>5323</td>
<td>Diction for Singers (3:3:0). A comprehensive study of the basic rules of German, French, and Italian lyric diction using the International Phonetic Alphabet to analyze and transcribe vocal repertoire.</td>
</tr>
<tr>
<td>5333</td>
<td>Dynamics of Studio Teaching (3). Practical exploration of the successful teacher-student relationship in the music studio, applicable to any performance area. Topics include learning styles, personality types, communication skills, and motivation.</td>
</tr>
<tr>
<td>5334</td>
<td>Advanced Orchestration (3). More advanced work in scoring for both band and orchestra. May be an individual study course.</td>
</tr>
</tbody>
</table>

### Course Descriptions

**Music Composition (MUCP)**

*(To interpret course descriptions, see page 8.)*

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<tr>
<td>4401, 4402</td>
<td>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.</td>
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<tr>
<td>5306, 5307</td>
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<tr>
<td>5313</td>
<td>Materials and Methods of Keyboard Instruction (3). Investigation of elementary and intermediate levels of piano methods, repertoire, and pedagogical procedures.</td>
</tr>
<tr>
<td>5314</td>
<td>Problems in Keyboard Pedagogy (3). Advanced studies in the materials, methods, procedures, philosophies, and/or techniques of keyboard pedagogy. Final demonstration project, research paper, and/or recital required.</td>
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<td>5334</td>
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</table>

**Music Education (MUED)**

**Undergraduate Courses**

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<th>Course Code</th>
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<tr>
<td>3312</td>
<td>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.</td>
</tr>
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</table>

**Graduate Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>5211, 5212, 5213</td>
<td>Teaching Applied Music in the Public Schools I, II, III (2 each). Techniques, materials, and procedures for class and individual instruction of applied areas in the public schools. I. Woodwinds; II. Brass; III. Percussion.</td>
</tr>
<tr>
<td>5326</td>
<td>Instrumental Music Workshop (3:3:0). Prerequisite: Departmental approval. Emphasis upon the organization and development of instrumental groups in the public schools, and upon development of performance excellence by these groups. May be repeated in a new section.</td>
</tr>
<tr>
<td>5332</td>
<td>Learning and Music (3:3:0). A study of aesthetic, sociological, and psychological foundations of music education applied to teaching. An emphasis is given to historical development and present day applications.</td>
</tr>
<tr>
<td>5333</td>
<td>Tests, Measurements, and Evaluations in Music (3:3:0). A study of general descriptive statistical measures as applied to music testing. Emphasis is placed upon existing music aptitude and achievement tests used in the discipline.</td>
</tr>
<tr>
<td>5337</td>
<td>Workshop of Contemporary Trends in Elementary Music Education (3:3:0). For graduates in elementary education and for specialists in music at the elementary level. Music activities for elementary school students stressing techniques and materials of current pedagogical approaches. Topics will vary. May be repeated for credit.</td>
</tr>
<tr>
<td>5340</td>
<td>Introduction to Graduate Studies in Music Education (3:3:0). A study of historical perspectives, basic concepts, and present research practices in music education.</td>
</tr>
<tr>
<td>5344</td>
<td>Special Problems in Music Education (3). Prerequisite: Consent of advisor. Investigation and execution of special problems in the field of music education. May be repeated with a new problem.</td>
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</table>

**Music Ensemble (MUEN)**

**Undergraduate Courses**

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<th>Course Title</th>
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<tbody>
<tr>
<td>1103</td>
<td>Marching Band (1:0:5).</td>
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<tr>
<td>2100</td>
<td>New Music Ensemble (1:0:3).</td>
</tr>
<tr>
<td>3101</td>
<td>Choir (1:0:3).</td>
</tr>
<tr>
<td>3102</td>
<td>Music Theatre (1:0:3).</td>
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<tr>
<td>3103</td>
<td>Band (1:0:3).</td>
</tr>
<tr>
<td>3104</td>
<td>Orchestra (1:0:5).</td>
</tr>
<tr>
<td>3105</td>
<td>Jazz Ensemble (1:0:3).</td>
</tr>
<tr>
<td>3106</td>
<td>Small Ensemble (1:0:1).</td>
</tr>
<tr>
<td>3110</td>
<td>Medium Ensemble (1:0:2).</td>
</tr>
<tr>
<td>3201</td>
<td>University Choir (2:0:5).</td>
</tr>
<tr>
<td>3202</td>
<td>Music Theatre (2:0:5).</td>
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<tr>
<td>3203</td>
<td>Band (2:0:5).</td>
</tr>
<tr>
<td>3204</td>
<td>Orchestra (2:0:5).</td>
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**Graduate Courses**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>5101</td>
<td>Choir (1:0:5).</td>
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<tr>
<td>5102</td>
<td>Music Theatre (1:0:5).</td>
</tr>
<tr>
<td>5103</td>
<td>Band (1:0:5).</td>
</tr>
<tr>
<td>5104</td>
<td>Orchestra (1:0:5).</td>
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</table>
Music History and Literature (MUHL)

### Undergraduate Courses

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1308</td>
<td>[MUSI 1306, 1307] Music Appreciation (3:3:0)</td>
<td>Beginning course for nonmajors. Encourages appreciation of music through consideration of a variety of musical styles.</td>
<td>3</td>
</tr>
<tr>
<td>2301</td>
<td>History of Music (3:3:0)</td>
<td>Prerequisite: MUSI 1200. Survey of music history, culture and style from antiquity to 1650. Part I of MUHL 2301, 2302, 2303 sequence.</td>
<td>3</td>
</tr>
<tr>
<td>2302</td>
<td>History of Music (3:3:0)</td>
<td>Prerequisite: MUSI 1200, MUHL 2301. Survey of music history, culture and style from 1650-1800. Part II of MUHL 2301, 2302, 2303 sequence. (Writing Intensive)</td>
<td>3</td>
</tr>
<tr>
<td>2303</td>
<td>History of Music (3:3:0)</td>
<td>Prerequisite: MUSI 1200, MUHL 2301, and 2302. Survey of music history, culture and style from 1880-present. Part III of MUHL 2301, 2302, 2303 sequence. (Writing Intensive)</td>
<td>3</td>
</tr>
<tr>
<td>2308</td>
<td>2309 [MUSI 1308, 1309] Heritage of Music (3:3:0 each)</td>
<td>For nonmusic majors. Studies selected compositions through an interpretation of their historical, functional, and cultural significance.</td>
<td>3</td>
</tr>
<tr>
<td>3304</td>
<td>History of Jazz (3:3:0)</td>
<td>Historical and analytical survey of jazz from its beginning through “Rock” its form, style, literature, and influence on 20th century music.</td>
<td>3</td>
</tr>
<tr>
<td>3308</td>
<td>Masterpieces in Music (3:3:0)</td>
<td>For nonmusic majors. Studies representative musical works from the Baroque Period to the present in relation to their historical and general cultural context.</td>
<td>3</td>
</tr>
<tr>
<td>3310</td>
<td>History of Rock and Roll (3:3:0)</td>
<td>This course focuses on hearing, understanding, and contextualizing Anglo-American rock and roll, a popular idiom rooted in the music of African Americans and rural whites.</td>
<td>3</td>
</tr>
<tr>
<td>4300</td>
<td>Special Topics in Music History and Literature (3:3:0)</td>
<td>Prerequisite: MUHL 2301 and 2302. Topics may cover any historical period of music, music literature, or composers. May be repeated under a different topic.</td>
<td>3</td>
</tr>
<tr>
<td>4321</td>
<td>Construct in Ethnomusicology (3:3:0)</td>
<td>Detailed examination of topics in ethnomusicology (the study of musical behavior in its original contexts) and its history, philosophies, methods and areas of study.</td>
<td>3</td>
</tr>
</tbody>
</table>

### Graduate Courses

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5330</td>
<td>Graduate Music History Survey (3:3:0)</td>
<td>Repertoire, context, and composition. Prerequisite to graduate music history unless waived by placement examination or by consent of Musicology Division. Not intended to fulfill major or minor graduate degree requirements.</td>
<td>3</td>
</tr>
<tr>
<td>5311</td>
<td>Symphonic Literature (3:3:0)</td>
<td>Studies in the development of orchestral music from the Classic Period to the present.</td>
<td>3</td>
</tr>
<tr>
<td>5312</td>
<td>Chamber Music Literature (3:3:0)</td>
<td>Studies in the development of chamber music from the Classic Period to the present.</td>
<td>3</td>
</tr>
<tr>
<td>5313</td>
<td>Great Composer Seminar (3:3:0)</td>
<td>Critical examination of the works of a single composer, e.g., Bach, Haydn, Mozart, Beethoven, Wagner, Verdi, Brahms, or Stravinsky. A different composer will be studied each time the course is offered. May be repeated for credit.</td>
<td>3</td>
</tr>
<tr>
<td>5320</td>
<td>Topics in Music History (3:3:0)</td>
<td>Topics include specific styles, ethnomusicology, vernacular musics, graduate history review, advanced research projects, and others as needed. May be repeated for credit on different topic; 12 maximum credit hrs.</td>
<td>3</td>
</tr>
<tr>
<td>5321</td>
<td>Construct in Ethnomusicology (3:3:0)</td>
<td>Detailed examination of topics in ethnomusicology (the study of musical behavior in its original contexts) and its history, philosophies, methods and areas of study.</td>
<td>3</td>
</tr>
<tr>
<td>5330</td>
<td>Music in the United States (3:3:0)</td>
<td>A study of 20th century American music together with its historical and cultural background.</td>
<td>3</td>
</tr>
<tr>
<td>5331</td>
<td>5332, 5333, 5334, 5335, 5336, 5337. Seminar in the History and Literature of Music; Medieval (5331), Renaissance (5332), Baroque (5333), Classic Period (5334), Romantic Period (5335), Twentieth Century (5336), World Music (5337) (3:3:0 each). May be repeated with consent of instructor.</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

### Music (MUSI)

### Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1101</td>
<td>Introduction to Music Teaching (1:1:2)</td>
<td>Overview of music teaching careers. Includes field-based observations and guest lecturers from the music professions. Open to all music majors.</td>
<td>1</td>
</tr>
<tr>
<td>1200</td>
<td>Introduction to Research and Style Analysis (2:2:0)</td>
<td>Music research, reading, writing, and study skills required for academic success.</td>
<td>2</td>
</tr>
<tr>
<td>2000</td>
<td>Independent Studies in Music (V1-3)</td>
<td>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.</td>
<td>V</td>
</tr>
<tr>
<td>2301</td>
<td>[MUSI 1304] Essential Elements of Music (3:3:0)</td>
<td>Basic elements of music with appropriate techniques and principles of singing, playing, moving to, and listening to music. For students preparing to teach young children. Not for music majors.</td>
<td>3</td>
</tr>
<tr>
<td>2302</td>
<td>Music for the Adolescent (2)</td>
<td>Content, organization, and administration of large and small instrumental and choral ensembles, programs of individual applied music, and appreciation of music for the adolescent.</td>
<td>2</td>
</tr>
<tr>
<td>3216, 3217</td>
<td>Choral Techniques (2 each)</td>
<td>Materials, repertoire, and procedures for preparing choral performances.</td>
<td>2</td>
</tr>
<tr>
<td>3218, 3219</td>
<td>String and Orchestral Techniques (2 each)</td>
<td>Materials, repertoire, and procedures for preparing orchestral and string ensemble performances.</td>
<td>2</td>
</tr>
<tr>
<td>3225, 3226</td>
<td>Band Techniques (2 each)</td>
<td>Prerequisite: 2 yrs. college marching experience. Materials, repertoire, and procedures for preparing band performances. Must be taken sequentially.</td>
<td>2</td>
</tr>
<tr>
<td>3237, 3238</td>
<td>Music for Children (2 each)</td>
<td>A study of musical activities, materials, and creative ideas. Emphasis on developing the child's voice, movement, playing</td>
<td>2</td>
</tr>
</tbody>
</table>
of simple melodic and harmonic instruments, and listening skills. For majors and specialists only.

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.

3341. Introduction to Technology for Musicians (3:3:0). Prerequisite: Music reading skills and basic keyboard skills. Introduces technological resources for all aspects of the musical experience. Topics covered include computer-assisted instruction, computer-generated notation, MIDI sequencing, digital sampling, and nonmusic topics such as Web site development.

4000. Individual Studies in Music (VI-3).

Graduate Courses

5100. Teaching Music in College (1).

5310. Historical and Critical Perspectives in Music (3:3:0). Historical and critical overview of the field including introduction to major theories and methodologies, study of particular artists, works or movements that provide insight into specific creative techniques, basic media and techniques of the field; and interdisciplinary relationships with the other arts. Not for music majors.

5314. Music in Contemporary Context (3:3:0). Contemporary issues in the field including current artistic trends, theory and criticism, organization (e.g., funding, administration), and cultural policy (e.g., education, assessment, multicultural issues, censorship).

5341. Introduction to Technology for Musicians (3:3:0). Introduction to 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.

5342. Advanced Technology for Musicians (3). Prerequisite: MUSI 3341 or 5341 or consent of instructor. Intensive and extensive student-centered study topics to be selected from programming and software development in music, MIDI sequencing, multimedia development, advanced music notation, and digital sampling and synthesis.

7000. Research (V1-12).

7301. Music Bibliography and Research (3). Required of all doctoral students.

8000. Doctor's Dissertation (VI-12).

8301, 8302, 8303, 8304. Doctoral Performance Projects I-IV (3 each). Individual directed projects in music performance or composition.

Music Theory (MUTH)

(To interpret course descriptions, see page 8.)

Undergraduate Courses

1101. Developmental Aural Skills (1). For music majors or with consent of instructor. Developmental dictio, sight singing, and keyboard skills.

1103. [MUSI 1116, 1216, 1316] 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. [MUSI 1117, 1217, 1317] 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.


1303. [MUSI 1311] Elementary Music Theory I (3:3:0). Corequisite: MUTH 1103. For music majors or with consent of instructor. Melody, rhythm, and diatonic harmony.

1304. [MUSI 1312] 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. [MUSI 2116, 2216] 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. [MUSI 2117, 2217] 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. [MUSI 2311] 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. [MUSI 2312] 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.

3316. Analysis of Post-Tonal Music (3:3:0). Prerequisite: Completion of MUTH 2104 and MUTH 2304 with a C or better. A study of analytic techniques and their application in post-tonal music.

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 Fuge (3). Prerequisite: Completion of MUTH 2303 and 2103 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.

Graduate Courses

5300. Studies in Harmony and Voice Leading (3). Common-practice harmony, counterpoint, and figured bass. Prerequisite to enrollment in graduate music theory unless waived by placement or preliminary examination or by consent of the theory-composition division. Not intended to fulfill major or minor graduate degree requirements.

5301. Dictation and Sight-Singing (3). Studies in melodic, harmonic, and contrapuntal dictation, complemented by the sight-singing of equivalent materials. Prerequisite to enrollment in graduate music theory unless waived by placement examination or by consent of the division chair. Does not fulfill graduate degree requirements.

5303, 5304. Styles (3:3:0 each). A study of the development of harmonic, melodic, rhythmic, modal, and tonal practices from Gregorian Chant to the present.


5310. Modal Counterpoint (3). A study of sixteenth-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.

5311. Tonal Counterpoint and Fuge (3). The analysis and synthesis of eighteenth-century counterpoint in two to four voices, concentrating upon the instrumental style and techniques of the invention and the fugue.

5315. Analysis of Tonal Music (3:3:0). Prerequisite: Successful completion of MUTH 5300 and MUTH 5301 or consent of instructor. A study of analytic techniques and their application in tonal music.

5316. Analysis of Post-Tonal Music (3:3:0). Prerequisite: Successful completion of MUTH 5300 and MUTH 5301 or consent of instructor. A study of analytic techniques and their application in post-tonal music.

5320. Special Topics in Music Theory (3). Topics include history of music theory, advanced analysis projects, and other topics as needed. Some topics offered on-line. May be repeated for credit on different topic.

6000. Master's Thesis (VI-6).
Faculty

Frederick B. Christoffel, M.F.A., Chairperson

**Professors:** Bert, Christoffel, Marks, Whitmore

**Associate Professors:** Chansky, Donahue

**Assistant Professors:** Adair, Bilkey, Durham, Gelber, Mann, Merz

About the Program

This department supervises the following degree programs:

- Bachelor of Arts in Dance
- Bachelor of Arts in Theatre Arts
- Bachelor of Fine Arts in Theatre Arts
- Master of Arts in Theatre Arts
- Master of Fine Arts in Theatre Arts
- Doctor of Philosophy in Fine Arts with a major in Theatre

The department is an accredited program of the National Association of Schools of Theatre and 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, the Department of Theatre and Dance sponsors chapters of Alpha Psi Omega (national theatre honorary), Chi Tau Epsilon (national dance honorary), and the United States Institute of Theatre Technology.

The department is an institutional member of the Texas Educational Theatre Association, the Texas Nonprofit Theatre Inc., the Southwest Theatre and Film Association, the Association for Theatre in Higher Education, the United States Institute of Theatre Technology, and the American College Dance Festival Association.

Undergraduate Program

Grades below C in required courses of theatre and dance majors 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, 15 hours; B.F.A. theatre majors, 30 hours; B.A. dance majors, 15 hours; theatre or dance minors, 6 hours.

Bachelor of Arts

**Theatre Arts Major.** The minimum number of hours required for the B.A. in Theatre Arts is 120, at least 40 of which must be at the junior and senior levels. 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. Core Requirements: DAN 1100 (3 semesters), 1103, 1105, 1109, 1206, 2202, 3103, 3105, 3109, 3208, 3301, 3309, 3313, 4103, 4105, 4109, 4210; TH A 1303, 3304; Electives (9-12 hours): DAN 1101, 1106, 1108, 2209, 3000, 3101, 3206, 4000, 4202, 4208, 4301; 3 hours from TH A 1104, 2302, 2306, 3303, 3305, 3308, 3309, 4208, VPA 3301, MUSI 2301, MUHL 3304, 3308, 3310, 4321.

**Dance Minor.** Students seeking a minor in dance should complete the following coursework: 2 credit hours from DAN 1103, DAN 3103, or DAN 4103; 2 credit hours from DAN 1109, DAN 3109, or DAN 4109; 2 credit hours from DAN 1105, DAN 3105, or DAN 4105; DAN 1100 (2 semesters); DAN 2202; DAN 3208; DAN 3309; and DAN 3313.

Bachelor of Fine Arts

Students seeking preprofessional training leading to a B.F.A. degree in theatre arts major in either acting or design technology. Entrance to the B.F.A. program is by audition and interview. Students usually audition for the program at the end of their third long semester 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 programmatic probation.

Students on programmatic probation who fail to improve will be removed from the program. The minimum number of hours required for B.F.A. theatre majors is 130, at least 40 of which must be at the junior and senior levels. Note that some of the following courses must be completed before entering the B.F.A. program; students should consult advisors for details.

**Core Requirements**

TH A 1101, 1102, 1103, 1104, 1303, 2101, 2302, 3104, 3105, 3303, 3304, 3305, 3308, 3309, 3335, 4208, 4302, 4303.

**Acting Courses**

TH A 1301, 1302, 2312, 3105 (two times additional to core), 3106, 3302, 3306, 3307, 3322, 3332. In addition, students must complete 23 hours from the following: TH A 2306, 4000, DAN 1100, 1101, 1103, 1105, 1109, 1206, 2202, 2209, 3000, 3101, 3103, 3105, 3109, 3206, 3208, 3313, 4103, 4105, 4109, 4301, MUAP (voice) 1001, 1002, 1113, 1114, 2001, 2002, 3001, 3002.

**Design and Technology Courses**

TH A 2306, 3306, 3307, 3336, 3337, 4108 (twice), 4309 (twice), 4310 and 4311; ART 1303, 2304. Also 15 hours must be selected from TH A 3100, 3101, 3102, 3103, 4000, 4309, 4310, 4311 or ART 3323.*

* Students with an emphasis in scenery, lighting, or costume design must take 6 of the additional 15 hours in their area of specialization.

Teacher Education

Students desiring all-level certification in theatre arts must include the following courses within their overall degree plan: TH A 1301, 1303, 2101, 2302, 3303, 3304, 3305, 3308, 3309, 4302, and one 3-hour theatre arts elective. Students desiring secondary certification in dance must include the following courses within their overall degree plan: DAN 1100 (twice), 1206, 2202, 3103, 3105, 3109, 3208, 3301, 3309, 3313, 4103, 4105, 4109, 4301 (or VPA 3301), and 3 hours from MUHL 3304, 3310, 4321, or TH A 3304. The overall degree plan for the B.F.A. or B.A. degree in theatre arts and for the B.A. degree in dance constitutes the academic major for purposes of recommendation for teacher certification.
Bachelor of Arts in Theatre Arts

Recommended Curriculum

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH A 1101, Activities: Scenery &amp; Props 1</td>
<td>TH A 1102, Activities: Lighting &amp; Sound 1</td>
</tr>
<tr>
<td>TH A 1303, Introduction to Theatre 3</td>
<td>HIST 2301 (or other U.S. history)* 3</td>
</tr>
<tr>
<td>ENGL 1301, Ess. of Coll. Rhetoric 3</td>
<td>Mathematics/Logic Required Course 3</td>
</tr>
<tr>
<td>HIST 2300 (or other U.S. history)* 3</td>
<td>Humanities Required Course* 3</td>
</tr>
<tr>
<td>Mathematics/Logic Required Course 3</td>
<td>Minor Required Course* 3</td>
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**SECOND YEAR**

<table>
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<th>Spring</th>
</tr>
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<tbody>
<tr>
<td>TH A 1103, Activities: Costume &amp; Makeup 1</td>
<td>TH A 3105, Rehearsal &amp; Performance 1</td>
</tr>
<tr>
<td>TH A 2302, Principles of Acting I 3</td>
<td>TH A 3303, Principles of Scenery 3</td>
</tr>
<tr>
<td>TH A 3335, Script Analysis 3</td>
<td>POLS 2302 (or other approved POLS)* 3</td>
</tr>
<tr>
<td>POLS 1301, Amer. Govt., Org. 3</td>
<td>Foreign Language Required Course 5</td>
</tr>
<tr>
<td>Foreign Language Required Course 5</td>
<td>Minor Required Course* 3</td>
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**THIRD YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>TH A 3304, Principles of Lighting 3</td>
<td>TH A 3305, Principles of Costuming 3</td>
</tr>
<tr>
<td>TH A 3308, History of Theatre I 3</td>
<td>TH A 3309, History of Theatre I 3</td>
</tr>
<tr>
<td>Foreign Language Required Course 3</td>
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<td>Minor Required Course* 3</td>
<td>Oral Communication Required Course* 3</td>
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**FOURTH YEAR**

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<tr>
<th>Fall</th>
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<tbody>
<tr>
<td>TH A 4302, Stage Directing Methods 3</td>
<td>Minor Required Course* 3</td>
</tr>
<tr>
<td>TH A Elective* 3</td>
<td>TH A, Minor, or Core Elective* 3</td>
</tr>
<tr>
<td>Ind. or Group Behavior Required Course* 3</td>
<td>TH A, Minor, or Core Elective* 3</td>
</tr>
<tr>
<td>Natural Lab Science Required Course 4</td>
<td>Natural Lab Science Required Course 4</td>
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<tr>
<td>Minor Required Course* 3</td>
<td>TOTAL 13</td>
</tr>
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<td>TOTAL 16</td>
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</table>

Total program hours—120 minimum

* Requires 40 hours of upper-division classes; 22 hours are satisfied by the major; 18 must be satisfied by minor courses and/or core curriculum. Courses marked with an asterisk (*) are potential upper-division courses.

Bachelor of Fine Arts in Theatre Arts (Acting Specialization) Recommended Curriculum

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH A 1101, Activities: Scenery &amp; Props 1</td>
<td>TH A 1102, Activities: Lighting &amp; Sound 1</td>
</tr>
<tr>
<td>TH A 1302, Motion for the Actor 3</td>
<td>TH A 2302, Principles of Acting I 3</td>
</tr>
<tr>
<td>TH A 3106, Auditioning 1</td>
<td>ENGL 1302, Adv. Coll. Rhetoric 3</td>
</tr>
<tr>
<td>ENGL 1301, Ess. of Coll. Rhetoric 3</td>
<td>Mathematics/Logic Required Course 3</td>
</tr>
<tr>
<td>Mathematics/Logic Required Course 3</td>
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**SECOND YEAR**

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<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
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<tbody>
<tr>
<td>TH A 1301, Voice for the Actor 3</td>
<td>TH A 3303, Principles of Scenery 3</td>
</tr>
<tr>
<td>TH A 3303, History of Theatre I 3</td>
<td>TH A 3308, History of Theatre I 3</td>
</tr>
<tr>
<td>TH A 3309, History of Theatre I 3</td>
<td>Required BFA Elective(s)* 3</td>
</tr>
<tr>
<td>POLS 1301, Amer. Govt., Org. 3</td>
<td>POLS 2302 (or other approved POLS) 3</td>
</tr>
<tr>
<td>Minor Required Course* 3</td>
<td>Humansities Required Course 3</td>
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**THIRD YEAR**

<table>
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<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH A 1103, Activities: Costume &amp; Makeup 1</td>
<td>TH A 3305, Principles of Costuming 3</td>
</tr>
<tr>
<td>TH A 3302, Acting Periods I 3</td>
<td>TH A 3322, Acting Periods II 3</td>
</tr>
<tr>
<td>TH A 3335, Script Analysis 3</td>
<td>TH A 3303, Theory &amp; Prac. of Playwriting 3</td>
</tr>
<tr>
<td>Required BFA Elective(s)* 3</td>
<td>Required B.F.A Elective(s) 3</td>
</tr>
<tr>
<td>Ind. or Group Behavior Required Course* 3</td>
<td>Natural Lab Science Required Course 4</td>
</tr>
<tr>
<td>HIST 2300 (or other U.S. history)* 3</td>
<td>HIST 2301 (or other U.S. history) 3</td>
</tr>
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<td>TOTAL 16</td>
<td>TOTAL 16</td>
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**FOURTH YEAR**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH A 1104, Activities: House Mgmt. 1</td>
<td>TH A 3104, Adv. Activities: House Mgmt. 1</td>
</tr>
<tr>
<td>TH A 3332, Acting Periods I 3</td>
<td>TH A 3301, Act. Period Styles I 3</td>
</tr>
<tr>
<td>TH A 4208, Professional Career Mgmt. 2</td>
<td>Required B.F.A Elective(s)* 6</td>
</tr>
<tr>
<td>TH A 4302, Stage Directing Methods 3</td>
<td>Natural Lab Science Required Course 4</td>
</tr>
<tr>
<td>Required B.F.A Elective(s)* 6</td>
<td>TOTAL 14</td>
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<td>TOTAL 15</td>
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</tbody>
</table>

Total program hours—130 minimum

* Choose 23 hours of electives from the following: TH A 2306, 4000, DAN 1100, 1101, 1103, 1105, 1106, 1109, 1206, 2202, 2209, 3000, 3101, 3103, 3105, 3109, 3206, 3309, 3403, 4103, 4105, 4109, 4301, MUAP 1001, 1002, 1113, 1114, 2001, 2002, 3001, 3002. Many of the above courses are repeatable for credit. Please see head of area for approved substitutions.

^ Additional required coursework:
- TH A 3306 and 3307, Practicum in Repertory Theatre I and II, must be taken once (only offered in summer sessions).
- TH A 3105, Rehearsal and Performance, may be taken three times. TH A 3105 should be taken during semesters the student is acting in or stage managing a departmental production.

Dance (DAN)

(To interpret course descriptions, see page 8.)

Undergraduate Courses

1100. [DANC 1112, 1113, 1151, 1152, 1212, 1213, 1251, 1252, 1351, 1352, 2112, 2113, 2151, 2152, 2210, 2211, 2212, 2213, 2251, 2252, 2351, 2352]. Dance Production Activities (1). Participation in a dance production, either as a choreographer, performer, designer, or crew member. May be repeated twice for credit.

1101. [DANC 1110, 1210] Tap I (1:0:3). A study of basic tap dance techniques, performance, and choreography. May be repeated once for credit.

1103. [DANC 1147, 1247, 1347]. Jazz I (1:0:3). A study of basic jazz dance techniques, performance, and choreography. May be repeated once for credit.

1105. [DANC 1141, 1241, 1341]. Ballet I (1:0:3). A study of basic ballet dance techniques, performance, and choreography. May be repeated once for credit.

1106. Conditioning for Performers (1:0:3). An introduction to systems of physical conditioning specific to the needs of dance and theatre performers. May be repeated once for credit.

1108. Hip Hop (1:0:3). A study of basic hip hop dance techniques, performance, and choreography. May be repeated once for credit.

1109. [DANC 1145, 1245, 1345]. Modern I (1:0:3). A study of basic modern dance techniques, performance, and choreography. May be repeated once for credit.

1206. Musical Stage Dance (2:1:2). An introduction to basic principles of dance styles associated with musical theatre.

2202. Improvisation (2:1:2). A study of basic movement improvisation techniques and skills. May be repeated once for credit.

2209. Somatics (2:1:2). An introduction to a variety of somatic frameworks through theoretical and kinesitic experience.

3000. Special Topics in Dance (V1-3). Prerequisite: Consent of instructor. Introduction to special topics in dance for in-depth study. May be repeated for credit with different topics.
Bachelor of Fine Arts in Theatre Arts  
(Design/Technology Specialization)  
Recommended Curriculum

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall</th>
<th>Spring</th>
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<tr>
<td><strong>THIRD YEAR</strong></td>
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<tr>
<td>TH A 1101, 02, or 03, Practicum</td>
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<td>TH A 1303, Intro to Theatre</td>
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<td>ENGL 1302, Adv. Coll. Rhetoric</td>
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**SECOND YEAR**

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**SUMMER**

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**THIRD YEAR**

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<td>TH A 4303, Playwriting</td>
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<td>TH A 3335, Script Analysis</td>
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Total program hours—120 minimum

**Bachelor of Arts in Dance Recommended Curriculum**

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<td>Dance Electives**</td>
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Total program hours—120 minimum

**4000. Projects in Dance (V1-3).** Prerequisite: Consent of instructor. 
This course is designed for students interested in pursuing guided independent projects in dance. May be repeated for credit.

**4103. Jazz III (1:0:3).** Prerequisite: DAN 3303 or consent of instructor. 
A study of advanced jazz dance techniques, performance, repertoire, and choreography. May be repeated twice for credit.

**4105. Ballet III (1:0:3).** Prerequisite: DAN 3305 or consent of instructor. 
A study of advanced ballet dance techniques, performance, repertoire, and choreography. May be repeated twice for credit.

**4109. Modern III (1:0:3).** Prerequisite: DAN 3309 or consent of instructor. 
A study of advanced modern dance techniques, performance, contemporary repertory, and choreography. May be repeated twice for credit.

**4202. Contact Partnering (2:0:3).** Prerequisite: DAN 2202. A study of contact partnering skills, techniques, and improvisations as practiced in contemporary dance.

**4208. Advanced Choreography Workshop (2:0:4).** Prerequisite: DAN 3308. An in-depth workshop focusing on creating, performing, and critiquing choreography.

**4210. Senior Project (2).** Prerequisite: DAN 3208. Senior presentation of an original dance composition and portfolio of work.

**4301. World Dance Forms (3:3:0).** A study of dances from different cultures, their histories, and their influences on contemporary American dance and culture.

Theatre Arts (TH A) 
(To interpret course descriptions, see page 8)
Graduate Program

**Master of Arts**
The Master of Arts degree in Theatre Arts requires a minimum of 30 semester hours beyond the baccalaureate. Completion of the M.A. degree requires a thesis and a final exam.

**Master of Fine Arts**
The Master of Fine Arts degree is a terminal professional degree that provides for intensive concentration in performance and pedagogy, design, playwriting, or arts administration. A minimum of 60 hours is required beyond the baccalaureate. Completion of the M.F.A. degree requires a thesis or a thesis project. In the case of performance and pedagogy and design candidates, the thesis project is based on a performance or production project accomplished during their program. In the case of playwriting candidates, the thesis is based on a script that is produced during their program.

**Ph.D. in Fine Arts**
The department participates with the faculties in art, music, and philosophy in a multidisciplinary program leading to the Ph.D. degree in Fine Arts. This degree is detailed in the catalog section that introduces the College of Visual and Performing Arts.

Doctoral students whose major area is theatre can choose two of the following fields of concentration: acting and directing; design; history, theory, and criticism; arts administration; and playwriting. Work towards the degree is both scholarly and practical, requires a minimum of 60 semester hours at the graduate level beyond the master’s degree, includes a rigorous comprehensive examination, and culminates in a dissertation requirement that allows a choice of several avenues of research.

Applicants for the Ph.D. program with the major area of theatre must have completed a master’s degree or its equivalent in theatre or a related field. Applicants must meet minimum Graduate School requirements, be recommended by the faculty, and be approved by the Graduate Committee within the college.

For admission to any graduate program in theatre, the applicant must fulfill all requirements of the Graduate School as well as departmental requirements (contact graduate advisor in the department). All incoming students must take a diagnostic examination at the start of the fall term. This will provide a basis for faculty decisions about any leveling courses that may be required and credits that may be transferred. After this examination, a degree plan must be decided upon and filed; master’s students must file during their first term and doctoral students should file before the end of the second term.

To be educated practically as well as academically, all graduate students are expected to participate actively in the department’s production program.

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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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<tr>
<td>1302</td>
<td>[DRAM 1322]. Movement for the Actor (3:3:3)</td>
<td>Explores the physical skills necessary for the actor with emphasis on individual physical creativity and imagination. Required of B.F.A. acting majors.</td>
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<tr>
<td>1303</td>
<td>Introduction to Theatre (3:3:0)</td>
<td>Introduction to theatre as a career and academic pursuit: basic concepts, practices, and values. Required of all theatre majors prior to admission to upper-level courses. Offered in fall semester only. For theatre majors and minors only.</td>
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<td>2101</td>
<td>[DRAM 1141, 1241, 1341] Stage Makeup (1:0:3)</td>
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<td>2301</td>
<td>[DRAM 1351] Introduction to Acting (3:3:0)</td>
<td>Fundamental principles of acting for nonmajors, with emphasis on establishing a working vocabulary and basic acting process. Applies toward Visual and Performing Arts requirement.</td>
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<tr>
<td>2302</td>
<td>Principles of Acting I (3:3:3)</td>
<td>Explores the fundamental principles of acting. Emphasis on establishing a process and working vocabulary necessary for the profession.</td>
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<td>2306</td>
<td>Stage Management (3:3:0)</td>
<td>Prerequisite: TH A 1303. An in-depth study of the functions and responsibilities of the stage manager in the performing arts.</td>
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<tr>
<td>3100</td>
<td>Advanced Theatre Activities: Stage Management (1)</td>
<td>Prerequisite: TH A 2306. Opportunity to participate extensively in theatre activities in stage management in University Theatre productions.</td>
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<tr>
<td>3101</td>
<td>Advanced Theatre Activities: Scenery and Properties (1)</td>
<td>Opportunity to participate extensively in theatre activities in scenery and properties with emphasis on leadership experiences.</td>
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<td>3102</td>
<td>Advanced Theatre Activities: Lighting and Sound (1)</td>
<td>Prerequisite: TH A 3304. Opportunity to participate extensively in theatre activities in lighting and sound with emphasis on leadership experiences.</td>
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<td>3103</td>
<td>Advanced Theatre Activities: Costume and Makeup (1)</td>
<td>Prerequisite: TH A 3305. Opportunity to participate extensively in theatre activities in costume and makeup with emphasis on leadership experiences.</td>
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<td>3104</td>
<td>Advanced Theatre Activities: House Management (1)</td>
<td>Opportunity to participate extensively in theatre activities in house management with emphasis on leadership experiences.</td>
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<tr>
<td>3105</td>
<td>Rehearsal and Performance (1)</td>
<td>Credit for acting or stage managing in departmental productions or acting in approved directing scenes. May be repeated for credit.</td>
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<td>3106</td>
<td>Auditioning (1:0:2)</td>
<td>Prerequisite: TH A 1301 and 2302. A practicum for developing audition techniques and examining guidelines for audition procedures, with emphasis on resume writing, organization and audition material selection and performance.</td>
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<td>3302</td>
<td>Acting Period Styles I (3:3:3)</td>
<td>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 majors.</td>
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<tr>
<td>3303</td>
<td>Principles of Theatrical Scenery (3:2:3)</td>
<td>Prerequisite: TH A 1303 or 2303. The study of technical problems of play production. Design, construction, and painting of scenery and properties and special effects. Enrollment in noncredit lab is required.</td>
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<tr>
<td>3304</td>
<td>Principles of Theatrical Lighting (3:2:3)</td>
<td>Prerequisite: TH A 1303 (or 2303) and 3303. Study of the theory and practice of theatrical stage lighting. Elementary electricity, lighting control and instruments, lighting design. Enrollment in non-credit lab is required.</td>
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<tr>
<td>3305</td>
<td>Principles of Theatrical Costuming (3:2:3)</td>
<td>Prerequisite: 1303 or 2303. Study and application of the theories and techniques of theatrical costuming. Survey of historical dress. Design for the stage. Construction of theatrical clothing. Enrollment in noncredit lab is required.</td>
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<tr>
<td>3306</td>
<td>Practicum in Repertory Theatre I, II (3:0:9 each)</td>
<td>Prerequisite: TH A 1303, 2302, or equivalent. Practical work in the organization, mounting, and presentation of plays in a repertory situation. May be repeated for credit.</td>
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<tr>
<td>3307</td>
<td>History of Theatre I (3:3:0)</td>
<td>A comprehensive review of world theatre from its beginning to the 17th century. (Writing Intensive)</td>
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<tr>
<td>3308</td>
<td>History of Theatre II (3:3:0)</td>
<td>A comprehensive overview of world theatre from the 17th century to the present. (Writing Intensive)</td>
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<tr>
<td>3322</td>
<td>Acting Period Styles II (3:3:3)</td>
<td>Prerequisite: TH A 2312. Scene study in a spectrum of periods and styles from Restoration to contemporary theatre. Required of B.F.A. acting majors.</td>
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<tr>
<td>3335</td>
<td>Script Analysis (3:3:0)</td>
<td>An introduction to dramatic structure and methods of script analysis as a preparation for writing, directing, designing, performing, and criticizing plays. (Writing Intensive)</td>
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<tr>
<td>3336</td>
<td>Computerized Drafting for the Theatre (3:2:3)</td>
<td>Traditional and computer-aided drafting techniques for theatrical presentation.</td>
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</table>
Graduate Courses

5300. Dramatic Analysis (3:3:0). Study of dramatic structures and script analysis methods as a preparation for writing, directing, designing, performing, and criticizing plays.

5301. Playwriting I (3:2:3). Prerequisite: TH A 3300. Basic graduate-level study in the theory and practice of playwriting, focusing on crafting the short play.

5302. Playwriting II (3:2:3). Prerequisite: TH A 3301. Instruction and practice in crafting the full-length play script. May be repeated once for credit.

5303. Theatre Scene Design (3:0:9). Advanced work in the process of designing for the stage. Includes work on models, sketches, renderings, and theatre drafting. May be repeated for credit.

5304. Theatre Lighting Design (3:0:9). Advanced work in theatrical lighting design with an emphasis on the use of light as artistic expression. May be repeated for credit.

5305. Theatre Costume Design (3:0:9). Advanced work in the total process of designing costumes for the stage through design projects for representative plays. May be repeated for credit.

5306. Theatre History Survey (3:3:0). A survey of the major periods and traditions of world theatre and various approaches to theatre historiography. Required of all theatre arts doctoral students.

5307. 5308. Advanced Practicum in Repertory Theatre I, II (3:0:9 each). Prerequisite: An undergraduate major in theatre arts, or consent of instructor. Practical work in supervision of the organization, mounting, and presentation of plays in a repertory situation. May be repeated for credit.

5309. Seminar in Theatre History (3:3:0). Prerequisite: An undergraduate major in theatre arts or consent of instructor. Consideration of the theatre of a specific historical epoch, or the comparative study of the theatre of several periods.

5310. Historical and Critical Perspectives in Theatre Arts (3:3:0). Historical and critical overview of the field including introduction to major theories and methodologies; study of particular artists; works or movements TH Aat provide insight into specific creative techniques; basic media and techniques of the field; and interdisciplinary relationships with the other arts.

5311. Advanced Directing (3:2:3). Prerequisite: Undergraduate directing course or consent of instructor. Study of procedures and techniques of directing. Enrollment in noncredit lab is required.

5312. Theatre Management (3:3:0). Study of university, community, and professional theatre management with special attention to policy making, audience building, play selection, staff organization, budget preparation, and relationships with governmental and private agencies and foundations.

5313. Dramatic Criticism (3:3:0). Principles of dramatic criticism from Aristotle to the present day.

5314. Theatre Arts in Contemporary Context (3:3:0). Study of contemporary issues in the field: Current artistic trends, theory and criticism, organization (e.g., funding, administration), and cultural policy (e.g., education, assessment, multi-cultural issues, censorship).

5315. Reading Playscripts (3:3:0). Reading and analysis of numerous playscripts and a study of the way in which they are produced in performance.

5316. Marketing the Arts (3:3:0). An approach to the field of current theories and practices of arts marketing.

5317. Funding the Arts (3:3:0). A seminar in locating and arranging funding for arts organizations.

5318. Advocacy for the Arts (3:3:0). Study of the importance and impact of external environments on the formation, production, and funding of arts organizations.


5321. Playwriting III (3:3:0). Prerequisite: TH A 5301 or consent of instructor. Study of selected topics in the theory and practice of playwriting.

5322. New Script Production (3). Practical work for playwrights participating in the production of their original full-length scripts.

5323. Problems in Lighting, Costuming, and Scenery (3:3:0). Development of scenery, costume, and lighting designs for selected plays and theatre buildings from research to presentation.


5325. Period Styles in Acting (3:3:3). Prerequisite: TH A 5329. Scene study in various periods ranging from Ancient Greece through Medieval, Spanish Golden Age, Jacobean, Restoration, and beyond. Two labs at progressive skill levels.


5327. Special Problems in Directing (3). Individual directing project on or off campus. Project must be approved by instructor before enrollment.

5328. Special Problems in Playwriting (3). Prerequisite: TH A 5301. Advanced study in developing, writing, and revising play scripts. May be repeated for credit.

5329. Advanced Scene Study (3:3:3). Scene study in realist and contemporary acting styles. Various approaches to acting in 20th century drama. Required of all first-year acting and directing MFA students.


5333. Topics in Acting (3:3:3). In-depth workshop in specific acting styles, genres, national and ethnic theatres, and techniques or training.


5341. Seminar in Dramatic Theory (3:3:0). Prerequisite: An undergraduate major in theatre arts or consent of instructor. The considerations of a specific theoretical approach to the theatre or the comparative study of several theoretical approaches. Repeatable for credit.


5350. Seminar in Theatre Research Methods (3:3:0). Examination of research and critical processes in dramatic history, theory, and performance or production through current philosophical orientations, methodologies, and techniques. Required of all graduate students.

5372. Dramaturgy (3:3:0). Study of the role of the dramaturgy in the theatre with emphasis on research, artistic collaboration, and the development of new works.

6000. Master’s Thesis (V1-6).

8000. Doctor’s Dissertation (V1-12).
Health Sciences Center

School of Allied Health Sciences
Paul P. Brooke Jr., Ph.D., Dean
Office of Admissions and Student Affairs | 2B 194 HSC
Texas Tech University Health Sciences Center | 3601 4th St.
Lubbock, TX 79430-6294 | T 806.743.3220
allied.health@ttuhsc.edu | www.ttuhsc.edu/sah

Graduate School of Biomedical Sciences
Roderick Nairn, Ph.D., Dean
2B 106 HSC | Texas Tech University Health Sciences Center
3601 4th St. | Lubbock, TX 79430-6206 | T 806.743.2556
graduate.school@ttuhsc.edu | www.ttuhsc.edu/gsbs

School of Nursing
Alexia Green, Ph.D., Dean
Nursing Program Offices | 2B 164 HSC
Texas Tech University Health Sciences Center | 3601 4th St.
Lubbock, TX 79430-6264 | T 806.743.2730
Undergraduate Program | T 800.493.3954
• Traditional | T 806.743.2737
• RN–B.S.N. | T 806.743.4843
• Second Degree | T 806.743.4844
Graduate Program | T 800.851.8240 | T 806.743.2730 (Ext. 309)

General Information
Texas Tech University Health Sciences Center cooperates with Texas Tech University to offer undergraduate and graduate programs in selected areas related to the health sciences. The Texas Tech University Health Sciences Center programs are administered through the School of Medicine, School of Pharmacy, School of Allied Health Sciences, Graduate School of Biomedical Sciences, and the School of Nursing.

Texas Tech University Health Sciences Center programs are accredited by the Commission of the Southern Association of Colleges and Schools to award bachelor’s, master’s, doctoral, and professional degrees. Questions about the accreditation status of TTUHSC may be directed to the Commission on Colleges at 1866 Southern Lane, Decatur, GA, 30333, T 404.679.4500.

The School of Allied Health Sciences offers bachelor’s, master’s, and doctor’s level studies in athletic training; clinical laboratory science; clinical services management; rehabilitation sciences; occupational therapy; physical therapy; physician assistant studies; speech-language pathology; audiology; communication sciences and disorders; speech, language, and hearing sciences (undergraduate); molecular pathology; and rehabilitation counseling. Programs are currently offered at the master’s and doctor’s level within the Graduate School of Biomedical Sciences in health services research, biotechnology; cell and molecular biology; biochemistry and molecular genetics, medical microbiology; pharmaceutical sciences, pharmacology and neuroscience, and physiology. The School of Nursing offers bachelor’s and master’s level programs and collaborates with the Texas Woman’s University College of Nursing to offer a Ph.D. in nursing.

Prospective students and others interested in services for students with disabilities should make inquiries to the program offices. Qualified students are considered for admission without regard to race, color, religion, sex, national origin, or disability.

About the School
The Health Sciences Center School of Allied Health Sciences offers the following degree programs:

• Bachelor of Science in Clinical Laboratory Science
• Bachelor of Science in Clinical Services Management
• Bachelor of Science in Speech, Language and Hearing Sciences
• Master of Science in Speech-Language Pathology
• Master of Science in Clinical Practice Management
• Master of Science in Molecular Pathology
• Master of Physician Assistant Studies
• Master of Athletic Training
• Master of Occupational Therapy
• Master of Physical Therapy
• Master of Rehabilitation Counseling
• Doctor of Audiology
• Doctor of Philosophy in Communication Sciences and Disorders
• Doctor of Science in Physical Therapy

All programs are fully accredited and most include both didactic and clinical practice components. Admission to School of Allied Health Sciences programs is competitive and by application to the school. Admission and application deadlines vary for each program.

Admission to Texas Tech University does not confer admission to the Texas Tech University Health Sciences Center School of Allied Health Sciences nor does admission to the School of Allied Health Sciences 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 sciences majors. These students will be advised through the Office of Preprofessional Health Careers at Texas Tech University, Room 340, Chemistry Building, 806.742.3078.
Department of Clinic Administration and Rehabilitation Counseling

Faculty
C. Robin Satterwhite, Ed.D., Chairperson
Professor: Brooke
Assistant Professors: Brooks, Hooten, House, Johnston, Keller, Pasupathy, Ramey, Satterwhite, Spears

About the Program
This department offers study in the following degree programs:
• Bachelor of Science in Clinical Services Management
• Master of Science in Clinical Practice Management
• Master of Rehabilitation Counseling

Undergraduate Program
Bachelor of Science, Clinical Services Management. The program objective is to expand educational access to graduates who have an Associate of Applied Science degree (A.A.S.) from a community college technical program in allied health or related disciplines. This program will provide the appropriate educational foundation and prerequisite hours to students who have an A.A.S. degree and desire to pursue a baccalaureate degree. Examples are certified occupational therapy assistants, medical technologists, physical therapy assistants, radiology technologists, respiratory care technicians, EMS technicians, or business related fields.

Curriculum. The Bachelor of Science in Clinical Services Management degree program is a “2 + 2” format designed to provide wide exposure to the skills, knowledge, and abilities needed for success in supervisory management in our healthcare delivery system. Students “attend” classes in a nontraditional format through the use of internet distance learning technology using the WebCT platform. The curriculum allows for completion of degree requirements at a pace set by the ability and availability of the student.

The program consists of 54 semester credit hours of upper-level undergraduate courses. Courses will rotate and students will register as they appear each semester. There is no prescribed sequencing of courses within the program. Students will select courses from their degree plan and register each semester to complete the 120-hour degree plan objective. The distance education format will rely primarily on internet-based (WebCT) course offerings.

Application Information. Applicants to the B.S., CSM program at TTUHSC must have earned an Associate of Applied Science degree from an accredited community college or university. Students must also complete the Texas common core courses by their anticipated graduation date to be awarded a baccalaureate degree.

Applications will be accepted on an ongoing basis. Each semester the School of Allied Health Sciences Admissions Office will provide admissions applications and processing. After receiving applications, notice of acceptance will be given 60 days prior to the next semester of class offerings.

Clinical Services Management (AHCM)
4301. Introduction to Healthcare Management (3:3:0). Reviews basic healthcare management principles and studies the roles and functions of contemporary healthcare managers.
4302. Financial Management for Clinical Supervisors (3:3:0). Examines the basic principles of financial management related to clinical support activities.
4304. Management of Clinical Services in Healthcare Organizations (3:3:0). Provides an overview of operations management and practical decision-making by analyzing the day-to-day operations in clinical support service activities.
4306. Marketing Principles and Entrepreneurship for Healthcare Professionals (3:3:0). The course covers the principles of marketing and their application in healthcare delivery systems.
4307. Material Management for Clinical Supervisors (3:3:0). An overview of identifying material requirements for a clinical support service activity, commercial sources, procurement, tendering contracts, and inventory management controls.
4311. The U.S. Healthcare System (3:3:0). A review of the healthcare system, both public and private sector examining organizational structures and the legislative, legal, and market impacts upon the current integrated delivery system.
4312. Foundations of Managed Care (3:3:0). An overview of identifying material requirements for a clinical support service activity, commercial sources, procurement, tendering contracts, and inventory management controls.
4313. Community Health Issues (3:3:0). A review of national, state, and local community agencies; preventive health services, public health, wellness, personal fitness, stress management, changing lifestyles, and analysis of national issues in the past 50 years.
4314. Quality Assurance and Risk Management (3:3:0). An overview of legal requirements and ethical standards in healthcare. Topics include the principles of total quality management (TQM), continuous quality improvement (CQI), joint commission on accreditation of healthcare organizations (JCAHO) requirements, quality assurance, risk management, outcomes measures, bench-marking, and utilization management in the clinical support service setting. Includes an overview of case law that has resulted from expectations of patients and payers, fiduciary responsibility of hospital boards and districts, and changing technology.
4315. Issues in Gerontology for Healthcare Managers (3:3:0). Overview of the physical, psychosocial, cognitive, cultural, and environmental factors that affect persons as they age. Special topics include financial and administrative issues that affect patient service, adaptive equipment, assistive technology, and community resources.
4316. Integrated Delivery Systems and Organizational Relationships (3:3:0). An overview of the components and organizational issues of integrated delivery systems.
4317. Statistics for Healthcare Supervisors (3:3:0). Introduction to descriptive and inferential statistics, quantitatitative and qualitative research designs, and relate their application for clinical and managerial operations in a healthcare organization.
4318. Healthcare Law and Ethics (3:3:0). An introduction to the regulatory, legal and ethical issues related to the healthcare delivery industry. Topics of study are directed toward reimbursement issues; utilization review; HIPPA; patient rights; malpractice; long-term regulatory issues; and federal, state and local statutes.
4320. Long-Term Care Management (3:3:0). This course is an overview of the nursing home industry and the managerial requirements associated with long-term care institutions. This course provides an introduction to state and federal regulatory aspects of facility management, care delivery systems, and reimbursement and personnel administration.
4321. Regulatory Aspects of Long-Term Care (3:3:0). This course presents an analysis of regulatory requirements in the daily operational environment of a certified and licensed long-term care facility. Topics in this course include Texas, Federal and JCAHO regulatory requirements of the care as well as architectural and life safety code compliance issues of long-term care facility operations.
4331. Leadership in Healthcare Organizations (3:3:0). An overview of management theory and leadership principles. Topics include behavioral and managerial practices with emphasis upon interpersonal relations, problem solving skills, time management, stress management, and wellness.
Graduate Program

Master of Science, Clinical Practice Management. The goal of the Master of Science in Clinical Practice Management is to offer a superior graduate-level program consisting of evidence-based research, a focused management-based curriculum, individualized instruction, and mechanisms for personal and professional growth as a clinician manager.

The MSCPM is designed to provide practicing clinicians with skills that will allow them to excel as a clinical supervisor. The increasing complexity of theoretical and applied knowledge required for practice and the growing demand for innovative problem solvers has necessitated the development of a cost-effective graduate program geared toward the practicing clinician.

Curriculum. The degree is entirely distance-based, designed specifically to increase the availability to as many working practitioners as possible. The use of WebCT in association with the Internet will provide a top-quality educational program requiring no coursework requirements on a traditional campus. The program is focused towards the practicing clinicians and their specific needs in today’s changing environment, utilizing a mechanism that is student friendly and effective. Students entering the program will be required to complete 36 semester hours to meet degree requirements. They will include 30 hours of core class requirements and 6 hours of elective courses.

Application Information. Individuals applying to the program should already hold a bachelor’s degree from a regionally accredited college or university, preferably in physical or occupational therapy, speech language pathology, nursing, athletic training, physician assistant, or any other health-related field. To be considered for admission, an overall grade point average of 2.7 on a 4.0 scale in the last 60 hours of college credit is required.

Master of Rehabilitation Counseling. The last few decades have seen an increasing recognition of the need and right of persons with disabilities to access meaningful work and employment. Rehabilitation counseling 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, non-profit 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 rehabilitation counseling professionals.

The master’s degree in rehabilitation counseling is offered by distance education and full-time residency on campus is not required. To be considered for admission, the applicant should hold a bachelor’s degree from a regionally accredited college or university and an overall GPA of 2.7. Provisional admission may be offered to applicants with a GPA of less than 2.7, but such applications are considered on an individual basis. Graduate Record Examination (GRE) or Miller Analogies Test (MAT) scores are not required for entry into the MRC program. Prior work or volunteer experience in human service settings is considered a valuable attribute for applicants, but is not mandatory. Persons with disabilities are particularly encouraged to apply.

Application Information. Students may start their program in either the fall or spring semester. Applications must be received in the School of Allied Health Sciences Admissions and Student Affairs Office by May 15 for the fall semester and October 1 for the spring semester. It is the applicant’s responsibility to assure that all supporting documentation is received by the deadline. Detailed information on application procedures and admission criteria can be obtained by contacting either the program director at 806.743.3242 or the School of Allied Health Sciences Admissions and Student Affairs Office 806.743.3220.

Upon successful completion of the professional program, students may apply to take the rehabilitation counseling certification examination, and if successful, be awarded certification as a Certified Rehabilitation Counselor (CRC).

Students will normally submit a completed application form, transcripts, a letter outlining their rationale for applying to the program, three letters of reference, and a resume or summary of previous work or volunteer experience in rehabilitation. Qualified candidates will be contacted for an interview.

Clinical Practice Management (AHCP)

5301. Foundations of Rehab (3:3:0). This course explores the history and underlying evolution of rehabilitation practice. Issues associated with the evolving position that rehabilitative providers face are addressed in this course. This course consists of current practice patterns, paradigms, and theoretical treatment models. Additionally, the driving forces that make up our clinical models are discussed and evaluated for effectiveness.

5302. Consumer Dimensions of Healthcare (3:3:0). This course examines the influence of social-economic factors such as age, gender, ethnicity, race, and financial status on healthcare delivery. The focus is to provide the practicing clinician a more effective background to facilitate a culturally competent approach to healthcare. Topics include organizational culture, customer-oriented service, contemporary demographic trends, and the implications of these trends for effective clinical practice.

5303. Research Methods (3:3:0). This course provides the basic statistical and methodological principles underlying clinical and theoretical research, research design, and techniques for conducting appropriate literature reviews. Students will critically evaluate measurement systems, interpretations of findings, and methodologies applied within the literature.

5305. Current Medical Issues in Healthcare (3:3:0). This course presents current medical issues that influence managers in today’s dynamic healthcare environment. The course will include discussion of emerging technologies, innovative medical procedures, pharmacology issues, and current epidemiological issues. Focus is on implications on managerial decisions, organizational response, and reimbursement issues.

5306. Healthcare Delivery System (3:3:0). This course provides the student with the basic understanding of the local and international origins, evolution, and trends in institutional and non-traditional healthcare delivery. Hospitals, ambulatory care organizations, managed care organizations, integrated delivery systems, and other models are discussed in detail. Additionally, various practitioners’ roles in the delivery of care within the different models are addressed.

5307. Practice Management I (3:3:0). This course discusses managerial principles, operations, and functions within healthcare delivery systems. Examination will focus on issues such as
organizational design, operational measurement, and stakeholder management. Topics include theories of leadership, management, customer service, and negotiation.

5308. Practice Management II (3:3:0). The course includes personnel management, organizational behavior, and operational issues within healthcare delivery systems. Examination will focus on individual, interpersonal, and group management; employment law; selection; discipline; motivation; staffing; productivity; and team building.

5309. Business Statistics (3:3:0). This course provides statistical knowledge needed to function in day-to-day business operations. This course will take existing data from the student's work environment and use it to chart, graph, manipulate, and extract relevant statistical information and trends. Topics include statistical concepts, methods, and practical application.

5310. Coding and Healthcare Law (3:3:0). This course addresses current CPT and HCPCS coding issues and healthcare related laws. The course will provide the learner with current coding requirements, reimbursement changes, and legal issues facing the healthcare industry. Topics include utilization review, HIPPA, patient rights, and malpractice legislation.

5311. Healthcare Finance and Resource Management (3:3:0). This course covers principles of financial management, analysis, reporting, and allocation of resources. Issues addressed are interpretation of multiple financial statements, utilization of finance-based situations and ratios, and implementation of financial analysis in planning. Additionally, focus is placed on management and allocation of resources, including materials and inventory management.

5312. Strategic Planning (3:3:0). This course addresses the dimensions of management assessment and associated business entry policy. Topics include product line development, business plan development, planning for success, and measuring and presenting outcomes. Entrepreneurial skills, marketing, project development, SWOT analysis, and market growth assessment are significant topics addressed.

5315. Professional Development and Healthcare Ethics (3:3:0). This course guides the student's growth through professional development. Topics include effective communication, education, professionalism, ethical issues, practice expectations, and promotion of the student's profession.

5316. Independent Study (3:0:0). Students are offered the choice of doing an independent comprehensive literature review, research, or practice-based work related to gerontology. Students design their study plan with faculty assistance.

5317. Public Policy and Issues in Aging (3:3:0). This course focuses on the development and evaluation of public policy, state and federal legislative processes, insurance and financial planning, retirement income, protective services, and legal issues that affect the population, especially older individuals. The course investigates current events related to the public policy implementation, using both educational and consumer-based literature.

Rehabilitation Counseling (AHRC)

5301. Foundations of Rehabilitation Counseling (3:3:0). Introduction to the history and philosophy of rehabilitation, and the legislative and policy background underpinning the modern delivery of rehabilitation counseling services. (Writing Intensive)

5302. Counseling Theories (3:3:0). Introduction to the principles of behavior, personality, and human development. Exploration of individual, group, and family counseling theories and practices as they apply to persons with disabilities.

5303. Medical Aspects of Disability (3:3:0). Introduction to the medical aspects and implications of disability. Review of medical terminology, functional limitations, medical treatment and vocational implications as they apply to VR. The identification of appropriate medical intervention resources is discussed.

5304. Vocational and Career Development (3:3:0). Major theories and approaches to career development and exploration, with particular emphasis on the importance of meaningful employment and a career focus. (Writing Intensive)

5305. Case Management (3:3:0). Review of the case management process, including case finding, service coordination, and client advocacy. Discussion of the planning process to maximize personal independence, and the role of the VR process in the identification and use of community resources. The role of computer technology in caseload management, functional assessment, job matching, etc.

5306. Psycho-Social Aspects of Disability (3:3:0). Exploration of the psychological and social aspects of disability, with particular emphasis on the impact of the disability experience from the perspective of the VR services consumer. (Writing Intensive)

5308. Research Methodologies and Interpretation of Research Findings (3:3:0). Exploration of current trends in research in rehabilitation and related fields. Basic research design, methodologies, analysis, and interpretation will be reviewed. A discussion of the applications of research methodologies, findings, and interpretations in guiding and evaluating rehabilitation counseling practice (e.g., choosing interventions, planning assessments, evaluating outcomes, etc.) is also included. (Writing Intensive)

5309. Group Counseling Theory and Practice (3:3:0). This course is designed to prepare counselors to become knowledgeable and skillful in using theoretical constructs of group counseling with individuals with disabilities. Attention is given to theories of counseling, elements of leadership in group counseling, health-related disabilities, and dysfunctional behaviors, culturally diverse perspectives, and legal and ethical issues.

5315. Special Topics/Seminars in Rehabilitation Counseling (3:3:0). Specialized seminars or courses in specific areas of VR as identified by faculty, students, or the community.

5321. Vocational Assessment (3:3:0). Exploration of the approaches, techniques, instruments, and interpretation of vocational assessment, with a strong emphasis on the identification and integration of assessment information from a multi-dimensional perspective.

5322. Employment Development and Placement (3:3:0). The roles and techniques involved in the development of employment options and placement of persons with disabilities in employment are explored in-depth. Topics to be explored include job analysis, job development, work site development, economics, role of assistive technology, job placement, employer contacts, supported employment, post placement support, job coaching, and building natural supports.

5342. Rehabilitation and Substance Abuse (3:3:0). This course will provide instruction in the issues and treatment of substance abuse as they pertain to persons with disabilities. Attention will be given to treatment modalities, exploring research topics, and counseling techniques appropriate for this area of service provision. (Writing Intensive)

5343. Introduction to Private Sector Rehabilitation (3:3:0). This course focuses on the work of rehabilitation counselors in a proprietary, or private setting, and private sector, and the means for preparing each area of employment. Comparison of private versus public sector rehabilitation philosophy. Focus on workers compensation, case management, disability management, long-term disability, and forensic rehabilitation. Examination of resources unique to the field and ethical and legal considerations of private sector rehabilitation.

5346. Psychiatric Rehabilitation (3:3:0). Addresses the issues and methods of working with persons that experience psychiatric disabilities. The course will cover areas of psychopathology, assessment issues, treatment and service options, and vocational and integration issues.

5416. Clinical Internship I (4:4:0). Supervised VR counseling internship located in a rehabilitation counseling services setting. Activities will include an orientation to program components, policies and procedures; an introduction to staff and their role and function; review of confidentiality and ethical standards; observation of all aspects of VR counseling services; work assignments encompassing the tasks of regularly employed VR counselors from intake to placement and/or discharge; reporting/charting and all documentation requirements as set forth by the organization, and evaluation of student performance (including self-evaluation, field site supervisor evaluation, and faculty supervisor evaluation).

5517. Clinical Internship II (5:5:0). Supervised VR counseling internship located in rehabilitation counseling services setting. Activities will include an orientation to program components, policies and procedures; an introduction to staff and their role and function; review of confidentiality and ethical standards; observation of all aspects of VR counseling services; work assignments encompassing the tasks of regularly employed VR counselors from intake to placement and/or discharge; reporting/charting and all documentation requirements as set forth by the organization, and evaluation of student performance (including self-evaluation, field site supervisor evaluation, and faculty supervisor evaluation).

5611. Practicum (6:6:0). Supervised rehabilitation counseling practicum fostering personal growth, skills development, and insights into the VR process and issues that affect service delivery. Includes both on-campus and classroom experiences (audio/vidotepe and individual/group interactions) and off-campus experiences in settings that facilitate the development of basic rehabilitation counseling and practice skills. This course may be repeated if the 100-hour requirement is not met.
Department of Laboratory Sciences and Primary Care

Faculty

Hal S. Larsen, Ph.D., Chairperson

Professors: Larsen, Sawyer

Associate Professors: Hubbard, Maxwell, Rice-Spearman, Taylor

Assistant Professors: Christensen, Collins, Diemer, Hamilton, Hendrix, Jankowski, O'Brien, Ream, Redman, Tatum

Faculty Associate: Chestnutt

About the Program

This department offers study in the following degree programs:

- Bachelor of Science in Clinical Laboratory Science
- Master of Physician Assistant Studies
- Master of Science in Molecular Pathology

Undergraduate Program

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 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 three options: a standard option, a premedical (dental, veterinary, pharmacy) option, and a prephysician 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.

Honors College students accepted into the CLS program may complete Honors College credit in the School of Allied Health Sciences catalog. Students who wish to apply should contact the Office of Admissions and Student Affairs at the School of Allied Health Sciences for information and forms. Contact Information: Lori Rice-Spearman, Program Director, 806.743.3252.

Clinical Laboratory Science Prerequisite Curriculum Standard Option

<table>
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<tr>
<th>Content Area</th>
<th>TTU Equivalent</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology or Anatomy and Physiology Science Elective*</td>
<td>BIOL 1403 and 1404 or ZOOL 2403 and 2404</td>
<td>3-4</td>
</tr>
<tr>
<td>Chemistry</td>
<td>CHEM 1307 &amp; 1107, 1308 &amp; 1108, and 2303 &amp; 2103</td>
<td>12</td>
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<tr>
<td>English</td>
<td>ENGL 1301 and 1302</td>
<td>6</td>
</tr>
<tr>
<td>History</td>
<td>HIST 2300 and 2301</td>
<td>6</td>
</tr>
<tr>
<td>Political Science</td>
<td>POLS 1301 and 2302</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics (Coll. Alg.)</td>
<td>MATH 1320</td>
<td>3</td>
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<tr>
<td>Microbiology</td>
<td>MBIO 3401</td>
<td>4</td>
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<tr>
<td>Electives**</td>
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<td>TOTAL</td>
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* Genetics recommended if pursuing the M.S. in molecular pathology.
** Electives must be social/behavioral sciences, humanities, and visual and performing arts.

Prephysician Assistant Option

<table>
<thead>
<tr>
<th>Content Area</th>
<th>TTU Equivalent</th>
<th>Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>Biology</td>
<td>BIOL 1403 and 1404</td>
<td>8</td>
</tr>
<tr>
<td>Anatomy and Physiology</td>
<td>ZOOL 2403 and 2404</td>
<td>8</td>
</tr>
<tr>
<td>Microbiology</td>
<td>MBIO 3401</td>
<td>4</td>
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<tr>
<td>Chemistry</td>
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<td>12</td>
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<tr>
<td>English</td>
<td>ENGL 1301 and 1302</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics (Algebra)</td>
<td>MATH 1320</td>
<td>3</td>
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<td>History</td>
<td>HIST 2300 and 2301</td>
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<tr>
<td>Political Science</td>
<td>POLS 1301 and 2302</td>
<td>6</td>
</tr>
<tr>
<td>Behavior Science</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Elective*</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>71</td>
</tr>
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</table>

* Electives must be humanities and visual and performing arts.

Premedical Option

<table>
<thead>
<tr>
<th>Content Area</th>
<th>TTU Equivalent</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>BIOL 1403 and 1404</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry</td>
<td>CHEM 1307 &amp; 1107, 1308 &amp; 1108, and 2305 &amp; 2105</td>
<td>12</td>
</tr>
<tr>
<td>English</td>
<td>ENGL 1301 and 1302</td>
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</tr>
<tr>
<td>History</td>
<td>HIST 2300 and 2301</td>
<td>6</td>
</tr>
<tr>
<td>Political Science</td>
<td>POLS 1301 and 2302</td>
<td>6</td>
</tr>
<tr>
<td>Science Elective*</td>
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<td>3-4</td>
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<td>69-70</td>
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</tbody>
</table>

* Genetics recommended if pursuing the M.S. in molecular pathology.
** Electives must be social/behavioral sciences, humanities, and visual and performing arts.

Clinical Laboratory Sciences (AHMT)

(To interpret course descriptions, see page 8.)

3015. Special Problems in Clinical Laboratory Science (V1-3). A study of specific problems in clinical laboratory science under faculty direction.

3110. Introduction to Clinical Laboratory Science (1:1:0). An overview and introduction to the profession. (Writing Intensive)

3310. Urinalysis and Body Fluids I (3:2:3). Analysis of the physical, chemical, and microscopic parameters of urine and body fluids. Special emphasis is placed on understanding kidney function and pathology.


3405. Clinical Bacteriology I (4:3:6). Study of the isolation, cultivation, identification, and susceptibility testing of pathogenic bacteria. The taxonomy, physiology, and pathogenesis of medically important bacteria are covered.

3450. Clinical Chemistry II (4:3:6). Prerequisite: 3400. The qualitative and quantitative chemical analysis of blood and other body fluids. Correlation of test results to health and disease states.


4105. Senior Seminar (1:1:0). A comprehensive review of topics in clinical laboratory science.
Physician Assistant (AHPA)

5301. Introduction to the Physician Assistant Profession (1:1:0).
This lecture series explores the role and socialization of the physician assistant as a healthcare professional. The course discusses the history of the profession, the evolution of the physician–PA team, maintenance of professional credentials, professional organizations, program accreditation, professional liability, practice issues and future trends.

5302. Medical Ethics and Jurisprudence (2:2:0).
This lecture series examines prominent ethical issues in healthcare delivery. Students are engaged in discussion of ethical dilemmas relevant to clinical practice and the unique relationship of the physician and physician assistant. The course also examines quality assurance and risk management, legal issues, practice statutes and rules regulating physician assistant practice in Texas.

5301. Clinical Laboratory (3:3:0).
This lecture series describes the significance, ordering and interpretation of laboratory studies routinely ordered in the clinical setting. Concepts of microbiology, including immunology and infectious disease will be examined. Case studies are incorporated into the teaching process.

5306. Pharmacology I (3:3:0).
This lecture series introduces the actions of basic pharmacologic agents in the human. The mechanism of action, principal actions and adverse reactions of conventional classes of drugs is examined. A review of fundamental pharmacologic calculations, measurements and symbols are performed. This course is taught in part by interactive teleconferencing from the TTUHSC campus in Lubbock and partly at the PA program main facility in Midland.

5307. Pharmacology II (3:3:0).
This lecture series builds on Pharmacology I. The action and interaction of pharmacological agents is discussed. Therapeutic applications, adverse reactions and contraindications to familiar drugs are considered. Instruction is focused in proper writing of prescriptions is presented. This is a distance-learning course taught by interactive teleconferencing from the TTUHSC campus in Lubbock.

This lecture series details the human nervous system, with emphasis on learning control of neuromuscular arrangement. The course explores neurophysiology and concepts of neurochemistry. This is a distance-learning course taught by interactive teleconferencing from the TTUHSC campus in Lubbock.

This lecture series surveys the acute and chronic disease states frequently encountered in the primary care setting as well as normal child growth and development. Students are challenged to correlate the subjective signs and symptoms with physical examination findings and clinical pathophysiology in developing critical thinking and a problem-oriented approach to diagnosis and treatment. The approach to problems in cardiology, pediatrics, speech/language and genetic disease is explored. Referral of patients to other healthcare providers or agencies is discussed. Case studies and patient education are incorporated into the teaching process.

5310. Medical Interviewing (3:2:2).
This course focuses on the “how to” aspects of patient interviewing, communication skills, and counseling skills. It stresses attributes of respect for self and others, adherence to the concepts of privilege and confidentiality in communicating with patients and a commitment to the patient’s welfare. Class sessions include lectures, interviewing labs and role-playing exercises. Small groups meet on a regularly scheduled basis each week to discuss and “actively” practice interviewing skills. This practice may include interviewing other students, simulated patients, or real patients in the hospital.

5311. Cardiology (3:3:0).
This lecture examines the complex disease states frequently encountered in the adult internal medicine setting. Students are challenged to correlate the subjective signs and symptoms with physical examination findings and clinical pathophysiology in developing a problem oriented approach to diagnosis and treatment. The approach to problems in cardiology and EKG interpretation is explored.

This lecture series examines the complex disease states frequently encountered in the primary care medicine setting. Students are challenged to correlate the subjective signs and symptoms with physical examination findings and clinical pathophysiology in developing critical thinking and a problem oriented approach to diagnosis and treatment. Referral of patients to other healthcare providers or agencies is discussed. The approach to problems in orthopedic and musculoskeletal disease processes including acute, chronic, continuing, rehabilitative care is explored. Case studies and patient education are incorporated into the teaching process.
Graduate Program

**Physician Assistant Program.** The Department of Laboratory Sciences and Primary Care offers study toward a graduate degree in Physician Assistant Studies. The master’s degree program is offered at a TUTHSC 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 3.2 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 Sciences Admissions and Student Affairs Office or the Physician Assistant Studies Program for specific requirements.

Applications are accepted through the Central Application Service for Physician Assistants (CASPA) beginning in the summer preceding the year of expected matriculation. New classes begin each year in late May. Applications must be received by CASPA by December 15 to be considered for admission into the professional curriculum, beginning the following May. 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 NCCPA 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 Sciences Admissions and Student Affairs Office or the Physician Assistant Program.

The following table illustrates the prerequisites for the Allied Health Physician Assistant Program.

### Physician Assistant Prerequisite Curriculum

<table>
<thead>
<tr>
<th>Content Area</th>
<th>TTU Equivalent</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>ENGL 1301 and 1302</td>
<td>6</td>
</tr>
<tr>
<td>College Algebra</td>
<td>MATH 1320 (or higher level math)</td>
<td>3</td>
</tr>
<tr>
<td>Biology</td>
<td>BIOI 1403 and 1404</td>
<td>8</td>
</tr>
<tr>
<td>Microbiology</td>
<td>MBIO 3401</td>
<td>4</td>
</tr>
<tr>
<td>Human An. and Phys.</td>
<td>ZOOL 2403 and 2404</td>
<td>8</td>
</tr>
<tr>
<td>General Chemistry</td>
<td>CHEM 1307 &amp; 1308 and 1107 &amp; 1108</td>
<td>8</td>
</tr>
<tr>
<td>Behavioral Science</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Human Nutrition</td>
<td>NS 3320 or 3340</td>
<td>3</td>
</tr>
<tr>
<td>Statistics</td>
<td>MATH 2300 or PSY 3400</td>
<td>3</td>
</tr>
<tr>
<td>Electives*</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>66</td>
</tr>
</tbody>
</table>

* Computer Basics and Medical Terminology recommended but not required.

**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 Science in 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 March 1 to be considered for enrollment when coursework 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:

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Chemistry with Lab.................................................8</td>
</tr>
<tr>
<td>Microbiology.................................................................4</td>
</tr>
<tr>
<td>Biochemistry........................................................................3-4</td>
</tr>
<tr>
<td>Cell Biology...........................................................................4</td>
</tr>
<tr>
<td>Anatomy &amp; Physiology..........................................................4</td>
</tr>
<tr>
<td>College Algebra.......................................................................3</td>
</tr>
<tr>
<td>General Biology......................................................................8</td>
</tr>
<tr>
<td>Organic Chemistry....................................................................8</td>
</tr>
</tbody>
</table>

5313. **Clinical Medicine IV (3:3:0).** This lecture surveys the acute and chronic disease states frequently encountered in the primary care setting. Students are challenged to correlate the subjective signs and symptoms with physical examination findings and clinical pathophysiology in developing critical thinking and a problem oriented approach to diagnosis and treatment. The family medicine relevance to genitourinary, reproductive (including family planning) and endocrinology processes including acute, chronic, continuing, rehabilitative care are explored. Referral of patients to other healthcare providers or agencies is discussed. Case studies and patient education are incorporated into the teaching process.

5403. **Clinical Medicine I (4:4:0).** This lecture series examines the complex disease states frequently encountered in the adult internal medicine setting. Students are challenged to correlate the subjective signs and symptoms with physical examination findings and clinical pathophysiology in developing critical thinking and a problem oriented approach to diagnosis and treatment. The approach to problems in pulmonology and gastroenterology are explored including the important aspects acute, chronic, continuing and rehabilitative care. The role of proper nutrition for health and disease prevention is discussed. Referral of patients to other healthcare providers or agencies is discussed. Case studies and patient education are incorporated into the teaching process.

5404. **Clinical Medicine II (4:4:0).** This lecture series surveys the acute and chronic disease states frequently encountered in the primary care setting. Students are challenged to correlate the subjective signs and symptoms with physical examination findings and clinical pathophysiology in developing critical thinking and a problem oriented approach to diagnosis and treatment. The family medicine relevance to EENT, infectious disease, dermatology, hematology/oncology and alternative/complementary medicine and the important aspects of acute, chronic, continuing and rehabilitative care are explored. Referral of patients to other healthcare providers or agencies is discussed. Case studies and patient education are incorporated into the teaching process.

5406. **Physiology (4:4:0).** This lecture series investigates human physiology through a detailed explanation of the functions and activities of bodily processes as related to healthcare. It discusses the fundamental principles of cellular physiology, considers the important concepts necessary for understanding the integrated cellular function of the human body and develops the explanation of human physiology as relevant to the health professional. The lectures assimilate an approach to major organs systems
and develop important concepts and principles necessary for understanding the integrated function of major organ systems of the human body.

5407. Pathology (4:4:0). This lecture series integrates normal human physiology with the pathological basis of disease. It illustrates abnormal cellular and physiologic functions in disease conditions. The series introduces major concepts of cellular pathophysiology and demonstrates abnormal physiologic function in disease conditions. The principles of cellular pathophysiology are applied to organ system pathology and the study of representative and important diseases. The lectures examine the function of major organ systems in addressing the pathological basis for disease and the role of the human immune system.

5501. Human Anatomy (5:4:2). This lecture/laboratory encompasses a regional study of the gross morphological features of the human body emphasizing functional anatomy. A portion of the laboratory experience involves computer-assisted learning. Students participate in human cadaver dissections or laboratory sessions held at TTUHSC in Lubbock or at other sites. The lecture portion is a combination of distance-learning and onsite activity taught in part by interactive teleconferencing from the TTUHSC campus in Lubbock and partly at the PA program main facility in Midland.

5502. Physical Examination (5:3:2). This lecture/laboratory series in which the pediatric, adult, geriatric and trauma patient physical examination is demonstrated and practiced. Students learn to apply the techniques of a comprehensive physical examination with the proper use of diagnostic instruments. Integration of the medical history (AHPA 5310, Medical Interviewing) with the physical examination is reviewed and rehearsed. The laboratory experience involves students acting as patients, other simulated patients and real patients in a long-term care facility.

6301. Clinical Medicine VI (3:3:0). This lecture series explores issues in preventive medicine, including health maintenance and risk factor reduction in the community. The course considers occupational health as well as acute, chronic and communicable diseases. Students are challenged to correlate the subjective signs and symptoms with physical examination findings and clinical pathophysiology in developing critical thinking and a problem-oriented approach to diagnosis and treatment. The family medicine relevance to geriatrics, neurology, urology, nephrology, and speech/language disorders is explored. Responses to death and dying, advance directives and end-of-life decisions are discussed. Referral of patients to other healthcare providers or agencies is discussed. Case studies and patient education are incorporated into the teaching process.

6302. Medical Spanish (3:3:0). This lecture is designed to introduce the non-Spanish-speaking healthcare provider to basic and essential medical Spanish terminology in order to elicit information necessary to obtain a comprehensive medical history and perform a physical examination. Laboratory/Radiographic results and treatment plans are also included.

6304. Healthcare Management (4:4:0). This lecture series informs and prepares the graduate for basic clinical office or hospital practice management. Discussion emphasizes reimbursement issues, coding/billing procedures, licensing and authorization of privileges that are exclusive to physician assistant practice. The impact of socioeconomic issues and healthcare delivery systems are also explored.

6306. Medical Psychology (3:3:0). This lecture series analyzes acute and chronic psychiatric diseases frequently encountered in primary care clinical practice. It also explores personality development, psychological responses to stress and psychosomatic manifestations of illness and injury, sexuality, responses to death and dying and basic counseling techniques. Adherence to the concepts of privilege and confidentiality in communicating with patients and a commitment to the patient’s welfare is stressed. The course will apply interviewing techniques developed in AHPA 5310, Medical Interviewing, to the approach to the patient with a psychiatric illness.

6404. Master Project Track (4:4:0). This course is taught during the grand rounds held at the completion of each clerkship and includes a research. The basics of biomedical research are explored prior to the writing phase. Students are instructed on the techniques necessary to search and interpret the medical literature and its application to patient care. Students prepare and submit a manuscript for evaluation. The course is designed to be a summative evaluation at the end of the didactic phase, and then administered again at the end of the clinical phase to document the student’s progress in developing a medical data base. Case studies and patient education are incorporated into the teaching process.

6501. Clinical Medicine V (5:4:2). This lecture series explores specialized and tertiary healthcare. Students learn the importance of the relationship between primary care practice and specialty practices. Areas of study include medical specialties, surgical specialties, and emergency medicine. Technical healthcare and development of the surgical patient in the preoperative, intraoperative, and postoperative phase of care.
Faculty

Steven F. Sawyer, Ph.D., Chairperson

Professor: Brooke
Associate Professors: Clopton, Daniel, Domenech, James, Knotts, Sawyer, Sizer.
Assistant Professors: Brisme, Brueilly, Cobb, Dedrick, Elliot, Geddie, K. Gilbert, J. Jackson, McGalliard, Potter, Poulson, Ramey, Scott, Smith, Steadman, Stickley, Taylor, Whisner, Wilkinson, Williamson

About the Program

This department offers study in the following degree programs:

- Master of Athletic Training
- Master of Occupational Therapy
- Master of Physical Therapy
- Doctor of Science in Physical Therapy

Athletic Training. “Certified athletic trainers (ATCs) are medical experts in preventing, recognizing, managing, and rehabilitating injuries that result from physical activity” as described by the National Athletic Trainers’ Association. Athletic trainers are integral members of the healthcare team, working under the direction of a licensed physician and in collaboration with other health care professionals, administrators, coaches, and parents. Career opportunities exist in settings such as college/university athletic departments, secondary school systems, professional sports, sport medicine clinics, corporate/industrial settings and other healthcare environments.

The master’s degree in athletic training (MAT) is a Commission on Accreditation of Athletic Training Education (CAATE) accredited entry-level program offered at the TTUHSC-Lubbock campus only. The MAT program is a 59 semester credit hour, two year lock step program combining didactic and clinical education to meet the educational needs of students. Admission into the MAT program is competitive. To be considered for admission, the candidate must hold a bachelor’s degree with a minimum cumulative GPA of 2.7 or above from an accredited college or university, completed or plan to complete all prerequisite courses prior to enrollment with a GPA of 2.7, and have some knowledge of the profession. Prerequisite courses include the following:

Semester Hours

Anatomy and Physiology ........................................... 6-8
Exercise Physiology .................................................. 3
Statistics ................................................................. 3
Nutrition ................................................................. 3
Kinesiology or Biomechanics ....................................... 3
Physics (recommended) ........................................... 3
Chemistry (recommended) .......................................... 3
Proof of First Aid and CPR from an approved provider

The Office of Admissions and Student Affairs accepts applications each year between September 1 and February 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. The entry-level master’s degree in occupational therapy is offered at the TTUHSC-Lubbock campus only. For more complete admissions information, visit www.ttuhsc.edu; or mail inquiries to Admissions and Student Affairs, MS 31220, Bethesda, MD 20824-1220 (301) 652-AOTA.

Prerequisite courses for entry into the master’s program include those listed below or their approved equivalents for a total of 90 hours.

English ...................................................................... 6
Physics and/or Biomechanics ..................................... 3
Anatomy and Physiology w/lab ................................ 6-8
Introductory Psychology .......................................... 3
Developmental Psychology (across the life span) ....... 3
Abnormal Psychology .............................................. 3
Introductory Sociology ............................................. 3
Statistics ................................................................. 3
Electives ................................................................... 58-60

TOTAL .................................................................... Minimum of 90

Physical Therapy Program. 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 healthcare 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 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 Odessa.

The Office of Admissions and Student Affairs accepts applications each year between September 1 and February 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. Class size is limited and all admissions are competitive. It is the applicant's responsibility to assure that all required supporting documentation is received by the deadline.

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 in general only 66 hours may transfer from a two-year college.

### Semester Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>English/Technical Writing</td>
<td>6</td>
</tr>
<tr>
<td>Psychology and Sociology</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Statistics</td>
<td>3</td>
</tr>
<tr>
<td>General Biology</td>
<td>8</td>
</tr>
<tr>
<td>Anatomy and Physiology</td>
<td>6-8</td>
</tr>
<tr>
<td>(one course must be upper division)</td>
<td></td>
</tr>
<tr>
<td>Gen. Chemistry (lab. required)</td>
<td>8</td>
</tr>
<tr>
<td>Gen. Physics (lab. required)</td>
<td>8</td>
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<tr>
<td>Electives*</td>
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<td>46-48</td>
</tr>
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</table>

* Recommended courses: Speech, developmental and general psychology.

Upon successful completion of the professional program, students are eligible to take the state licensure examination that is required to practice as a physical therapist.

Further information about the program, school requirements, and other related matters may be obtained from the School of Allied Health Sciences.

**Doctor of Science in Physical Therapy.** The mission of the Doctor of Science in Physical Therapy (Sc.D.) Program is to provide post-professional education to practicing physical therapists in Texas. There is a strong need for advanced clinical mastery and physical therapy, creating unique decisions and functions for practicing physical therapists. The Sc.D. program will provide practitioners with opportunities to develop the advanced knowledge base, clinical skills, and professional competencies needed for state-of-the-art evaluation and treatment of their patients, as well as the successful management of clinical services located in isolated practice settings. The Sc.D. program provides clinicians a means to develop into highly skilled participants in clinical education and research, thus contributing to the growth and development of evidence-based practice within the profession.

**Program Description.** The Sc.D. is a clinical doctoral degree designed for licensed physical therapy practitioners to develop into advanced clinicians. It emphasizes orthopaedic physical therapy in response to the great number of orthopaedic afflictions suffered by patients from the agrarian economy of West Texas. Over 80 percent of all patients seeking physical therapy services suffer from orthopaedic afflictions. Thus, this program will provide concentrated study at the applied doctoral level in the clinical science areas of orthopaedic physical therapy practice.

The Sc.D. program emphasizes orthopaedic physical therapy diagnostics and manual therapy. Courses will be conducted through a weekend format with Web-based course enhancement. Faculty and students communicate with each other in person, via phone or fax, and through the electronic mail or internet. Students entering the program should have ready access to a computer and be familiar with word processing, spreadsheet, and internet applications. Students without computers are required to purchase one and become familiar with it prior to beginning the program.

**Admission to the Program.** The following requirements will be considered for admission into the program:

- A bachelor's or master's professional degree in physical therapy
- At least one year of clinical experience
- Currently practicing as a physical therapist
- All official college transcripts
- Acceptable grade point average
- Two supporting letters of reference

**Application Process.** Although applications may be submitted at anytime, applications are considered approximately three months prior to the beginning of the summer term. It is in the best interest of the applicant to apply as early as possible. Two reference letters are required: One from a professional colleague and one from a previous or present employer.

All application materials should be sent to the Texas Tech University Health Sciences Center, Office of the Registrar, 5601 4th Street, Lubbock, Texas 79430-8310. Applicants should understand that fulfillment of the basic requirements does not guarantee admission.

**Athletic Training (AHAT)**

*(To interpret course descriptions, see page 8.)*

**5098. Practicum in Athletic Training (V1-5).** A structured remediation of clinical observation, hands-on clinical experience and skills, and/or on-field athletic training. Designed to meet the individual needs of the student.

**5099. Independent Study in Athletic Training (V1-5).** Designed to meet the professional student's particular needs and may include a structured review of previously presented classroom and/or laboratory experiences, literature review and discussion. Anatomy teaching assistants may enroll in a structured independent study.

**5105. Research Seminar (1:1:0).** This course focuses on the application of information introduced in Research Methods (AHAT 5200). Emphasis will be placed on becoming good consumers of the literature.

**5120. Research-Directed Study I (1:0:3).** Progression of the student's research project as deemed satisfactory by the student's project advisor. The job application process, cover letter, resume writing, and interviewing skills are also covered.

**5124. Seminar in Athletic Training (1:0:3).** Graduate seminar focusing on current events in athletic training and preparation for BOC certification and Texas Licensure athletic training credentialing exams.

**5126. Research-Directed Study II (1:0:3).** Completion of a research project including preparation of a manuscript suitable for publication in the sports healthcare literature.

**5130. Athletic Training Review (1:1:0).** This course is devoted to developing a study schedule and registering for Athletic Training credentialing exams. Comprehensive written and practical exams will allow students to assess their readiness to sit for the BOC exam.

**5200. Research Methods (2:2:0).** Development of a working knowledge of descriptive and experimental research techniques and statistics.

**5201. Clinical Experience I (2:0:6).** A supervised educational experience in athletic training under the supervision of a certified athletic trainer. The objective is to obtain hands-on experiences in a variety of athletic training settings including intercollegiate, high school, and clinical/industrial.

**5206. Clinical Experience II (2:0:6).** A supervised educational experience in athletic training under the supervision of a certified athletic trainer. The objective is to obtain hands-on experiences in a variety of athletic training settings including intercollegiate, high school, and clinical/industrial.

**5210. Orthopaedic Assessment I (2:1:3).** Theory, principles, clinical applications and literature review associated with athletic training evaluation, assessment, and management of musculoskeletal conditions within the head, neck, and spine.

**5222. Introduction to Clinical Education (2:0:6).** An introduction to basic skills necessary to practice as an athletic training student. The main concepts are medical terminology, basic documentation, OSHA training, first responder responsibil-
ties, tapping techniques, safe modality application, and identification of common general medical conditions. Hands-on surface anatomy with palpation labs are utilized.

5223. Special Populations and Concerns for the Athletic Trainer (2:1:3). Examination and discussion of issues related to sports nutrition and the physiological demands of exercise. Survey of injury and illness risk factors associated with sports participation by the preadolescent/adolescent, geriatric, disabled, male, and female athlete.


5225. Clinical Experience III (2:0:6). A supervised educational experience in athletic training under the supervision of a certified athletic trainer. The objective is to obtain hands-on experiences in a variety of athletic training settings including intercollegiate, high school, and clinical/industrial.

5227. Current Medical Diagnosis and Treatment I (2:2:0). Physician presentation of the medical approach to the management of musculoskeletal disorders and afflictions. Course content includes history taking, differential diagnosis, prognosis, medical and surgical management, and prophylactic measures for each condition relevant to athletic training.

5228. Clinical Experience IV (2:0:6). A supervised educational experience in athletic training under the supervision of a certified athletic trainer. The objective is to obtain hands-on experiences in a variety of athletic training settings including intercollegiate, high school, and clinical/industrial.

5302. Rehabilitation of Sports Injuries (3:2:3). Assimilation of all aspects of patient evaluation, treatment, and rehabilitation of injuries, with a focus on functional rehabilitation and return to activity.

5304. Special Topics in Athletic Training (3:3:0). This course will cover topics such as cell biology, psychosocial concerns, and pharmacology as they relate to the athletic training profession.

5305. Clinical Kinesiology (3:3:0). Problem-solving approach to the study of human movement with integration of biomechanics fundamental to understanding exercise concepts and musculoskeletal evaluation. The course includes the study of length-tension curves, active and passive insufficiencies, application of lever systems and moments of force to the human body, biomechanical properties of human tissues and joint mechanics, postural and gait assessment.

5322. Administration of Athletic Training Programs & Professional Development (3:3:0). The planning, coordinating, and supervising of all administrative components of an athletic training program. Coverage includes theories and concepts in the management of sports healthcare delivery systems, facilities, equipment, and financial resources.

5401. Orthopaedic Assessment II (4:2:6). Theory, principles, clinical application and literature review associated with athletic training evaluation, assessment, and management of musculoskeletal conditions within the upper extremity. Scenario-based evaluation of the upper and lower extremity and spine will conclude this course.


5405. Patient Evaluation and Management I (4:3:3). Development of clinical skills fundamental to patient management, including an introduction to orthopaedic assessment, clinical evaluation procedures, and presentation of the concepts and principles of athletic training evaluation procedures and management of acute injuries.

5500. Anatomy (5:3:6). Integrated study of gross human anatomy embodying gross morphology and coordinating with development and histological aspects of the body. Included is regional dissection with emphasis on integumentary, musculoskeletal, nervous, circulatory, and respiratory systems.

5506. Patient Evaluation and Management II (5:3:6). This course emphasizes the use of physical examination, and expands on the theory, principles, literature review, and clinical applications associated with patient management. Theory, principles, literature review, and clinical applications associated with athletic training evaluation, assessment and management of musculoskeletal conditions within the lower extremity are covered.

Occupational Therapy (AHOT)

5071. Fieldwork II: Specialization (3-6:0:3-6). Prerequisites: AHOT 5631, 5632. Optional additional full-time, supervised clinical experience in an area/facility of the student’s choice.

5072. Special Topics in Occupational Therapy (1-3:1-3:0). Selected topics of interest to occupational therapy. Please note that this course is not offered every year.

5073. Individual Projects (1-3:1-3:0). Approval of instructor and program director. Provides an opportunity for students to undertake a special project in an area of interest.

5105. Clinical Reasoning for Fieldwork (1:1:0). This course will prepare students for their first fieldwork rotation. Professional behavior, personal success strategies, and professional success strategies will be utilized in this course. Clinical reasoning will focus on procedural, interactive, conditional, and pragmatic reasoning.

5106. Fieldwork I:1 (1:0:3). Prerequisites: AHOT 5105, 5106, 5131, 5403, 5411. One week (40 hours), supervised, opportunity to observe clinical practice and to participate, within limits, in the occupational therapy process with individuals and groups. Students will develop clinical reasoning skills and complete treatment notes and a concept map on clientele seen as part of Fieldwork I:1.

5111. Introduction to Occupational Therapy (1:0:3). Introduction to key terms and concepts used in occupational therapy practice. Course includes self-paced learning and testing for medical terminology. This course introduces students to OT professional practice and prepares them for learning theoretical foundations and clinical reasoning.

5112. Research Seminar (1:1:0). Prerequisites: AHOT 5316, 5217. During this course students will be introduced to qualitative research methods and gather and analyze data and/or write research reports while working on a research team with classmates, OT clinicians and faculty members. Each of the four types of clinical reasoning may be employed depending on the topic of the student's collaborative project. This is a writing intensive course.

5113. Research Seminar II (1:0:3). Prerequisite: AHOT 5112. Prepares the student for participation in beginning-level research. Students continue to gather and analyze data and/or write research reports while working on a research team with classmates, OT clinicians and faculty members. Each of the four types of clinical reasoning may be employed depending on the topic of the collaborative project. This is a writing intensive course.

5200. Fieldwork I:2 (2:0:3). Prerequisites: AHOT 5105, 5106, 5405. Two weeks (80 hours), supervised, opportunity to observe clinical practice and to participate, within limits, in the occupational therapy process with individuals and groups. As possible, this will allow students to explore occupational therapy contributions in “non-traditional” or “role-emerging” settings. Students will develop clinical reasoning skills and complete treatment notes and a concept map on clientele seen as part of Fieldwork I:1.

5209. Applied Kinesiology in Occupational Therapy (2:1:3). Corequisites: AHOT 5500. An analysis of normal human movement, including explanations of how movements are produced at specific joints and their influence on occupation. This course builds a scientific basis for assessment, intervention, and procedural clinical reasoning.


5211. Occupational Therapy Process: Hand and Upper Extremity (2:1:3). Prerequisites: AHOT 5500, 5209, 5313. This course integrates anatomy, kinesiology, assessment, and intervention of the upper extremity and hand conditions. Common injuries and conditions for the shoulder, elbow, forearm, wrist, and hand are covered. Advanced splinting skills are taught. This course prepares students in the areas of assessment and intervention and clinical reasoning.
5212. Occupational Therapy Practice: Assistive Technology (2:1:3). Prerequisites: AHOT 5111, 5313. This course includes assessments and interventions involving assistive technology. Topics will include, but are not limited to, assistive devices, seating systems, various switches, communication augmentative systems, environmental controls, home assessments, ergonomic assessments, and computer systems. This course prepares the student in the areas of assessment, intervention, and clinical reasoning.

5213. Introduction to Evaluation and Intervention in Occupational Therapy (3:2:3). Prerequisite: AHOT 5111. Introduction to key OT practice skills including basic evaluation techniques, clinical documentation, clinical safety, physical handling techniques, interventions, and splinting. Prepares students in the areas of assessment, intervention, and clinical reasoning.

5214. Common Conditions in Occupational Therapy: Part 1 (2:2:0). Prerequisite: AHOT 5500, 5111. First course in a series of two courses that provides an overview of the etiology, epidemiology, signs and symptoms, associated conditions/complications, prognosis, and medical management of disorders and injuries in children and adults relevant to occupational therapy practice. This course focuses on conditions in several broad areas: neurological conditions, spinal cord injury, cancer, burns, and universal/safety precautions for healthcare providers. Examines areas of occupation, occupational performance, and occupational roles potentially affected as a result of the condition or complications of the condition (conditional reasoning). Develops students' scientific and procedural reasoning by improving one's knowledge of conditions. Examines areas of occupation, occupational performance, and occupational roles potentially affected as a result of the condition or complications of the condition (conditional reasoning). Develops students' scientific and procedural reasoning by improving one's knowledge of conditions. Examines areas of occupation, occupational performance, and occupational roles potentially affected as a result of the condition or complications of the condition (conditional reasoning).

5215. Common Conditions in Occupational Therapy: Part 2 (2:2:0). Prerequisite: AHOT 5214. Second course in an overview of the etiology, signs and symptoms, associated conditions/complications, prognosis and medical management of disorders and injuries in children and adults relevant to occupational therapy practice. This course focuses on conditions in several broad areas: neurological conditions, spinal cord injury, cancer, burns, and universal/safety precautions for healthcare providers. Examines areas of occupation, occupational performance, and occupational roles potentially affected as a result of the condition or complications of the condition (conditional reasoning). Develops students' scientific and procedural reasoning by improving one's knowledge of conditions. Examines areas of occupation, occupational performance, and occupational roles potentially affected as a result of the condition or complications of the condition (conditional reasoning).

5217. Advanced Clinical Reasoning for Fieldwork (2:2:0). Prerequisite: AHOT 5105. This course will prepare students for level II fieldwork rotations and will require students to utilize advanced clinical reasoning skills. This course will address the shift from classroom to clinic, supervision, dealing with fieldwork-related problems, preparing for the national certification exam, and planning a continuing education workshop. Clinical reasoning will focus on procedural, interactive, narrative and procedural reasoning.

5220. Case- and Population-Based Clinical Reasoning (2:2:0). Prerequisite: AHOT 5316. Research teams will develop a proposal for a beginning-level clinical research project and submit an application to the Institutional Review Board for approval of the proposal. Skills in procedural and conditional reasoning are reinforced through the process of proposal development. This course is writing intensive.

5221. Planning, Administration, and Management in Occupational Therapy Practice (2:2:0). Prerequisite: AHOT 5316. Research teams will develop a proposal for a beginning-level clinical research project and submit an application to the Institutional Review Board for approval of the proposal. Skills in procedural and conditional reasoning are reinforced through the process of proposal development. This course is writing intensive.

5222. Case- and Population-Based Clinical Reasoning (2:2:0). This course focuses on the exploration of illness and/or disability experiences from the perspectives of the individual, healthcare professional, and society. Students will examine the influences of culture, poverty and ethics on disability through conditional and interactive reasoning using case studies and personal reflection.

5223. Advanced Clinical Reasoning for Fieldwork (2:2:0). Prerequisite: AHOT 5105. This course will prepare students for level II fieldwork rotations and will require students to utilize advanced clinical reasoning skills. This course will address the shift from classroom to clinic, supervision, dealing with fieldwork-related problems, preparing for the national certification exam, and planning a continuing education workshop. Clinical reasoning will focus on procedural, interactive, narrative and procedural reasoning.

5237. Advanced Clinical Reasoning for Fieldwork (2:2:0). Prerequisite: AHOT 5105. This course will prepare students for level II fieldwork rotations and will require students to utilize advanced clinical reasoning skills. This course will address the shift from classroom to clinic, supervision, dealing with fieldwork-related problems, preparing for the national certification exam, and planning a continuing education workshop. Clinical reasoning will focus on procedural, interactive, narrative and procedural reasoning.

5309. Applying Neuroanatomy in Occupational Therapy (3:3:0). Prerequisite: AHOT 5500 A study of the structure and function of the human nervous system. Discussion of neurological diagnoses and theories for treatment. Application of those concepts to occupational therapy is made with concept and case maps, which fosters clinical reasoning.

5310. Theory and Foundations of Occupational Therapy (3:3:0). Prerequisite: AHOT 5111. Study of the philosophical, theoretical, and professional concepts that are foundational to occupational therapy as well as the study of occupation-based theories, frame of references, and treatment approaches. Develops students' theoretical reasoning.

5311. Overview and Analysis of Occupational Therapy Assessment (3:3:0). Prerequisite: AHOT 5310, 5313. Overview, analysis, and application of psychometrics, basic statistics, and characteristics of assessment instruments. Develops students' procedural and interactive reasoning skills through the administration, interpretation, and documentation of a variety of assessment tools utilized in occupational therapy practice with clients across the life span.

5312. Organization and Management in Occupational Therapy (3:3:0). Overview of management theories, budgeting, marketing, writing a business plan, strategic planning, performance appraisals, interviewing, billing and OT procedures, insurance and payment systems, and documentation issues. Prepares students in the areas of assessment, intervention, and clinical reasoning.


5314. Developmental and Assessment in Occupational Therapy (4:3:3). Prerequisite: AHOT 5310 Conceptual [and treatment] theories and practice frameworks which guide pediatric practice are linked with the treatment techniques and strategies that they guide. The occupational therapy process in pediatric settings is discussed. Skills in procedural reasoning are built through hands-on lab activities and written assignments requiring the application of theories to practice.

5315. Developmental Theory and Practice in Occupational Therapy (4:3:3). Prerequisite: AHOT 5310 Conceptual [and treatment] theories and practice frameworks which guide pediatric practice are linked with the treatment techniques and strategies that they guide. The occupational therapy process in pediatric settings is discussed. Skills in procedural reasoning are built through hands-on lab activities and written assignments requiring the application of theories to practice.

5316. Research Process in Occupational Therapy (3:3:0). Prerequisite: AHOT 5311. This course is the first in a series of research courses designed to prepare the student as both a consumer of research and a participant in beginning-level research. Content includes an introduction to the research process, resources necessary for the design and development of a research question, the selection of a research method, the identification of the research methods that are appropriate for the research question, and the application of the professional literature relevant to occupational therapy practice, professional writing skills and quantitative analysis methods (inferential statistics). Skills in procedural and conditional reasoning are developed through literature search and by writing an evidence-based practice paper. This course is writing intensive.

5317. Developmental and Assessment in Occupational Therapy (4:3:3). Prerequisite: AHOT 5311, 5403. Focus is on the skill progressions in typical and atypical development and how those sequences are used in pediatric occupational therapy assessment and treatment. Lab experiences involve the observation and assessment of children. Students apply all four types of clinical reasoning (conditional, interactive, narrative, and procedural).

5318. Occupational Therapy Practice in Adult Rehabilitation (4:3:3). Prerequisites: AHOT 5214, 5215, 5310, 5311, 5313. This course builds on student knowledge in prerequisite courses, applying specific OT techniques to diagnostic areas and individual conditions found in adults. Students will also learn how the various adult practice settings influence the clinical reasoning skills. Instruction and laboratory practice incorporate active learning to cultivate critical thinking skills needed in practice. Using competency checklists and treatment plans completed in class and in the clinic, students will apply pragmatic reasoning skills required for fieldwork.

5319. Occupational Therapy Practice with Older Adults (4:3:3). Prerequisites: AHOT 5310, 5311, 5313. Overview of the physical, psychosocial, and cognitive issues commonly seen in older adults and the impact of these conditions on occupational performance. Includes aging theory, assessment and intervention techniques training. Case and concept mapping are used to integrate clinical reasoning.

5320. Advanced Clinical Reasoning: Children and Adolescents (4:3:3). Prerequisite: AHOT 5310, 5313. Overview of clinical reasoning and treatment skills in pediatric occupational therapy practice. In treatment discussions, case mapping and supervised treatment sessions students...
practice all four types of clinical reasoning (conditional, interactive, narrative and procedural).

5500. Human Anatomy (5:3:12). Integrated study of gross human anatomy embodying gross morphology and coordinating with developmental and histological aspects of the body. Included is regional dissection with emphasis on the musculoskeletal, nervous, circulatory and respiratory. Lays a scientific foundation for other courses in the curriculum. Human cadaver dissection is the primary lab activity.

5931. Fieldwork II:1 (6:0:6). Prerequisites: Successful completion of all previous professional and fieldwork courses and approval of program director. Full-time, supervised clinical experience for 12 weeks (480 hours). Development of knowledge and skills needed for entry-level practice. Use of the occupational therapy process and clinical reasoning skills, working with individuals and groups. Introduction to clinical administration, supervision, quality assurance, consultation, and research.

5932. Fieldwork II:2 (6:0:6). Prerequisites: Successful completion of all previous professional and fieldwork courses and approval of Program Director. Full-time, supervised clinical experience for 12 weeks (480 hours). Development of knowledge and skills needed for entry-level practice. Use of the occupational therapy process and clinical reasoning skills, working with individuals and groups. Introduction to clinical administration, supervision, quality assurance, consultation, and research.

Physical Therapy (AHPT)

5099. Independent Study in Physical Therapy (1-6 hours). Prerequisite: instructor approval. This course is a structured review of previously presented classroom and/or laboratory experiences. A literature review and discussion, clinical observation and/or hands-on clinical experience may be required. Each independent study is designed to meet the student's particular needs.

5104. Clinical Education (1:1:0). This course emphasizes the different forms of communication necessary for the physical therapist student to succeed as a professional. Documentation of patient care, interpersonal relationships with patients and professionals, and patient education principles and techniques are emphasized. Grading requirements and documentation of the student's upcoming clinical education experience are included topics.

5122. Residual Limb Care and Prosthetics (1:1:0). Prerequisite: AHPT 5505, 5506 This course includes the study of technological materials and devices used in rehabilitation of patients with residual limbs, including the study of biomechanics, gait, and proper fit of upper and lower extremity prostheses. Selection criteria for prosthetics and physical therapy management for persons with recent amputations are included.

5124. Research Process 2 (1:1:0). Prerequisite: AHPT 5223. This course focuses on developing skills to critically read and analyze peer-reviewed scientific literature. Students are instructed on searching the scientific literature with electronic databases.

5128. Research Process 3 (1:1:0). Prerequisites: AHPT 5223, 5124. This course focuses on the development of writing skills and students make contributions to the scientific literature.

5152. Seminar in Physical Therapy 1 (1:1:0). This is a seminar course examining issues in the field of physical therapy. Specific subject matter varies.

5202. Principles of Kinesiology (2:1:3). This course focuses on applied human anatomy and basic kinesiology with emphasis on normal form and function as it relates to physical therapy practice. Lab experiences focus on surface anatomy and palpation.

5204. Healthcare Issues and Ethics (2:2:0). This course includes the study and application of legal guidelines and ethical principles as they relate to healthcare practice. Special emphasis is placed on ethical dilemmas relevant to the practice of physical therapy including confidentiality, informed consent and negligence. Wheelchair prescription and fitting are included. Introduction to powered mobility options, environmental controls, and augmentative communication devices are included.

5300. Clinical Applied Physiology (3:2:3). Prerequisite: AHPT 5500 This course includes the study of exercise physiology, human anatomical responses to physical training, principles of acute and chronic exercise, and physical training principles. This course also emphasizes concepts of health promotion and wellness.

5305. Clinical Kinesiology (3:2:3). Prerequisite: AHPT 5202. This course focuses on the study of human movement with integration of biomechanics fundamental to understanding exercise concepts and musculoskeletal evaluation. Ergonomics, basic anatomical, postural, and neurological issues are included. An emphasis is placed on patient education and health promotion.

5320. Early Growth and Development (3:3:0). This course focuses on the study of human growth and development issues and theories. The emphasis is on typical and atypical physical growth and motor development, and on developmental testing. The course includes the study of social-emotional, cognitive, and language development and cultural influences on growth and development.

5321. Adult Development and Aging (3:3:0). This course focuses on the physical, psychological, emotional, cultural and socioeconomic influences involved with adult development.
Considerable emphasis is placed on age-related changes and current literature regarding concepts in this area.

5325. Physical Therapy Administration (3:3:0). This course provides initial personnel management perspectives and skills needed by the entry-level physical therapist in a clinical setting. It focuses on organizing, directing, developing, and measuring the management and entrepreneurial components of physical therapist practice. Billing and coding procedures are included.

5335. Musculoskeletal Evaluation and Management 2 (3:2:3). Prerequisite: AHPT 5430. This course focuses on physical therapy examination, evaluation, prognosis, intervention, and outcomes for patients with musculoskeletal disorders of the spine, based on current research, evidence, and practice guidelines. Lab experience focuses on specific tests and measures and interventions.

5341. Developmental Evaluation and Management (2:2:3). Prerequisite: AHPT 5320. This course focuses on physical therapy examination, evaluation, prognosis, intervention, and outcomes for children with neuromuscular, musculoskeletal, or developmental disorders based on current research, evidence, and practice guidelines. The course includes the requirements for physical therapy practice in specialized settings such as neonatal intensive care, Birth to Three programs, and public schools. Lab experience focuses on specific tests and measures and interventions.

5343. Cardiopulmonary Evaluation and Management (3:2:3). Prerequisite: AHPT 5304. This course focuses on physical therapy examination, evaluation, prognosis, intervention, and outcomes for patients with cardiopulmonary disorders based on current research, evidence, and practice guidelines. Lab experience focuses on specific tests and measures and interventions.

5405. Pathophysiology of Body Systems (4:4:0). This course focuses on general physiological principles of diseases and disorders that affect organ systems of the body. There is an emphasis on integrating the interrelationship between different organ systems in the context of clinical correlations relevant to physical therapy. Neuromuscular, cardiopulmonary, endocrinology, and immune system and body fluids and electrolytes, neoplasias, and genetic disorders will be discussed from molecular and systems perspectives.

5420. Neuroscience 2 (4:3:3). Prerequisite: AHPT 5205. This course focuses on the functional relationships of neuroanatomical structures in the human nervous system. Topics include the organization of the nervous system in terms of development, mechanisms of processing of sensory and motor information (including receptors and reflexes), and pathological conditions of the nervous system.

5430. Musculoskeletal Evaluation and Management 1 (4:2:6). Prerequisite: AHPT 5506. This course focuses on physical therapy examination, evaluation, prognosis, intervention, and outcomes for patients with musculoskeletal disorders in the extremities based on current research, evidence, and practice guidelines. Lab experience focuses on specific tests and measures and interventions.

5436. Clinical Experience 1 (4:0:12). Prerequisites: AHPT 5506, 5104. This eight-week full-time clinical experience allows the student to practice all previously acquired skills and learn additional clinical skills as the culmination of physical therapy training, while acting as a student physical therapist under the direct supervision of a licensed professional. The student performs all aspects of patient care and other professional duties, and may practice in an inpatient or outpatient setting. The student practices in either a neurological setting or in an elective setting selected according to the student’s individual needs and desires. All prior coursework prepares the student, and additional information and skills are gained in the clinic.

5438. Clinical Experience 2 (4:0:12). Prerequisites: AHPT 5436, 5341, 5446. This eight-week full-time clinical experience allows the student to practice all previously acquired skills and learn additional clinical skills as the culmination of physical therapy training, while acting as a student physical therapist under the direct supervision of a licensed professional. The student performs all aspects of patient care and other professional duties, and may practice in an inpatient or outpatient setting. The student practices in either a neurological setting or in an elective setting selected according to the student’s individual needs and desires. All prior coursework prepares the student, and additional information and skills are gained in the clinic.

5441. Adult Neurological Assessment and Rehabilitation (4:3:3). Prerequisite: AHPT 5228. This course focuses on physical therapy examination, evaluation, prognosis, intervention, and outcomes for adult patients with neuromuscular disorders based on current research, evidence, and practice guidelines. Lab experience focuses on specific tests and measures and interventions.

5446. Clinical Experience 3 (4:0:12). Prerequisite: AHPT 5444, 5341, 5438. This eight-week full-time clinical experience allows the student to practice all previously acquired skills and learn additional clinical skills as the culmination of physical therapy training, while acting as a student physical therapist under the direct supervision of a licensed professional. The student performs all aspects of patient care and other professional duties, and may practice in an inpatient or outpatient setting. The student practices in either a neurological setting or in an elective setting selected according to the student’s individual needs and desires. All prior coursework prepares the student, and additional information and skills are gained in the clinic.

5448. Clinical Experience 4 (4:0:12). Prerequisites: AHPT 5444, 5341, 5446. This eight-week full-time clinical experience allows the student to practice all previously acquired skills and learn additional clinical skills as the culmination of physical therapy training, while acting as a student physical therapist under the direct supervision of a licensed professional. The student performs all aspects of patient care and other professional duties, and may practice in an inpatient or outpatient setting. The student practices in either a neurological setting or in an elective setting selected according to the student’s individual needs and desires. All prior coursework prepares the student, and additional information and skills are gained in the clinic.

5500. Human Anatomy (5:3:6). This course is the integrated study of human gross anatomy including gross morphology, coordinated with developmental and histological aspects of the body. Regional dissection is included with emphasis on the integumentary, musculoskeletal, nervous, circulatory, and respiratory systems.

5505. Patient Evaluation and Management 1 (5:3:6). Prerequisite: AHPT 5500. This course focuses on basic examination skills and tests and measures used in a variety of settings. It also includes beginning level intervention skills, and principles of care used in acute care settings, including medical terminology and basic documentation skills. Beginning-level problem solving skills are developed using case studies.

5506. Patient Evaluation and Management 2 (5:3:6). Prerequisite: AHPT 5505. This course focuses on examination, tests and measures, and interventions used in a variety of settings. The course emphasizes the use of physical agents and modalities. This course includes the care of burns and wounds.

6201. Advanced Clinical Practice for Shoulder Afflictions (2:2:0). Examination and treatment of dysfunction in the shoulder complex. Lecture components include advancements in patho-anatomy, biomechanics, interpretation of functional examination, pathology, and treatment approaches to arthritis/arthritis, impingement, instability, labral afflictions, and soft tissue lesions. Clinical laboratory sessions include surface anatomy, basic functional examination and special tests, soft tissue treatments, and joint-specific treatment measures.


6204. Advanced Clinical Practice for Hip Afflictions (2:2:0). Examination and treatment of dysfunction in the hip complex. Lecture components include advancements in patho-anatomy, biomechanics, interpretation of functional examination,
6205. Advanced Clinical Practice for Knee Afflictions (2:2:0). Examination and treatment of dysfunction in the knee. Lecture components include advancements in patho-anatomy, biomechanics, interpretation of functional examination, pathology, and treatment approaches. Clinical laboratory sessions include surface anatomy, basic functional examination and special tests, soft tissue treatments, and joint-specific treatment measures.

6206. Advanced Clinical Practice for Ankle and Foot Afflictions (2:2:0). Examination and treatment of dysfunction in the ankle/foot complex. Lecture components include advancements in patho-anatomy, biomechanics, interpretation of functional examination, pathology, and treatment approaches. Clinical laboratory sessions include surface anatomy, basic functional examination and special tests, soft tissue treatments, and joint-specific treatment measures.

6207. Advanced Clinical Practice for Upper Cervical Spine Afflictions (2:2:0). Examination and treatment of dysfunction in the upper cervical complex. The lecture components of this course include advancements in patho-anatomy, biomechanics, interpretation of functional examination, pathology, and treatment approaches. Clinical laboratory sessions include surface anatomy, basic functional examination and special tests, soft tissue treatments, and joint-specific treatment measures.


6210. Advanced Clinical Practice for Thoracic Spine and Rib Afflictions (2:2:0). Examination and treatment of dysfunction in the thoracic spine and ribs. Lecture components include advancements in patho-anatomy, biomechanics, interpretation of functional examination, pathology, and treatment approaches. Clinical laboratory sessions include surface anatomy, basic functional examination and special tests, soft tissue treatments, and joint-specific treatment measures.

6211. Advanced Clinical Practice for Sacroiliac and Lumbar Primary Disc Afflictions (2:2:0). Examination and treatment of lumbar 1 degree disc-related disorders, as well as dysfunction at the sacroiliac joint. Lectures include advancements in patho-anatomy, biomechanics, interpretation of functional examination, pathology, and treatment approaches. Clinical laboratory sessions include surface anatomy, basic functional examination and special tests, soft tissue treatments, treatment to 1 degree disc afflictions, and joint-specific treatment measures to the sacroiliac joint.


6213. Clinical Internship (2:2:0). Prerequisite: 6 of the previously listed clinical courses. Sc.D., PT. students will be given the opportunity to develop and enhance advanced clinical skills associated with evaluation and treatment of the extremities. Students will be guided by a clinical mentor and will use skills in problem solving, diagnosis, treatment selection, and management implementation for orthopaedic dysfunction in the spine and or extremities.

6214. Clinical Internship 2 (2:2:0). Prerequisite: All 12 of the previously listed clinical courses. Students, guided by a clinical mentor, will be given the opportunity to develop and enhance advanced clinical skills associated with evaluation and treatment of the spine.

6215. Research Internship I (2:2:0). Prerequisite: AHPT 6201 through 6212. Sc.D. students will be given the opportunity to conduct directed literature review and develop hypotheses, that pursue a line of inquiry that is agreed upon between the student and faculty mentor. A manuscript will be required for course completion.

6216. Research Internship II (2:2:0). Prerequisite: AHPT 6201 through 6212, and 6215. Sc.D. students will continue the process begun in AHPT 6215, with emphasis on the development of concepts and hypotheses, analysis and synthesis of ideas, and the development of current research practices in the pre-elected area of study. A manuscript will be required for course completion.


6302. Issues in Orthopaedic Physical Therapy and Manual Therapy 2 (3:3:0). Survey of selected topics in basic and applied science as they relate to orthopaedic physical therapy and manual therapy, including neurophysiology, histology, exercise physiology, and applied medical science.

6303. Basic and Applied Science in Orthopaedics (3:3:0). Prerequisite: AHPT 7302 or consent of the instructor. Addresses select basic science processes associated within the musculoskeletal system, including histology and physiology of bone, cartilage, tendons, and ligaments. Muscle physiology will be discussed as it relates to orthopaedic dysfunction.

6304. Orthopaedic Physical Therapy Screening (3:3:0). Enhances knowledge and clinical skills designed to assist in the screening of patients for orthopaedic conditions which require examination by a physician. Radiology and laboratory screening are presented as special topics to further the therapist’s understanding of pathology and the clinical implications of patient presentation.

6305. Updates in Orthopaedic Surgical Management (3:3:0). Evaluation of recent developments from the literature in orthopaedic surgical management, in terms of indications, methodology, and rehabilitation. Emphasis will be placed on the implications of each procedure for rehabilitation.

6311. Clinical Studies in Anatomy: a Lab Course (3:3:0). Evaluation of prosected human cadaveric specimens with emphasis on musculoskeletal structures. Each session will include a short lecture at the beginning for review of anatomical structures to be observed, as well as the relevance of each of those structures to examination and treatment of orthopaedic afflictions.

6312. Neuroscience in Orthopaedic Physical Therapy (3:3:0). Prerequisite: AHPT 6302 or consent of the instructor. Addresses select neuroscience processes associated within the musculoskeletal system, including the neuroscience of motor planning, initiation and control; sensory function and integration; and dysfunction of the nervous system as it relates to orthopaedic afflictions such as pain production and control.

6313. Biomechanics in Orthopaedic Physical Therapy (3:3:0). Theory and application of biomechanical principles to orthopaedic physical therapy practice emphasizing the biomechanics of musculoskeletal structures, including bone, cartilage, ligament, tendon, and muscle tissue. Emphasis will be placed on joint and tissue mechanics will be related to musculoskeletal injury and orthopaedic affliction.


6315. Advanced Healthcare Administration (3:3:0). Addresses fundamental and contemporary issues in organization and management of physical therapy services, with an emphasis on the ambulatory setting. Topics include design, structure, and effective operation of contemporary healthcare services; strategic planning, conflict resolution, managed care systems, insurance regulations, and third-party reimbursement.
6316. **Marketing in Outpatient Physical Therapy** (3:3:0). Addresses fundamental and contemporary issues in marketing as they apply to outpatient physical therapy services, including epidemiology, market analysis, managerial economics, financial planning, marketing strategy decisions, structural relationships, marketing tactics, forecasting, marketing ethics, and entrepreneurship.

7000. **Clinical Research/Education Project (V1-3)**. Independent clinical project centering on either a clinical research or teaching project. Content and goals will be established through mutual consent between the student and the project committee.

7104. **Clinical Research/Education Project Presentation (1:1:0)**. Student presents the development and findings from the clinical project with either a research or teaching emphasis before the Sc.D., PT, faculty, other students, and clinicians from the community.


7302. **Non-Parametric Statistics for Clinical Research (3:3:0)**. Methods in non-parametric statistical analysis and qualitative design. Explore various non-parametric tools and include one, two, and k-sample designs. Emphasis on clinical research using either single-case or small clinical samples.

7303. **Instructional Technology in Allied Health** (3:3:0). Use of technology in educational instruction and evaluation including computer-assisted instructional design, as well as Web-based educational models and design.

7304. **Educational Evaluation in Allied Health** (3:3:0). Discussion of educational evaluation theory and tools, emphasizing methods of objective and performance-based evaluation. Students will learn to draft specific evaluation measures used in an educational setting.

7305. **Curriculum Design and Teaching in Allied Health** (3:3:0). Discussion of the theories and applications of curriculum design, emphasizing applications to entry-level and post-professional educational settings in physical therapy.

7306. **Parametric Statistics for Clinical Research** (3:3:0). Introduces various tools used in parametric statistical analysis including correlation, regression, t-test, analysis of variance, and selected multivariate designs. Emphasis will be placed on research findings that evaluate specific clinical populations.

**Department of Speech, Language, and Hearing Sciences**

**Faculty**

**Rajinder K. Koul, Ph.D., Chairperson**

**Professor:** Koul
**Associate Professors:** Paschall, Sancibrian
**Assistant Professors:** Aoyama, Bogschutz, Corwin, Dembowski, Gustafson, Hicks, Keller, Zhang, S. Zupancic
**Clinical Instructors:** Arnold, Dragga, LeFave, Perry, Sims, L. Zupancic
**Instructor:** Flores

**About the Program**

This department offers study in the following degree programs:

- Bachelor of Science in Speech, Language and Hearing Sciences
- Master of Science in Speech-Language Pathology
- Doctor of Audiology
- Doctor of Philosophy in Communication Sciences and Disorders

**Undergraduate 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) a 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 Sciences, 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 following 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.

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 Sciences.
Speech, Language and Hearing Sciences (AHSL)

Speech-Language Pathology (AHSL)

3219. Supervised Observation Laboratory: AUD (2:2:0). A supervised observation of various audiomotoric procedures and patient types. Discussion of clinical protocols, assessment, and management for individuals with hearing disorders. (Writing Intensive)

3220. Supervised Observation Laboratory: SLP (2:2:0). A supervised observation of clinical assessment and management of individuals with speech and language disorders. May be repeated for credit. (Writing Intensive)

3221. Clinical Methods (2:2:0). A review of clinical methodologies used in speech-language pathology and audiology, including specific clinical activities, report writing, and professional development. (Writing Intensive)

3320. Introduction to Communication Disorders (3:3:0). An overview of communication disorders which can affect children and adults. The impact of these disorders on an individual’s psychological, social, emotional, cultural, and educational status will be discussed.

3321. Speech Science (3:3:0). An introduction on the production, perception, and processing of speech, including acoustic phonetics.


3323. Language Development (3:3:0). An introduction to current theories of language and language development, including methods of obtaining and analyzing language samples. (Writing Intensive)

3324. Language Disorders (3:3:0). An emphasis on language disorders across the life span. Topics include the nature and etiologies of language disorders, with an overview of the principles of treatment. (Writing Intensive)


3422. Articulation and Phonological Disorders (4:3:1). The basic principles of assessment and treatment for children and adults with phonological and articulatory disorders. Includes lab for development of relevant clinical transcription skills. (Writing Intensive)

3427. Phonetics (4:3:1). An introduction to production and classification of speech sounds, principles and theories of phonetics, emphasis on development of clinical transcription skills. (Writing Intensive)

3442. Clinical Audiology (4:3:1). An introduction to hearing assessment techniques and auditory disorders, with adaptation of testing for special populations such as infants, geriatrics, and different language backgrounds. The student will gain proficiency with pure-tone, speech, and impedance testing techniques.

4280. Clinical Practicum: SLP (2). A supervised clinical experience in case management. May be repeated for credit.

4290. Clinical Practicum: Audiology (2). A supervised clinical experience in case management. May be repeated for credit.

4300. Senior Research Project (3). An individual study of a specific problem in one of the areas of speech or hearing disorders. Students are required, in advance of registration, to consult with the instructor and secure approval of the specific project to be pursued.

4344. Multicultural Issues in Communication Disorders (3:3:0). Assessment and management of communication disorders in culturally and linguistically diverse populations. Topics include typical and disordered communication, and perspectives on clinical, theoretical, and research implications.

4410. Basic Sign Language for the Health Professions (4:4:0). An intensive, introductory course in American Sign Language. Issues related to deaf culture and the use of signs in healthcare settings will be discussed.

4426. Neural Bases of Speech and Language (4:3:1). An exposure to neuroanatomy and neurophysiology through individualized and interactive learning. This course provides strong foundations for future graduate courses in aphasia and motor speech disorders, as well as an understanding of neuroanatomy, neurophysiology, and neuropsychologies of speech and language.

4427. Assessment Procedures (4:3:1). The development of competencies in the selection, use, and interpretation of a wide range of speech and language assessment procedures for children and adults from diverse etiologic, cultural, and ethnic groups.

4446. Diagnostic Audiology (4:3:1). This course will present advanced diagnostic techniques for children and adults including those from diverse populations or with special needs.

5010. Independent Study (V1-3). A course used for individual leveling plans created by the program director.

5100. Foundations (1:1:0). A forum for the discussion of professional issues in communication disorders. May be repeated for credit.

5110. Capstone Course (1:1:0). A comprehensive review of the nature of human communication and speech disorders in prevention, assessment and intervention for communication and swallowing disorders; and research principles and professional issues.

5143. Aural Rehabilitation Lab (1:0:1).

5201. Speech Science: Clinical Applications (2:2:0). Review of basic concepts of acoustic and articulatory phonetics, with specific reference to their application to clinical populations. No communication disorders. Selective literature review illustrating acoustic and physiologic analysis of speech disorders, and the application of laboratory and clinical instrumentation for the analysis of disordered speech and language.

5239. Evidence-Based Practice in Communication Disorders (2:2:0). This course in designed to prepare students for undertaking research by reviewing research findings and current practice. Students are expected to learn about research findings in evidence-based practice.

5243. Aural Rehabilitation (2:2:0). The study of aural habilitation and rehabilitation procedures, intervention techniques, and the use of amplification for hearing-impaired children and adults. Psychosocial issues of hearing loss will be discussed in relation to the hearing impairment as well as the cultural history of the patient.

5310. Special Topics in Speech Pathology (3:3:0). Directored study for non-thesis candidates. May be repeated for credit.

5320. Research Design (3:3:0). The purpose of this course is to summarize the basic concepts of science and research. Emphasis will be placed on the nature of experimental designs and basic inferential statistical analyses. Discussions will also include the application of advanced statistical techniques in clinical settings. (Writing Intensive)


5330. Dysphagia (3:3:0). A detailed study of the anatomy and physiology of normal and disordered swallowing patterns,
Graduate Program / Speech, Language and Hearing Sciences

**Master of Science in Speech-Language Pathology.** This professional education requires two years of study beyond the baccalaureate level. Admission into the professional program begins in February of each year for the fall class. Class enrollment is limited each year and admission is competitive. To be considered for admission into the professional program, the applicant must meet a number of requirements that include a baccalaureate degree in communication disorders or completion of leveling coursework. Students have two options for satisfying the requirements for the comprehensive examination. They may conduct an independent investigation culminating in a master’s thesis or complete a two-day written examination.

**Professional Doctorate in Audiology (Au.D.).** This professional education requires four years of study beyond the baccalaureate level which includes a professional externship year. Admission into the professional program begins in fall of each year. Class enrollment is limited each year and admission is competitive. To be considered for admission into the professional program, the applicant must meet a number of requirements that include a baccalaureate degree in communication disorders, basic sciences, or a similar program. Admissions are also open to current holders of a master’s degree in audiology via application and portfolio review. Students will complete both a clinical research project and comprehensive audiology examinations before graduation.

Students enrolled in either program are required to adhere to all policies as outlined by the department, the school, and the Health Sciences Center. Students also have specific rights as outlined in the student handbook. Students must maintain a 3.0 grade-point average to continue in the program.

**Doctor of Philosophy in Communication Sciences and Disorders.** Admission to the Ph.D. program in communication sciences and disorders requires the recommendation of the department as well as the approval of the Dean of the School of Allied Health Sciences. The objective is to prepare students for careers in research and teaching. Admission to the degree program is competitive and decisions on admissions normally are made each spring for the fall semester. The department awards teaching and research assistantships on a competitive basis. Applicants for the program may specialize in audiology, communication sciences, or speech-language pathology. Doctoral students in audiology may pursue research in electrophysiology, psychoacoustics, auditory physiology, cochlear implants, hearing instrumentation, and pediatric audiology. Doctoral students who specialize in speech-language pathology may pursue research in phonology, speech perception, bilingualism, developmental disabilities, neurogenic communications disorders, and augmentative communication. Contact information: Dr. Raj Koul (rajinder.koul@ttuhsc.edu) or Dr. Candace Hicks (candace.hicks@ttuhsc.edu).

For additional information concerning a career in either speech-language pathology or audiology contact the department. Graduate clinical programs are accredited by the Council on Academic Accreditation of the American Speech-Language-Hearing Association.

747. Aural Rehabilitation Lab (1:0:1). Designed to provide clinical training on using additional testing and techniques to expand the diagnostic and rehabilitative focus of audiologists.

7164. Auditory Electrophysiology Lab (1:0:1). Hands-on experiences with equipment utilized to allow students to practice and demonstrate the skills instructed in “auditory electrophysiology” lecture course.

7166. Research Colloquium (1:1:0). Seminar discussion on applied research techniques in the field of audiology. Emphasis is placed on analyzing research applied to patients across the life span.


7249. Auditory Neuroscience (2:2:0). This course will assist students in understanding anatomy/physiology and cell biology of the auditory system from cochlea up to cortex, subsidized by introduction of nervous system and neural signaling and virtual lab exercise. Completion of this course should establish a solid base for understanding, applying, designing, and initiating different auditory test applications and research.

7251. Counseling in Audiology (3:3:0). An introduction to counseling the communicatively disordered and their families. Emphasis on special education, vocational and emotional issues surrounding hearing impairment. Considerations of special populations and life span issues will be included.

7264. Auditory Electrophysiology (2:2:0). Covers theoretical knowledge and applied skills of normal and pathological auditory systems.

7267. Clinical Electrophysiology (2:2:0). This course will provide clinical instruction in the application of electrophysiological testing techniques and interpretation. Emphasis will be placed on evaluation of auditory functional and site of lesion testing, protocols, and interpretation.

7321. Clinical Observation and Methods (3:0:3). Supervised observation of clinical assessment and management of individuals with communication disorders.

7322. Auditory Processing Disorders (3:3:0). This course is designed to address the functional aspects of the auditory system. It will include an overview of anatomy, testing for auditory processing...
disorders, differential diagnosis, and management. It will also include information on differentiating functional difficulties as symptomology of other disabilities versus auditory processing disorders as the primary diagnosis.

7324. Language Disorders (3:3:0). An emphasis on language disorders across the life span. Topics include the nature and etiologies of language disorders, with an overview of the principles of treatment.

7340. Auditory Anatomy and Physiology (3:3:0). This course is an in-depth exposure to the structure and function of the auditory system. Emphasis is placed on peripheral structure and function, up to and including important brainstem nuclei. An introduction to cortical structures and processing is presented.

7343. Cortical Connections (3:3:0). Seminar course related to cortical processing speech and other acoustic signals and perceptual stimuli. Includes a discussion of cellular, intracellular, and cortical communication and connections involved in analysis and perception of sound, including speech.

7345. Advanced Amplification (3:3:1). Advanced topics in clinical amplification including programmable instruments, digital processing and digital amplification, multichannel cochlear technology and other noise reduction systems will be presented.

7347. Aural Rehabilitation (3:3:0). The study of aural habilitation and rehabilitation procedures, intervention techniques, and the use of amplification for hearing-impaired children and adults. Psychosocial issues of hearing loss will be discussed in relation to the hearing impairment as well as the cultural history of the patient.

7348. Educational Audiology (3:3:0). Audiological considerations in educational settings. The incidence, treatment and educational sequelae of hearing impairment in the auditory-verbal classroom will be covered.

7352. Clinical Disorders in Audiology (3:3:0). The purpose of this course is to provide students with information to understand the following areas: (1) the anatomy and physiology of auditory mechanisms; (2) etiology and pathology of auditory disorders; and (3) the developmental and otologic evaluation/management of auditory disorders.

7355. Instrumentation and Conservation (3:3:0). This course will present the physiologic and behavioral effects of noise exposure, hearing conservation programs and clinical services to children and adults from diverse populations. Instrumentation associated with the measurement of noise across multiple environments will be a central aspect of the course.


7390. Clinical Practicum—Individualized Experience (3:3:0). The course is intended to allow for individualized student instruction of clinical procedures and protocols. This course may be repeated for credit.


7442. Psychoacoustics and Auditory Perception (4:3:1). This course will present the physiological bases of auditory perception and the corresponding behavioral manifestations including higher level cognitive and developmental aspects of speech perception. Includes laboratory.

7446. Diagnostic Audiology (4:3:1). This course will present advanced diagnostic techniques for children and adults including those from diverse populations or with special needs.

7450. Pediatric Audiology (4:3:1). A study of behavioral and objective audiologic evaluation, as well as the habilitation and rehabilitation of infants and children.

7544. Amplification (5). A comprehensive introduction of amplification devices, methods, and techniques. Consideration of special populations and their diverse needs will also be included.

8000. Doctoral Research Seminar (6). Students will enroll in pre-dissertation research projects. This project is expected to make a significant contribution to the student’s chosen area of study.

8320. Cortical Connections (3:3:0). This course will study the functional significance of the complex array of connections between cortical regions and subcortical regions that support cortical functions. Topics covered include brain and language, animal communication, motor speech processes, the descending pathways, memory and attention, cortical processing of pitch information, thalamocortical organization, cerebellum and cognition, perception of complex sounds, and sound source localization.
Graduate School of Biomedical Sciences

Roderick Nairn, Ph.D., Dean

About the Program

Development of a strong program of graduate education in the basic biomedical and related health sciences is one of the responsibilities and goals of the Texas Tech University Health Sciences Center. Present-day medicine cannot exist outside the academic framework and intellectual discipline which the biological, chemical, and medical sciences provide. Graduate training in these areas, an integral component of the overall program of the Health Sciences Center, is provided by the Graduate School of Biomedical Sciences.

Opportunities are offered for study and research leading to the following degrees:

- Master of Science in Biotechnology
- Master of Science in Cell and Molecular Biology
- Master of Science in Biochemistry and Molecular Genetics
- Master of Science in Medical Microbiology
- Master of Science in Pharmaceutical Sciences
- Master of Science in Medical Microbiology
- Master of Science in Biochemistry and Molecular Genetics
- Master of Science in Cell and Molecular Biology
- Doctor of Philosophy in Cell and Molecular Biology
- Doctor of Philosophy in Biochemistry and Molecular Genetics
- Doctor of Philosophy in Medical Microbiology
- Doctor of Philosophy in Pharmaceutical Sciences
- Doctor of Philosophy in Pharmacology and Neuroscience
- Doctor of Philosophy in Physiology

Individual program descriptions can be found within the specific department or program sections in this catalog.

Students interested in pursuing a career in academic medicine as a physician-scientist may apply to the M.D.–Ph.D. program. The M.D.–Ph.D. program permits a student to complete the requirements of both the medical and graduate portions of the program, and health insurance for the duration of the stipend. This program is designed to be completed in seven years and will provide the student with rigorous training in both clinical medicine and biomedical research. Students interested in this program should indicate their interest on the application forms submitted to the Texas Medical and Dental Schools Application Service (TMDSAS) at www.utsystem.edu/tmdsas.

The graduate courses listed in this section are available to graduate students at Texas Tech University or other qualified applicants as a graduate interdisciplinary student (GIDS). Applications must be made to the Graduate School of Biomedical Sciences, the application fee ($45 for U.S. citizens and $45 for international students) paid, and registration accomplished at TTUHSC. Currently enrolled TTUHSC and Texas Tech students are exempt from the fee.

Further information about graduate programs offered through the Health Sciences Center Graduate School of Biomedical Sciences may be obtained by contacting the Graduate School of Biomedical Sciences, Texas Tech University Health Sciences Center, Lubbock, Texas 79430, 806.743.2556, 800.528.5391, FAX 806.743.2656, or e-mail graduate.school@ttuhsc.edu. For more information and to apply online, visit www.ttuhsc.edu/gsbs.

The policies and procedures for the Graduate School of Biomedical Sciences differ from those established by Texas Tech University Graduate School. Policy information is available on the Web site at www.ttuhsc.edu/gsbs. Programs are subject to change, depending on availability of resources and educational goals.

Interdisciplinary Courses

The following interdisciplinary courses are available in addition to course offerings in the individual departments and divisions throughout the Graduate School of Biomedical Sciences.

**Graduate School of Biomedical Sciences (GSBS)**

*(To interpret course descriptions, see page 8.)*

5101. Responsible Conduct of Research (1:1:0). This course will address the regulatory and ethical environment of today’s biomedical research using lectures and case discussions. Course is required for all GSBS students.

**Neuroscience (GIDN)**

5910. Integrated Neurosciences (9:8:1). This cooperative, interdepartmental effort offers a detailed study of the nervous system. Students examine both gross and fine structure and function from the subcellular through the behavioral level. (GPHY 5910)

**Health Communications (GIHC)**

5319. Seminar in Current Topics of Information Sciences (3:3:0). Prerequisite: Must be enrolled or accepted in a graduate program. Course varies each semester emphasizing information science topics including Internet training. (Writing Intensive)

**Preventive Medicine (GIPM)**

6303. Principles of Epidemiology (3:3:0). Considers the variety, behavior, and distribution of both infectious and noninfectious diseases in populations. It will show how an understanding of the etiology, transmission, and pathogenesis of disease can lead to methods of disease prevention. Emphasis will be placed on the principles and methods of epidemiologic investigation. Arranged.

6304. Topics in Community Health (3:3:0). Consider various topics in epidemiology, preventive medicine, and community health not normally included in other courses. Emphasis on the interactions of various agencies in the community to abate hazards and promote health. May be repeated for credit with change in content. Arranged.
Department of Cell Biology and Biochemistry

Faculty

Harry M. Weitlauf, M.D., Chairperson

Professors: Chilton, Everse, Faust, Hutson, Pence, Reid, Stocco, Weitlauf

Associate Professors: Beale, Coates, Cornwall, Coué, Hardy, Lee, Little, MacDonald, Pelley, Pfarr, Sridhara, Whelly, Schneider, Williams, Wright

Assistant Professors: Dufour, Thomas, Urbatsch, Webster

About the Program

This department offers study in the following graduate degree programs:

- Master of Science in Cell and Molecular Biology
- Master of Science in Biotechnology
- Master of Science in Biochemistry and Molecular Genetics
- Doctor of Philosophy in Cell and Molecular Biology
- Doctor of Philosophy in Biochemistry and Molecular Genetics

Cell and Molecular Biology. The purpose of the Ph.D. program is to prepare students for careers in cellular, developmental, and molecular biology. Employment opportunities for graduates of this program include traditional university professorships, positions in the biotechnology industry, and governmental appointments. The curriculum centers around three courses: Cell Function and Structure, Advanced Cell Biology, and Biochemistry. During the first year of study, the student will progress through a minimum of three laboratory rotations in order to determine his or her research interest. Dissertation topics can be pursued in the following areas: Regulation of gene expression, RNA processing, the role of transcription factors in cellular transformation and differentiation, cell cycle, cell and molecular biology of intercellular communication, control of microtubular function, embryo implantation, molecular mechanisms of epididymal sperm function, proliferation and differentiation of gonadal cells, molecular basis of gamete interactions, molecular regulation of ovarian development and function, and development and regeneration of the nervous system.

The Master of Science program in Cell and Molecular Biology offers two instructional tracks. The research track is designed for students who need extra preparation for the Ph.D. program or whose career track is geared toward technical or staff level positions in industry or universities. Students undertake study and research in similar areas as that of the Ph.D. program. The education-medical track is designed for students whose eventual goal is towards a teaching career in the anatomical sciences. Students in the education-medical track take courses in the anatomical sciences and in modern instructional methods and design, and will participate in the teaching mission of the medical school as teaching assistants. Students with undergraduate degrees in biology and chemistry are well suited for this program. Please contact Dr. Martine Coué 806.743.1558 or Pam Roddy 806.743.2701 for more information concerning admission to this program.

Biochemistry and Molecular Genetics. The biochemistry and molecular genetics program is designed to prepare students for research and teaching careers in biochemistry and molecular biology as related to the medical and life sciences. Admission to the program requires prior coursework in mathematics, general physics, organic chemistry, analytical chemistry, and biological science. Students with deficiencies in any of these areas may be conditionally admitted pending successful completion of leveling courses prescribed by the program. Students are required to take GBCH 5421, 6522, 6533, and 6441 or their equivalents as determined by the department. In addition, students are urged to take or to have successfully completed courses in physical chemistry, statistics, and computer programming.

Generally within 12 months after enrolling in the program, each student will take a preliminary examination in general biochemistry. After a major portion of the required coursework has been completed, the student must pass a qualifying examination that consists of two parts: a written portion in the form of an original research proposition designed to demonstrate the student's comprehension of some field of study related to biochemistry, ability to develop hypotheses, and competence in the design and conduct of promising and significant experiments; and an oral portion in which the student is expected to defend the proposition and demonstrate an understanding of the fundamental concepts and principles of biochemistry that relate to the proposition.

During the first year in the program, students will rotate through at least three different laboratories to broaden their education and research experience and to help them identify a field of specialization for their dissertation research. Major areas of current research include studies of the regulation of gene expression in a variety of eukaryotic tissues, biochemistry of development, mechanisms of hormone action, biochemistry of neoplasia, genetics of somatic cells in culture, biochemistry of membranes, mechanisms of enzyme action, and recombinant DNA.

Information covering specific requirements for degree programs is contained in the departmental Graduate Student Handbook. For more information, contact Dr. Sandra Whelly, the program advisor, at 806.743.2503.

Biotechnology Master of Science Biomedical Track. Although this program is listed among degrees offered by the Department of Cell Biology and Biochemistry, it is an interdisciplinary degree supported by all basic science departments in the Health Sciences Center. The Texas Tech University general academic campus administers a complimentary track in Applied Science Biotechnology.

The biomedical track is a 21-month curriculum consisting of two terms (nine months) of coursework and 12 months of full-time laboratory research. It is typically a nonthesis degree with an optional thesis at the end of the second year by arrangement with the advisor. The research component may be completed either at the HSC campus or at a biotechnology industry laboratory. Students who choose to do their research at the HSC campus will work with a member of the biotechnology graduate faculty. All biotechnology graduate faculty have active research programs that emphasize use of molecular biology methods.

Prerequisites for the program include a bachelor’s degree in science with at least one semester of organic chemistry. Please contact Dr. Daniel Hardy 806.743.2053 for more information regarding admission to the program.

Cell and Molecular Biology (GANM)

5110, 5210. Histology I and II (1:1:1, 2:2:4). Correlation of the structural organization with functional specializations of human tissues and organs; clinical correlations are also an integral part. Since this is the histology course offered in the first-year medical curriculum, departmental approval prior to registration is required.

5112, 5212, 5312. Laboratory Methods (1:0:2, 2:0:4, 3:0:6). Prerequisite: Consent of instructor. Taken as (1) a hands-on introduction to the laboratories in which a student may wish to do dissertation research or (2) after a student is well established in his or her dissertation research, additional rotations can be done to gain expertise in techniques applicable to the student's research but not available in the faculty advisor's laboratory. Repeatable if different methods are covered for each registration.

5113, 5213, 5313. Selected Topics in Cell and Developmental Biology (1:1:0, 2:2:0, 3:3:0). Topics vary from semester to semester and reflect the research interests of the faculty. Recent offerings have included oncogenes and molecular biology
of hormone action. May be repeated provided that different topics are covered for each registration.

5321. Advanced Gross Anatomy (3:0:3). An in-depth gross anatomical study devoted to one of the following areas of emphasis: topographical anatomy, head and neck, thorax and abdomen, pelvis and perineum, extremities and back, depending on the student’s needs. The course may be repeated for credit if another area of emphasis is selected.

5611. Gross Anatomy (6:2:10). A highly integrated introductory course of anatomical study (including human prosection) which embodies the gross morphology of the body and coordinates it with the clinical, developmental, and microscopic aspects of the human body.

6000. Master’s Thesis (V1-6).
6340. Cell Function and Structure (3:3:0). Topics include structure/function relationships involved in DNA replication, transcription, protein tracking, cytoskeletal organization and function, cell division, and adhesion.
6620. Advanced Cell Biology (6:6:0). Prerequisite: GANM5321. This course will cover advanced topics in cell biology and is designed for senior students who have completed introductory cell biology courses. The topics covered will include regulatory mechanisms that control the development of metazoan organisms, cell cycle regulation, cancer, and reproductive and stem cell biology.

7000. Research (V1-12).
7101. Seminar (1:1:0). Students will attend and participate in departmental seminars.
8000. Doctor’s Dissertation (V1-12).

Biochemistry and Molecular Genetics (GBCH)

5421. General Biochemistry (6:6:0). Human life processes at the molecular level with emphasis on biochemical homeostasis and control mechanisms.
6000. Master’s Thesis (V1-6).
6101. Biochemistry Conference (1:1:0). Informal conferences between faculty and students considering topics of current interest in biochemistry not normally included in other courses. Literature search, evaluation, organization, writing, and oral presentation by the student are emphasized. Different topic each semester. May be repeated for credit.
6135, 6235, 6335, 6535. Topics in Biochemistry (1:1:0, 2:2:0, 3:3:0, 5:5:0). Prerequisite: Consent of instructor. Lectures in specific areas of biochemistry not normally included in other courses. May be repeated for credit with change of content.
6441. Cell Signaling (4:4:0). Topics include structure and function of membranes and organelles, mechanisms of transcription and translation, and regulation of cellular processes including both the endocrine and nonendocrine aspects.
6522. Molecular Biology of Eukaryotes: Nucleic Acids (5:5:0). Prerequisite: GBCH 5921 or equivalent and consent of instructor. Study of nucleic acid biosynthesis and gene expression and its control in eukaryotes, as well as studies and applications of principles of genetic engineering to nucleic acid structure and molecular biology.
6533. Molecular Biology of Eukaryotes: Proteins (5:5:0). Prerequisite: GBCH 5421 or equivalent and consent of instructor. An in-depth description of the process of protein biosynthesis, degradation and regulation in eukaryotes, as well as the study of physicochemical methods used to characterize proteins and their molecular structure.

Biotechnology, Medical (GBTC)

6000. Master’s Thesis (V1-6).
6301. Introduction to Biotechnology (3:3:0). Broad coverage of topics with high current interest and utility to the medical and agricultural biotechnology industries. Emphasizes application of technologies.
7000. Research (V1-12).
Department of Microbiology and Immunology

Faculty
Ronald C. Kennedy, Ph.D., Chairperson

Professors: Chaffin, Fralic, Hamood, Kennedy, Nairn, Rolfe, Straus
Associate Professors: Bright, San Francisco, Siddiqui
Assistant Professors: Chiriva-Internati, Filleur, Reilly
Research Assistant Professors: Colmer-Hamood

Joint Faculty: Cobos, Frezza, Griswold, Jumper, Lampe, Lyte, Pence, Schneider, Williams

About the Program
This department offers study in the following graduate degree programs:
• Master of Science in Medical Microbiology
• Doctor of Philosophy in Medical Microbiology

The coursework and information presented below describe those aspects of the programs of particular interest to students choosing to study and conduct research in the areas of medical microbiology which are traditionally found in a medical center.

Students seeking information concerning admission to the graduate program in medical microbiology, training, and research opportunities or teaching and research assistantships in the department should contact the chairperson of the department. For further information, see www.ttuhsc.edu/som/microbiology.

Microbiology (GMIB)
5181, 5281, 5381. Selected Topics in Microbiology (1:1:0; 2:2:0; 3:3:0). Prerequisite: Consent of instructor. Specific areas in microbiology and immunology or related research not normally included in other courses. May be repeated for credit.

5240. Cellular and Molecular Immunology (3:0:3). Core curriculum course. Consent of instructor. Cellular and Molecular Immunology is a study of the development of the immune system, and immunity against microbes and tumors, and diseases caused by inappropriate immune responses.

5350. Introduction to Microbiology (3:0:3). Core curriculum course. Consent of instructor. A study of the classification, structure, virulence and pathogenesis of the microorganisms that cause human disease and the ways to control these organisms.

5399. Introduction to Microbiological Research (3:0:3). Exposure to experimental design, research methodology and data analysis in the laboratories of three faculty members.

6000. Master’s Thesis (V1-6).

6201. Medical Parasitology (2:1:1). Overview of important protozoan helminth, arthropod infections, and vectors of disease.

6237. Medical Mycology for Graduate Students (2:2:0). Prerequisite: Biochemistry and general microbiology. Current knowledge of the immune system and immunity, including defenses against microbes and tumors and diseases caused by inappropriate immune responses.

6347. Medical Mycology, Parasitology, and Virology (3:3:0). Prerequisite: GMIB 6345, 6346, 6347 or consent of instructor. Current knowledge of the immune system with emphasis on molecular and cellular interactions.

6335. The Pathogenesis of Infectious Disease (3:3:0). Prerequisite: Medical or pathogenic microbiology or consent of the instructor. A study of the processes by which microorganisms produce disease in humans and how the host responds.

6345. Cellular and Molecular Immunology (3:3:0). Beginning student. A study of the development of the immune system and immunity, including defenses against microbes and tumors and diseases caused by inappropriate immune responses.

6346. Medical Bacteriology (3:3:0). Beginning student. A study of bacterial classification, structure, virulence and pathogenesis of the bacteria that cause human disease and the ways to control these organisms.

6347. Medical Mycology, Parasitology, and Virology (3:3:0). Beginning student. A study of the classification, structure, and pathogenesis of fungi, parasites, and viruses that cause human disease and the ways used to control these organisms.

7000. Research (V1-12).

7101. Microbiology Seminar (1:1:0).

8000. Doctoral Dissertation (V1-12).

Department of Pharmaceutical Sciences

Faculty
Quentin R. Smith, Ph.D., Chairperson

Professors: Bickel, Mehvar, Smith, Thekkumkara, Wang
Associate Professors: Abbruscato, Gunaje, Rao, Siddiqui, Srivastava, Srivenugopals, Stoll, Weis, Wright
Assistant Professors: Ahsan, Arumugam, Borges, Lockman, Moridani, Shek, Veronin, Weidanz

About the Program
This department offers study in the following graduate degree programs:
• Master of Science in Pharmaceutical Sciences
• Doctor of Philosophy in Pharmaceutical Sciences

The department is housed in the Texas Tech School of Pharmacy at Amarillo. Pharmaceutical sciences encompass all those areas of pharmacy research that pertain to drug design, delivery, formulations, and therapeutics. The faculty members of the department exhibit interests and expertise in drug design and delivery, pharmacology, pharmaceutics (including formulations and industrial pharmacy), pharmacokinetics, drug receptor modeling, molecular and reproductive biology, biochemistry, pathophysiology, immunology and cancer therapy, toxicology, and pharmacy administration. The graduate program in pharmaceutical sciences is designed to educate students for careers in pharmaceutical industry, academia, and federal agencies including the FDA. Admissions requirements include a degree in pharmacy, chemistry, biology, or related areas, acceptable GRE scores, and a TOEFL score of at least 550 (written) or 213 (electronic) for international students. Teaching and research assistantships are awarded on a competitive basis. The departmental courses are listed below. For more information contact Dr. Thomas Abbruscato, graduate program advisor, 806.356.4015 ext. 287 or email pharmsci.gradadv@ttuhsc.edu.

Pharmaceutical Sciences (GPSC)
5101. Topics in Pharmacology (1:1:0). Special topics in pharmaceutical sciences that are not normally included in other courses. May be repeated for credit with change in content.

5201. Topics in Pharmacology I (2:2:0). Special topics in pharmaceutical sciences that are not normally included in other courses. May be repeated for credit with change in content.

5210. Graduate Pharmaceutics Part I. This course will cover various pharmaceutical dosage forms and drug delivery systems.
Department of Pharmacology and Neuroscience

Faculty

Reid L. Norman, Ph.D., Chairperson

Professors: Lombardini, Norman, Strahlendorf, Syapin, Tenner, Young

Associate Professors: Blanton, Dickerson, Freeman, McMahon, Roghani

Assistant Professors: Frame, Popp

About the Program

This department offers study in the following graduate degree programs:

- Master of Science in Pharmacology and Neuroscience
- Doctor of Philosophy in Pharmacology and Neuroscience

The objective is to prepare students for careers in research and teaching. The faculty of the program seeks to foster a creative and productive research atmosphere, to provide encouragement and positive challenge, and to equip students with the intellectual tools they will need to be effective teachers and investigators. Specialized research training is available in the areas of biochemical pharmacology, circadian pharmacology, autonomic pharmacology, cardiovascular pharmacology, neuropharmacology, and molecular pharmacology.

Pharmacology (GPHM)

5101, 5201, 5301. Topics in Pharmacology (1:1.0, 2:2.0, 3:3.0). Prerequisite: Consent of instructor. Specific areas of pharmacology not normally included in other courses. May be repeated for credit with change in content.

5225. Techniques in Pharmacological Research (2:2:6). Prerequisite: Consent of instructor. Standard experimental techniques used in pharmacological research are explored through a series of hands-on laboratory exercises. Numerous techniques common to research in many fields will be introduced.

5303. Principles of Pharmacology (3:3:0). Prerequisite: Biochemistry and physiology or consent of instructor. A study of the principles and theories of pharmacokinetics and pharmacodynamics of chemicals in relationship to dose and time. The course will consist of lectures, discussions, and oral presentations of original papers by the class and is oriented for both pharmacology and non-pharmacology majors.

5312, 5313. Medical Pharmacology I and II (3:8:0). A study of pharmacology with emphasis on mechanisms of drug action, interaction, and therapeutics.

5326. Pharmacology of the Autonomic Nervous System (3:3:0). Prerequisite: GBCH 5921, GPHY 5803, GPHM 5613 or equivalent. A conceptual study of drugs which alter the function of the autonomic nervous system. Emphasis will be on mechanisms by which drugs affect transmitter synthesis, release, uptake, and metabolism as well as receptor function.

5336. Molecular and Cellular Pharmacology (3:3:0). Prerequisite: Consent of instructor. Course focuses on experimental methods employed in pharmacological research. Topics include expression cloning, photo-affinity labeling, gene microarrays, patch clamp recording, etc. This course will consist of selected topics, lectures, and student discussions.

5337. Neuropsychopharmacology (3:3:0). Prerequisite: Consent of instructor. A structured in-depth study of specific topics concerning neurochemical pharmacology, behavioral pharmacology, and neuropsychopharmacology. Topics to be studied will vary each semester. The course will consist of lectures, discussions, and oral presentations of original papers by the class.

6000. Master’s Thesis (V1-6).

6331. Principles of Toxicology I (3:3:0). Prerequisite: Graduate standing in the department or consent of instructor. First half of a two-semester course. Examines the foundations of...
Health Sciences Center

5302. Human Physiology (3:2:0). This introductory graduate course provides the student with a basic understanding of the organ systems of the human body, including their functions, regulation and interactions. No prerequisites are required.

5350. Laboratory Methods in Physiology (3:0:3). Fundamental principles of physiology are explored through a series of hands-on laboratory exercises. Numerous techniques common to research in many fields will be introduced.

5360. Laboratory Rotations as an Introduction to Modern Physiological Research (3:3:0). Prerequisite: Consent of instructor. Students work in a specific laboratory assisting an ongoing research project or conducting an independent research effort.

Toxicological sciences. Covers principles, disposition, and first half of toxicological mechanisms.


7000. Research (V1-12).

7101. Pharmacology Seminar (1:1:0). Prerequisite: Consent of instructor. This weekly seminar is designed to provide training in research data presentation and analysis. A required course for pharmacology and neuroscience graduate students, it is taken during the fall and spring semesters. Students present seminars to the entire department. Seminar topics vary but the two primary formats are journal club and presentation of data involving the student's research. Part of the grade is determined by class participation.

8000. Doctoral Dissertation (V1-12).

Department of Physiology

Faculty

Luis Reuss, M.D., Chairperson

Professors: Davies, Janssen, Kurtzman, Laski, Lutherer, Orem, Pressley, Reuss, Strahlendorf

Associate Professors: Escobar, Fowler, Martinez-Zagulian

About the Program

This department offers study in the following graduate degree programs:

- Master of Science in Physiology
- Doctor of Philosophy in Physiology

The program is designed primarily to train persons for careers in biomedical research in medical institutions or industry, but can accommodate those interested in alternative careers in physiology. Faculty research programs are diverse, encompassing the general areas of cellular and systemic physiology. Specific areas include membrane channels and transporters, pH and Ca2+ homeostasis, excitation-contraction coupling, apoptosis, neuronal protective mechanisms, hypertension, shock, and mechanisms of rhythm generation such as sleep and control of respiratory and cardiovascular function.

Advanced courses in specialized areas are taught under the topics course and are designed to fit a student's specific needs.

Applicants should have a demonstrated interest in research and preferably have identified an area for their dissertation research. All candidates for graduate degrees who hold assistantships must fulfill certain requirements while appointed as assistants.

GPHY 5302 is normally a prerequisite for all courses in or above the 6000 level but may be waived for students in other programs with approval of the instructor. Enrollment in GPHY 5302 is limited to students admitted to degree programs and requires approval by the course director.

Physiology (GPHY)

(To interpret course descriptions, see page 8.)

5400. General Physiology (4:4:0). An introduction to the physical properties that underlie physiology at the molecular and cellular level. Lecture material will be supplemented by readings from the textbook, as well as discussion of seminal papers. There are no prerequisites; completion of an undergraduate course in physical chemistry or thermodynamics is recommended.

5904. Systems Physiology (9:4:0). An introduction to the organ systems of the body, with emphasis on their regulations and interactions. The course material is presented in the context of a larger medical school course, thus individual lectures, small group conferences, and computer exercises are provided at regular intervals during the semester.

6000. Master's Thesis (V1-6).

6105, 6205, 6305. Topics in Physiology (1:1:0; 2:2:0; 3:3:0). Prerequisite: Consent of instructor. Advanced training in a specialized area of physiology. May be repeated for credit with change in content.

6210. Advanced Cardiovascular Physiology (2:2:0). Prerequisite: consent of instructor. Advanced level coverage of topics in cardiovascular physiology with much material being covered in reviews of the research literature.

6311. Cellular and Molecular Physiology (3:3:0). Prerequisite: GPHY 5302 or consent of instructor. The study of the structure and function of ion channels and transporters, excitation-contraction coupling, and mechanisms of cell damage and death.

6314. Membrane Biophysics (3:3:0). Students are introduced to the mechanisms of ion transport through membrane channels; models of membrane excitability; molecular structures of ion channels and their physiological functions.

6318. Physiology of the Neuron (3:3:0). Prerequisite: Consent of the instructor. A contemporary and comprehensive coverage of the biology of nerve cells.

7000. Research (V1-12).

7101. Physiology Seminar (1:1:0). This weekly seminar series provides invited speakers from this and other departments as well as other universities and laboratories with the opportunity to present their current research in some area of physiology.

7102. Readings in Physiology (1:1:0). Students review literature on special topics of research. (Students may be assigned or may select these topics.) May be repeated for credit.

7103. Supervised Teaching in Physiology (1:1:0). Supervised teaching experience including leading laboratory groups and small-group discussions and presenting lectures in some departmental courses (all under faculty supervision).

8000. Doctoral Dissertation (V1-12).
School of Nursing

Alexia Green, Ph.D., Dean

Faculty

Medical Center Hospital Regional Dean Endowed Chair: Sharon Cannon, Ed.D.

Associate Dean for Administrative and Student Affairs: Barbara Johnston, Ph.D.

Associate Dean for Practice and Research Program: Christina Esperat, Ph.D.

Associate Dean of Outcomes Management and Evaluation: Yondell Masten, Ph.D.

CH Foundation Professor: Esperat
Garrison Professor: Owen
Horn Professor: Ketner

Professors: Armstrong, Boswell, Cannon, Decker, Fenton, Green, Johnston, Masten, Valadez, Yoder-Wise

Associate Professors: Allen, Ashcraft, Dadich, Galvan, Merrill, V. Miller, Saunders, Sridaromont, Young


Instructors: Billings, M. Chavez, R. Chavez, Coates, Curran, Davenport, Gallegos, Gregory, Hernandez, Hust, McMurry, J. Miller, Moore, Thal

About the Program

The School of Nursing is located in the Texas Tech University Health Sciences Center (TTUHSC), which is a legally separate institution from Texas Tech University.

The School of Nursing is an integral part of the Texas Tech University Health Sciences Center and is committed to improving the availability and quality of nursing care. 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 healthcare environment. Essential 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 for students who are not licensed as registered nurses and an online RN to B.S.N. degree completion program for students who are licensed as registered nurses. The school also offers an online second degree accelerated B.S.N. program. This program is designed for students with baccalaureate degrees in non-nursing fields, initially targeting recruits from both the Austin/Hill Country and West Texas communities. The program goals are to prepare graduates to provide and direct care to individuals, families, and communities with complex healthcare needs in structured and unstructured settings, to prepare graduates with a professional commitment to nursing excellence for present and emerging healthcare arenas and to provide a foundation for future graduate education in nursing. The school also offers full-time online RN–M.S.N. and B.S.N.–M.S.N. programs focusing on the rural nurse educator. The traditional Master of Science in Nursing degree focuses on such specialties as education, administration, and clinical research management while offering nurse practitioner tracks in family, acute care, pediatrics, and geriatrics. The School of Nursing collaborates with the School of Nursing at the Texas Woman’s University College of Nursing to offer a Ph.D. in Nursing.

Program Accreditation: The School of Nursing is accredited by the Commission on Collegiate Nursing Education (CCNE) and the Board of Nurse Examiners for the State of Texas. The CCNE can be contacted at 1866 Southern Lane, Decatur, Georgia 30033, T 404.679.4500. The Board of Nurse Examiners for the State of Texas can be contacted at PO. Box 430, Austin, TX 78767-0430, T 512.305.7400.

Undergraduate Program

Bachelor of Science in Nursing. The student may earn the Bachelor of Science in Nursing (B.S.N.) degree at TTUHSC through three tracks: traditional or unlicensed track, licensed RN-B.S.N. track (current RN without B.S.N. degree), or second degree Web-based B.S.N. track (first baccalaureate in another field of study). For each of the three tracks, the program is designed to produce graduates who can achieve the following:

1. Provide patient-centered care for individuals, families, and communities.
2. Work as an effective member of interdisciplinary teams to ensure continuous and safe patient care.
3. Employ evidence-based practice (EBP) by integrating current research with clinical expertise and patient values to provide optimal patient care.
4. Apply quality improvement measures that continually improve health outcomes consistent with current professional knowledge.
5. Utilize informatics to enhance patient safety, manage knowledge and information, make decisions, and communicate more effectively.
6. Provide safe care to individuals, families, and communities through individual performance and system effectiveness.

Traditional Bachelor of Science in Nursing Track

Donna C. Owen, Ph.D., Department Chair
Undergraduate Traditional Program

For students who are not licensed registered nurses (traditional student), the baccalaureate degree program offers the opportunity to complete the degree in six consecutive semesters, 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. At the time of application submission, applicants must have completed the Nurse Entrance Test (NET) and a minimum of 40 credit hours of the required non-nursing prerequisite courses, including at least three of the four required science courses.

Application Information. Application for admission to the Bachelor of Science in the traditional undergraduate track is for students who are not currently licensed as registered nurses. Application deadline is February 1 for the next summer semester. Application to the TTUHSC does not guarantee admission. A minimum cumulative grade point average of 2.5 is required to be considered for admission to the School of Nursing. Admission to the program is competitive. Although academic criteria (cumulative GPA, grades earned in science courses, and failed/repeated courses) are the most important factors in admission consideration, additional non-academic information can be considered. Non-academic factors include but are not limited to the following:

- Extracurricular activities
- Work experience
- Diversity of experience, such as study abroad, knowledge of other cultures, proficiency in other languages
- Permanent resident of a TTUHSC service area county
- First generation college student
- English as a second language
- Socioeconomic status
- Prior enrollment at Texas Tech
All applicants will be reviewed in an individual and holistic manner. No single factor will determine a student’s admission.

Applicants who receive offers of admission will be required to consent to a criminal background check. A history of criminal conduct or convictions may result in withdrawal of the admission offer. See “Criminal Background Checks” section of the TTUHSC Student Affairs Handbook for the School of Nursing policy. The Health Sciences Center policy may be found at HSC OP 10.20.

The Board of Nurse Examiners has identified certain circumstances that may render a potential candidate ineligible for licensure as a registered nurse in the State of Texas. See “Eligibility to Take NCLEX-RN Examination” section of the School of Nursing Catalog or access the BNE Web site (www.bne.state.tx.us) for declaratory order information.

General requirements for the traditional B.S.N. track and for the RN to B.S.N. students include the following:

<table>
<thead>
<tr>
<th>Content Area</th>
<th>TTU Equivalent</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>ENGL 1301 and 1302</td>
<td>6</td>
</tr>
<tr>
<td>Statistics*</td>
<td>MATH 1342, 1442, 2342, or 2442</td>
<td>3</td>
</tr>
<tr>
<td>Anatomy and Physiology</td>
<td>ZOOL 2403 and 2404</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry</td>
<td>CHEM 1305 &amp; 1105 OR 1107</td>
<td>4</td>
</tr>
<tr>
<td>Microbiology</td>
<td>MBIO 3400</td>
<td>4</td>
</tr>
<tr>
<td>Food &amp; Nutrition</td>
<td>F N 1325 OR 1410 OR 3320</td>
<td>3</td>
</tr>
<tr>
<td>Visual &amp; Performing Arts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Science</td>
<td>POLS 1301 and 2302</td>
<td>6</td>
</tr>
<tr>
<td>General Psychology</td>
<td>PSY 1300</td>
<td>3</td>
</tr>
<tr>
<td>Introductory Sociology</td>
<td>SOC 1301 OR 2302</td>
<td>3</td>
</tr>
<tr>
<td>U.S. History</td>
<td>HIST 2300 and 2301</td>
<td>6</td>
</tr>
<tr>
<td>Life Span Human Development</td>
<td>HDFS 2303</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>55</td>
</tr>
</tbody>
</table>

* Students must complete 3 credit hours of mathematics to meet Core Curriculum requirements. If the student does not take mathematics statistics, then an additional mathematics course must be completed to meet the Core requirement.

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.

**Bachelor of Science in Nursing Curriculum for Traditional B.S.N. Track**

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.

**Summer–4th Semester**

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS 3206, Introduction to Nursing as a Profession</td>
</tr>
<tr>
<td>NURS 3420, Health History and Physical Assessment</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
</tbody>
</table>

**Fall–5th Semester**

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS 3115, Concepts of Pathophysiology</td>
</tr>
<tr>
<td>NURS 3313, Care of the Healthy Aging Adult</td>
</tr>
<tr>
<td>NURS 3314, Nursing Management of Pharm. Therapy</td>
</tr>
<tr>
<td>NURS 3500, Fundamentals of the Nursing Profession</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
</tbody>
</table>

**Spring–6th Semester**

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS 2420 or 2421, Microbiology with lab</td>
</tr>
<tr>
<td>BIOl 2401 and 2402, Anatomy and Physiology I and II</td>
</tr>
<tr>
<td>PSY 2314, Growth and Development</td>
</tr>
<tr>
<td>MATH 1342, 1442, 2342 or 2442, Statistics</td>
</tr>
<tr>
<td>HECO 1322 or BIOl 1322, Food and Nutrition</td>
</tr>
<tr>
<td>SOC 1301, Sociology</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
</tbody>
</table>

The prerequisite for all students with a bachelor’s degree in any field of study earned in the State of Texas is 27 semester hours. All general education courses must be completed prior to taking the first nursing course. Additional prerequisites for applicants with a bachelor’s degree in another field of study earned outside the State of Texas include 6 hours of U.S. history (HIST 1301 and 1302) and 6 hours of political science (GOVT 2301 and 2302 or 2305 and 2306).

Second Degree Web-Based B.S.N. Program

**Cathleen Collins, M.S.N., Acting Department Chair**

Non-Traditional Undergraduate Programs

Texas Tech Health Sciences Center School of Nursing offers a second degree Web-based accelerated baccalaureate nursing program for students with previous baccalaureate degrees. This program initially targeted recruits from both the Austin/Hill Country and West Texas communities. Program goals are derived from the mission of the School of Nursing as well as the organizing framework for the program. These goals are to prepare graduates for providing and directing care to individuals, families, and communities with complex healthcare needs in structured and unstructured settings; prepare graduates with a professional commitment to nursing excellence for present and emerging healthcare arenas; and provide a foundation for future graduate education in nursing.

All qualified applicants are carefully evaluated individually and holistically. Admission to the second degree nursing program is highly competitive and only the most qualified applicants are selected. Applicants to the second degree B.S.N. program can seek admission to the School of Nursing through one entry point in the school’s curriculum.

**NOTE:** Application is an online process available at the School of Nursing Web site (www.ttuhsc.edu/son). Admission requirements for all campuses should be mailed to the Registrar’s Office, School of Nursing Admissions Evaluator, Texas Tech Health Sciences Center, 3601 4th St., MS 8310, Lubbock, TX 79430.

Prerequisite general education required courses for the second degree Web-based B.S.N. track include the following:

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS 3302, Pathophysiology</td>
</tr>
<tr>
<td>BIOl 2420 or 2421, Microbiology with lab</td>
</tr>
<tr>
<td>BIOl 2401 and 2402, Anatomy and Physiology I and II</td>
</tr>
<tr>
<td>PSY 2314, Growth and Development</td>
</tr>
<tr>
<td>MATH 1342, 1442, 2342 or 2442, Statistics</td>
</tr>
<tr>
<td>HECO 1322 or BIOl 1322, Food and Nutrition</td>
</tr>
<tr>
<td>SOC 1301, Sociology</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
</tbody>
</table>
Sample Degree Plan for Second Degree with B.S.N. Track

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Semester</td>
<td>NURS 3205</td>
<td>Basic Skills for Nursing Practice: Clin. Comp. I</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>NURS 3906</td>
<td>Foundations for Professional Nursing Practice I</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>NURS 3307</td>
<td>Health Assessment</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 3308</td>
<td>Pharmacology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 3315</td>
<td>Nursing of the Developing Family</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 3211</td>
<td>Clinical Competence II: Practicum in the Developing Family and Selected Foundation Skills</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>2nd Semester</td>
<td>NURS 3911</td>
<td>Chronic Care Nursing</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>NURS 4312</td>
<td>Child Health Nursing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 4314</td>
<td>Mental Health Nursing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 4214</td>
<td>Nursing Research</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>NURS 4216</td>
<td>Clinical Competence III: Practicum, Mental Healthcare, and Child Healthcare</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>3rd Semester</td>
<td>NURS 4316</td>
<td>Health Promotion Teaching in Nursing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 4317 CL</td>
<td>Community Nursing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 4318</td>
<td>Management and Leadership in Nursing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 4919 CL</td>
<td>Acute Care Nursing</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>NURS 4219 CL</td>
<td>Nursing Integration: Clin. Comp. IV: Integ. Nurs.</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

Registered Nurse–Bachelor of Science in Nursing Track

Students who are licensed as RNs can apply to the RN to B.S.N. track to further their education beyond the diploma or associate’s degree level. 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 advanced roles such as nursing faculty, nurse practitioners, and nursing managers. Texas Tech University Health Sciences Center School of Nursing offers an exciting baccalaureate degree program that enables nurses to meet healthcare challenges. These courses are accessible on the Web, allowing students to access academic education by computer at work or at home.

This degree requires 123 credit hours, including the following: 55-58 credits of general education requirements, 30 credits of RN-B.S.N. course sequence, and 38 advanced placement credit hours (basic nursing program). The program length is two semesters for a full-time student. Enrollment can begin in the fall, spring, and summer semesters. 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-B.S.N. 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 advanced 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 curriculum for fall students. The spring enrollment sequence will vary slightly.

Registered Nurse–Bachelor of Science in Nursing Curriculum for Licensed Students

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Semester</td>
<td>NURS 4380</td>
<td>Nature of Nursing Theory</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 4381</td>
<td>Issues and Trends in Nursing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 4382</td>
<td>Aspects of Nursing Research</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 4384 (CL)</td>
<td>Nursing Management I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>or NURS 4385 (CL)</td>
<td>Nursing Management II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 4388 Client and Peer Teaching</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2nd Semester</td>
<td>NURS 4383</td>
<td>Legal and Ethical Issues for RNs</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 4386 (CL)</td>
<td>Leadership in Nursing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NURS 4387 (CL)</td>
<td>Community Health Practice</td>
<td>3</td>
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<td>NURS 4389</td>
<td>Pharmacology Across the Life Span</td>
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<td>NURS 4390 (CL)</td>
<td>Baccalaureate Nursing Practice</td>
<td>3</td>
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<tr>
<td>TOTAL</td>
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<td>30</td>
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Registered nurse applicants are accepted from the entire state of Texas. Out-of-state RN applicants are accepted and can call the department for further information to facilitate enrollment.

NOTE: Applying to the School of Nursing is an online process. An application is available at www.ttuhsc.edu/son. Admission requirements for all campuses should be mailed to the Registrar’s Office, School of Nursing Admissions Evaluator, Texas Tech University Health Sciences Center, 3601 4th St., MS 8310, Lubbock, TX 79430-8310.
Graduate Program / School of Nursing
Barbara Cherry, D.N.Sc.
Department Chair of Leadership Studies
Emily Merrill, M.S.N.
Department Chair of Nurse Practitioner Studies

The purpose of the Master of Science in Nursing program is to prepare the graduate to practice nursing within an expanded role. In synthesizing a clinical and functional focus, the graduate assumes an encompassing perspective of practice, service, research, and education. The graduate in an expanded role is prepared to:

- Provide patient-centered care in the master’s-prepared nursing role.
- Work in interdisciplinary teams to address the needs of patients using master’s-prepared nursing role skills.
- Employ evidence-based practice (EBP) by integrating the best research evidence into the master’s-prepared nursing role.
- Apply quality improvement as a master’s-prepared nurse.
- Utilize informatics in the master’s-prepared nursing role to reduce errors, manage knowledge and information, make decisions, and communicate effectively.
- Integrate best practices in implementation of master’s-prepared nursing roles to ensure safety and risk reduction for patients and populations.

Graduates acquire expertise to meet these objectives in all components of the graduate program, including the collaborative program with the College of Nursing and Health Sciences at the University of Texas at Tyler through Web-based technologies and HealthNet, a two-way interactive video system that links the campuses. The TTUHSC School of Nursing graduate program offers numerous opportunities for students to pursue a master’s degree that meets their career plans. The M.S.N. program is offered at the Lubbock, Odessa, Hill Country (Fredericksburg/Kerrville, Marble Falls/Highland Lakes), and UT Tyler campuses.

Students who have not completed the Bachelor of Science in Nursing (B.S.N.) and are registered nurses may elect to complete the Registered Nurse to Master of Science in Nursing online program. It is a full-time fast-track program focusing on the rural nurse educator. The student who has completed the B.S.N. can elect to complete the B.S.N.–M.S.N. full-time online program focusing on the rural nurse educator. The rural nurse educator program prepares graduates to seek a position as a nurse educator and to sit for Academic Nurse Educator Certification when eligible.

Students also can elect to obtain a Master of Science in Nursing with a clinical focus in geriatrics or community health and a functional track of education or administration. The graduate is prepared to assume a leadership position in education or administration. A sub-focus of nursing administration is the clinical research management track, offered as an M.S.N., post-master’s certificate, or nondegree certificate. The clinical research management program prepares the graduate to manage clinical research trials in a variety of research settings. Graduates will have an in-depth knowledge of the regulatory guidelines and know how these guidelines apply to various research projects and clinical trials. The M.S.N.–nurse practitioner and post-master’s certificate programs are offered in several specialty areas, such as family, acute care, geriatrics, and pediatrics. The M.S.N. family nurse practitioner and post-master’s family nurse practitioner programs prepare graduates to assume a primary care provider role in rural agencies and other healthcare settings in underserved areas. The M.S.N. acute care nurse practitioner and post-master’s certificate programs prepare graduates to provide culturally sensitive, comprehensive care for adults with common episodic and chronic health problems managed across the continuum of acute care centers. The acute care nurse practitioner assumes responsibility for promoting, maintaining, and restoring health to adults who are acutely or critically ill. Emphasis includes identification of health risks, promotion of wellness, and diagnostics and management of acute and critical illnesses. The M.S.N. geriatric nurse practitioner and post-master’s programs prepare graduates to assume a role as a primary healthcare provider dedicated to improving the health of the elderly. Geriatric nurse practitioners serve the elderly and their families in an extensive range of practice settings. The services of geriatric nurse practitioners focus on health maintenance and disease processes that are specific to the elderly. The M.S.N. pediatric nurse practitioner and post-master’s programs prepare graduates to assume a role as a primary healthcare provider dedicated to improving children’s health. Pediatric nurse practitioners serve children and families in an extensive range of practice settings providing for well and ill children of all ages. Some of the services of pediatric nurse practitioners include well-child examinations, routine developmental screenings, diagnoses and treatment of common childhood illnesses, childhood immunizations, school physicals, and health maintenance care.

Upon completion of course requirements, graduates of the master’s and post-master’s programs are eligible to sit for the following:

- National Certification Board of Pediatric Nurse Practitioners (PNB) Exam (PNP)
- American Nurses Credentialing Center (ANCC) Exam (ACNP, GNP, FNP, PNP)
- American Academy of Nurse Practitioners Certification Exam (FNP)
- Society of Clinical Research Associates (SoCRA) Exam (CRM)
- National League for Nursing Nurse Educator Exam (CNE)

Application Information. The minimum requirements for all applicants to the graduate master’s nursing programs are the following:

- Valid RN license in the State of Texas.
- Baccalaureate nursing degree from a nationally accredited college or university.
- Successful completion of an undergraduate research and statistics course.
- Minimum 3.0 GPA or better (on a 4.0 scale) in undergraduate upper-division nursing courses and all graduate level work.
- Essay
- Three references
- BLS (M.S.N.) or ACLS (PM–FNP/GNP/ACNP), PALS-PNP

In addition to the above, applicants to the post-master’s program must have a M.S.N. degree from a nationally accredited college or university.

Although academic criteria are the most important factors in admission consideration, additional information considered for (Continued on next page)
all applicants includes but is not limited to consent to a criminal background check, demographic data, diverse work and life experiences, and unique attributes that would contribute to the profession of nursing.

For further information call 800.851.8240, visit online at www.ttuhsc.edu/son or email songrad@ttuhsc.edu/son.

**NOTE:** Application is an online process available at the School of Nursing Web site www.ttuhsc.edu/son. Admission requirements for all campuses should be mailed to the Lubbock campus: Registrar's Office, School of Nursing Admissions Evaluator, Texas Tech University Health Sciences Center, 3601 4th St., MS 8310, Lubbock, TX 79430-8310.

**Collaborative Programs**

**College of Nursing and Health Sciences, University of Texas at Tyler.** Students at this collaborative site can obtain a M.S.N. or a post-master's specializing in family nurse practitioner, acute care nurse practitioner, geriatric nurse practitioner, and pediatric nurse practitioner.

**Texas Woman's University.** A Ph.D. in Nursing is offered in collaboration with Texas Woman's University College of Nursing (TWU). The Ph.D. degree is awarded by TWU in accordance with program policies of the Graduate School and the College of Nursing. There are three sites for doctoral course offerings: Denton, Houston, and Lubbock. The doctoral program in nursing prepares leaders and scholars who will make a significant contribution to the nursing profession in the discovery, integration, application, and dissemination of knowledge.

**Opportunities for Involvement in Student Organizations**

**Graduate Dean's Advisory Council.** Graduate students serve in an advisory role. The primary purpose is to maintain open communication among students, administration, faculty, and staff.

**Mentoring Advanced Practice Students (MAPS).** This organization's primary purpose is to provide new graduate students an opportunity to network with a knowledgeable colleague already in the program.

**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.

**Undergraduate Dean's Advisory Council.** Students serve in an advisory role. The primary purpose is to maintain open communication among students, administration, faculty, and staff.

**Texas Nursing Students' Association (TNSA).** TTUHSC School of Nursing claims one of the most active TNSA chapters in the state. The chapter has won numerous awards and honors.

**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.

**Nursing (NURS) Courses**

For all courses offered in the School of Nursing, the list of nursing courses is organized by course number, using the credit hour as the unit of measure and the Texas Higher Education Coordinating Board Credit/Contact Hour (Texas Higher Education Coordinating Board Workforce Education Course Manual, Chapter four, Page 9, Table 4-2. Credit/Contact Hour Combinations for SCH/WECM and Local Need Courses) criteria as follows:

- One credit hour per course represents 16-48 contact hours per semester
  - 0-1 lecture/didactic hours per week and
  - 0-3 lab contact hours per week
- Two credit hour course represents 32-80 contact hours per semester
  - 0-2 lecture/didactic contact hours per week and
  - 0-4 lab contact hours per week
- Three credit hour course represents 48-96 contact hours per semester
  - 2-3 lecture/didactic contact hours per week and
  - 0-4 lab contact hours per week
- Four credit hour course represents 80-128 contact hours per semester
  - 2-3 lecture/didactic contact hours per week and
  - 2-6 lab contact hours per week
- Five credit hour course represents 96-144 contact hours per semester
  - 3-5 lecture/didactic contact hours per week and
  - 0-6 lab contact hours per week

**(To interpret course descriptions, see page 8.)**

**Undergraduate Courses**

Undergraduate and graduate courses are delivered via traditional, Web-enhanced (combination of face-to-face and online), and Web-based (completely online) methodologies. Traditional course methodology is indicated by T, Web-enhanced by WE, and Web-based by WB.

**3030. Independent Study in Nursing (V1-6 WE).** Topic and objectives of study are mutually agreed upon by the student and selected faculty member. Independent study agreement formalizes the plan for study and guides evaluation.

**3040. Special Topics in Nursing (V1-6 WE).** Designed to focus on subjects of special interest to groups of students. Repeated for credit as topics vary.

**3115. Concepts of Pathophysiology/Pathology I (1:1:0 WB).** Study of the physiologic basis of disease for beginning nursing practice. Emphasis on application of pathophysiologic concepts to the recognition of pathologic conditions across life span.

**3205. Basic Skills for Nursing Practice: Clinical Competence I Practicum (2:0:6 WB).** (Second Degree) Prerequisite: Program admission and completion of all required general education courses. This laboratory/clinical experience is an introduction to foundational skills for practice and an overview of the standards for nursing practice. This course focuses on client safety and comfort, mobility and transfer, nutrition, care of the integument and beginning assessment skills.

**3206. Introduction to Nursing as a Profession Seminar I (2:1.75:0.75 WE).** An introduction to the healthcare delivery system and the nursing profession. Concepts in the course include: nursing history, nursing theory, nursing philosophy, legal/ethical issues, professional roles, interdisciplinary roles, professional writing, and scholarship.

**3211. Clinical Competence II: Practicum in the Developing Family and Selected Foundational Nursing Skills.** (2:0:6 WB). (Second Degree) Prerequisite: Satisfactory completion of all first semester courses. This laboratory/clinical experience focuses on additional foundational skills for nursing practice. Selected experiences will also include a practicum in obstetric nursing.

**3216. Integrated Concepts of Pathology (2:2:6 WE).** Continued study of pathophysiologic concepts across the life span. Major concepts addressed are alterations in sensory and perception, reproduction, gas exchange, hematology, neurologic system, musculoskeletal system, endocrine system, gastrointestinal system, renal system, and cancers.

**3302. Basic Concepts of Pathophysiology: Application in Nursing (3:3:0 WB).** Study of the physiologic basis of disease for beginning nursing practice. Emphasis on application of pathophysiologic concepts to the recognition of pathologic conditions across the life span. (Prerequisite: Previous Bac-
Health Sciences Center

3307. Health Assessment (3:2:3 WE). (Second Degree) Prerequisite: NURS 3205; corequisite: NURS 3906, 3308, 3309, 3315. An introduction to health assessment as a systematic process with emphasis on developing skill in the techniques of assessment and communication across the life span. Includes introductory concepts of data collection, health history, physical examination, communication, documentation of assessment and nursing process.

3308. Pharmacology (3:3:0 WB). (Second Degree) Prerequisite: NURS 3205; corequisite: NURS 3906, 3307, 3315. Introduction to principles of pharmacology and drug therapy, classifications of drugs, and nursing implications of pharmacotherapeutics, legal, ethical, genetic, and cultural implications of drug therapy are explored as well as life span considerations of drug therapy in the young and old. Dosage calculation and routes of medication administration are included.

3311. Community Health Nursing (3:1.5:4.5 WE). Study of nursing care of populations in the community. Includes the concepts of community health nursing practice, epidemiology, environmental health, and collaboration with other healthcare team members.

3312. Nursing Care of Families with Children (3:1.5:4.5 WE). Assists the student in developing a concept of family-centered care across the life span. Emphasizes application of the nursing process with children and families with developmental, cultural, and family structure variance.

3313. Care of the Healthy Aging Adult (3:2:3 WE). An introduction to concepts of healthy aging with a focus on health promotion, maintenance of normal capacity, normal physiologic changes, and improvement of quality of life through interdisciplinary collaboration.


3315. Developing Family Nursing (3:3:0 WB). (Second Degree) Prerequisite: NURS 3205; corequisite: NURS 3906, 3307, 3308. This course emphasizes nursing concepts related to the childbearing family with emphasis on the neonate and women’s health. Family theory, health disparities, and genetics are also explored as a foundation for care delivery. Clinical judgment and reasoning will be required in the application of evidence based nursing care in case studies and clinical simulations.

3316. Nursing Care of the Patient Experiencing Cardiac Dysrhythmias (3:1.4:4.8 WE). This course includes assessment and nursing diagnosis of adult clients experiencing cardiac dysrhythmias. Emphasis is placed on pharmacology, therapeutic modalities, patient/family response and nursing implications are emphasized throughout the course.

3357. Holistic Health Practices in Stress Management (3:3:0 WE). This course is an introduction to holistic health in stress management.

3365. Introduction and Exploration into the Multiple Aspects of Forensic Science (3:3:0 WE). Forensic science has multiple, significant procedures and guidelines which contribute to the medicolegal analysis in the criminal justice system. Content addressed includes assessment, intervention, and utilization of community resources; legal issues; and evaluation of forensic evidence.

3366. Hospice and Palliative Care (3:2:5:1.5 WE). This course will utilize readings from sociology, psychology, religion, and medical and nursing sciences as a background for discussing and analyzing therapeutic nursing interventions for care of the terminally ill client.

3367. Violence in Families (3:2:3 WE). Family violence has multiple, significant consequences for victims and members of families in which violence occurs. Concepts of assessment, intervention, utilization of community resources, and evaluation of violence in families are included.

3368. High Risk Obstetrics in Nursing (3:2.5:1.5 WE). This course will explore the scope of high risk pregnancy in which the life or health of the mother or fetus is in jeopardy due to complications that are either unique to pregnancy or are due to disorders that coincide with the pregnancy.

3369. Community Mental Health Nursing (3:2:3 WE). This course will utilize various readings and case studies to explore the psychiatric nurse’s role in community healthcare. Clinical experiences will be utilized to examine community-based mental health services for individuals and families living with mental illness.

3371. Legal and Ethical Issues in Healthcare (3:3:0 WE). An interdisciplinary course surveying major legal and ethical issues in the delivery of healthcare.

3374. Philosophical Issues and Problems in Human Caring (3:3:0 WE). Exploration of different avenues of approaching philosophical dilemmas in providing care to individuals whose behaviors and value systems are difficult to accept.

3376. Advanced Cardiac Life Support (3:1:6 WE). This course will expand the student’s cognitive knowledge and psychomotor skills necessary to provide nursing care to individuals experiencing acute life-threatening physiological dysfunctions.

3420. Health History and Physical Assessment (4:1:9 WE). An introduction to the nursing process with emphasis on therapeutic communication, health history, and physical exam.

3500. Fundamentals of Nursing Profession (5:2:9 WE). An introduction into acute and long-term healthcare systems, health-wellness-illness continuum, health promotion, nursing process, and decision making.


3906. Foundations of Nursing Practice (9:3:6 WB). (Second Degree) Prerequisite: NURS 3205, Corequisite: NURS 3307, 3308, 3309, 3315. This course is an introduction to nursing s a systematic process with emphasis on the knowledge, skills and values core to evidence based professional nursing utilizing a framework of clinical judgment and decision making coupled with a management systems approach of macro/micro systems. Emphasis is on human functioning, human diversity, and responses to health and illness. Clinical opportunities in exploration of the foundations of professional practice occur in a variety of acute care settings.

3911. Chronic Care Nursing (9:2:18 WB). (Second Degree) Prerequisite: NURS 3211 and satisfactory completion of NURS 3307 and 3308. Corequisite: NURS 4312, 4313, 4214. This course emphasizes chronic care nursing concepts essential for professional nursing practice in long-term care and medical/surgical environments. Special focus is on the concepts of aging and health promotion and disease prevention as well as illness management. Clinical judgment and reasoning and the integration of therapeutic nursing skills will be required in the application of nursing care in case studies and weekly clinical experiences.

4201. Synthesis of Nursing Knowledge (2:1:3 WE). Provides students with an opportunity to assess and analyze own ability to synthesize concepts of nursing care and apply those concepts in simulations and standardized examinations.

4205. Nursing as a Human Service (3:3:0 WB). Summarizes the concepts of the profession of nursing with emphasis in nursing leadership. Includes anticipatory socialization to the professional nursing role.

4208. Complex Pharmacological Therapy (2:1:5.1:5 WE). Focuses on pharmacological therapy in complex healthcare situations affecting individuals across the life span. Involves the use of knowledge in understanding of medications and alternative therapies for common health disorders and builds on previous pharmacological knowledge.

4210. The Nurse as a Consumer of Research (2:2:0 WE). Addresses basic research concepts and explores the relationship of research to theory and evidence based practice.

4214. Research (2:3:0 WB). (Second Degree) Prerequisite: NURS 3211; corequisite: NURS 3911, 4312, 4314. This course will address the basic research concepts and explore the relationship of research to theory and evidence based practice. The purpose of the course is to develop skills in critical appraisal and summary of the evidence in order to apply best practices in clinical care.

4216. Clinical Competence III: Practicum in Mental Health Nursing and Child Healthcare (2:0:6 WB). (Second Degree) Prerequisite: Satisfactory completion of NURS 3911, 4312, and 4314. This practicum/lab/experience provides opportunities for the student to integrate his/her knowledge and clinical skills in a variety of settings applicable to the child, adolescent, and adult. The student will develop an understanding of the roles of provider, manager, and member of the profession. Practicum emphasis is on providing comprehensive nursing care to multiple clients in an acute care setting and integra-
4312. Child Health (3:3:0 WB). (Second Degree) Prerequisite: NURS 3211 and satisfactory completion of all first semester courses; corequisite: NURS 3911, 4314, 4214. This course emphasizes child health and illness nursing concepts essential for professional nursing practice in pediatric acute care and outpatient settings. Growth and development and safety are emphasized. Clinical judgment and reasoning will be required in the application of evidence based nursing care in case studies and clinical simulations.

4314. Mental Health Nursing (3:3:0 WB). (Second Degree) Prerequisite: NURS 3211 and satisfactory completion of all first semester courses; corequisite: NURS 3911, 4312, 4214. Course emphasizes the concepts of human mental health in altered states from adaptation through dysfunction to pathological processes. The focus is the promotion of mental health/optimal function in the care of clients, groups, and families with mental illness.

4316. Health Promotion and Education (3:3:0 WB). (Second Degree) Prerequisite: NURS 4216; corequisite: NURS 4317, 4318, 4919. This course incorporates health promotion and disease prevention concepts for assessment and intervention with clients across the life span. Emphasis is placed on health education planning and teaching principles for support and promotion of clients in the choice for healthy lifestyles.

4317. Community Nursing (3:2:3 WB). (Second Degree) Prerequisite: NURS 4216; corequisite: NURS 4316, 4318, 4919. This course emphasizes public health as community nursing concepts essential for professional nursing practice. Focus is on the concepts of community health nursing practice, epidemiology and disease transmission, comprehensive assessment of risk factors and health problems, program planning and intervention, environmental health, and collaboration with public health agencies.

4318. Management and Leadership in Nursing (3:3:0 WB). (Second Degree) Prerequisite: NURS 4216; corequisite: NURS 4316, 4317, 4919. This course is designed to provide experiences and critical information for the role of the nurse as a leader and as a nurse manager. In addition to developing greater personal insight, this course includes opportunities to apply keys concepts in relation to leadership roles. The role of the manager as coordinator of care, the student will have the opportunity to examine complex staffing, delegation organization and health-care delivery system and policy issues for effective management of human and material resources.

4330. Medical Surgical Nursing II Theory (3:5:0 WE). Combines an emphasis on the critical thinking and clinical reasoning and judgment process as a major role in professional nursing practice.


4381. Issues and Trends in Nursing (3:3:0 WB). (RN-B.S.N.) Corequisite: NURS 4380. Focuses on current issues and trends relevant to the professional nursing role on a local, state, national and international level.

4382. Aspects of Nursing Research (3:3:0 WB). (RN-B.S.N.) Prerequisite: NURS 4380, 4381, and 3 hours of undergraduate statistics. Addresses basic research concepts and explores the relationship between theory and practice. Prepares the student as a consumer of research in order that relevant research findings may be applied to clinical practice.

4383. Legal and Ethical Issues for RNs (3:3:0 WB). (RN-B.S.N.) This course surveys major legal and ethical issues in the delivery of healthcare. It focuses on basic principles and language of legal and ethics in healthcare. It provides a foundation in value development and ethical theories. This course is designed to address the issues confronted by individuals who are actively engaged in the practice of professional nursing.

4384. Nursing Management (3:2:3 WB). (RN-B.S.N.) For RN-B.S.N. students with less than 3 years as an RN or full-time nursing experience or portfolio review. Basic management principles that are inherent in the role of professional nursing practice will be presented.

4385. Nurse Management II (3:2:3 WB). (RN-B.S.N.) For RN-B.S.N. students with three or more years of full-time nursing experience as an RN. Focuses on the mid-manager responsibilities that are inherent in the role of professional nursing practice.

4386. Leadership in Nursing (3:2:3 WB). (RN-B.S.N.) Prerequisite: NURS 4384 or 4385. Leadership concepts related to the management of nursing personnel and healthcare delivery are emphasized.

4387. Community Health Practice (3:2:3 WB). (RN-B.S.N.) This clinical course provides students with the opportunity to apply the nursing process, together with public health, professional nursing and community concepts, scientific methods and critical thinking (judgments and reasoning) to the nursing care groups in a community.

4388. Client and Peer Teaching (3:3:0 WB). (RN-B.S.N.) Teaching focuses on collaboration between the nurse and clients/peers. It includes an assessment of learning needs, the implementation of planned learning experiences, and the evaluation of process and product of teaching. Teaching-learning theories/principles are used as bases for educational planning and intervention.

4389. Pharmacology Across the Life Span (3:3:0 WB). (RN-B.S.N.) This course will build on the foundation resulting from the student’s previous nursing educational process. The principles of pharmacology will be applied, in case study format, to non-structured and structured healthcare settings and to individuals across the life span.

4403. Nursing Care of the Childbearing Family (4:2:6 WE). Focuses on developing skills during the phases of the nursing process in working with all members of the childbearing family unit. Special emphasis on assessment of family unit, cultural differences in the approach to the childbirth experience.

4404. Mental Health Nursing (2:2:6 WE). Concepts of human mental health in altered states from adaptation through dysfunction to pathological processes are included. Focus is on utilization of nursing process in the care of clients, groups, and families with alterations in mental health.

4405. The Nurse as a Manager (2:3:5 WE). Focuses on the role of the nurse in beginning management roles as critical elements for nursing’s future. Examines the use of selected theoretical role perspectives related to management.

4430. Medical-Surgical Nursing III (4:1:9 WE). Focuses on the role of the professional nurse using selected models of case delivery for the complex client and family.

4630. Medical-Surgical Nursing II Clinical (6:0:18 WE). Combines an emphasis on the critical thinking and clinical reasoning/judgment process as a major role in professional nursing practice with application of nursing process in acute and critical care settings with clients across the life span.

4801. Professional Nursing Practice (8:7:5:1.5 WE). Introduces nursing theories relevant to nursing practice and integrates the concepts of pathophysiology, pharmacology, informatics, nursing process, physical assessment, interdisciplinary holistic care, and critical thinking into professional nursing practice. Includes the influence of multicultural environments.

4919. Acute Care Nursing (9:2:21 WB). (Second Degree) Prerequisite: NURS 4216; corequisite: NURS 4316, 4317 4318. This course emphasizes acute care nursing concepts essential for professional nursing practice in complex adult medical/surgical environments. Clinical judgment and reasoning and therapeutic nursing skills will be required in the application of evidence based nursing care in case studies and weekly clinical experiences.

Graduate Courses

Graduate courses are delivered via traditional, Web-enhanced (combination of face-to-face and online), and Web-based (completely online) methodologies. Traditional course methodology is indicated by T, Web-enhanced by WE, and Web-based by WB.
5060. Independent Study (V1-6 T). Designed to meet special needs and interests of a student who proposes a specific plan of study. Course varies from 1-6 semester hours and course may be repeated as topic and/or objective of study changes.

5080. Special Topics (V1-6 WB/WE). Designed to focus on subjects of special interest to groups of students. May be repeated for credit as topics vary.

5111. The Advanced Practice Nurse Role: Foundation for Advanced Practice Nursing (1:1:0 WE). A study of the Advanced Practice Nurse (APN) role, including the evolution of the role, current and continuing educational requirements to advance to advanced practice nursing, and clinical practice issues related to health promotion and disease prevention. Course activities include observation, discussion, and analysis of experiences.

5222. Diagnostic Methods and Procedures for Advanced Practice (2:1:3 WE). Designed for students preparing for the Advanced Practice Nursing (APN) role as a nurse practitioner. Selected clinical diagnostic laboratory, imaging tests, and selected procedures practiced by APNs will be presented. Clinical decision making for selecting appropriate tests or procedures, and interpretation of diagnostic test results is addressed. Students will use evidence based research to appropriately gather, interpret and manage objective diagnostic clinical data to manage various health problems across the life span.

5231. The Nursing Administrator: Standards for Excellence (2:2:0 T). Focuses on the standards affecting the nursing administrator and the administrative role. Content relates to the Scope of Practice and Standards for Nurse Administrators, the Magnet Recognition Program criteria and the Baldridge National Quality Program. Traditional role content is viewed in light of these elements of quality.

5242. Administrative Role Development (2:0:6 T). The course emphasizes the practicality of applying quality standards in the nursing administration role. The practicum focuses on the concepts formulated in the prerequisite course.

5300. Community Health I: Foundations of Community Health Nursing (CL) (3:1:6 WB). Prerequisite or corequisite: NURS 5330. Study of the major concepts basic to the development, implementation and evaluation of Community Health. Clinical practice focuses on application of nursing theory, epidemiologic concepts, public policy, program planning and implementation of nursing skills and techniques related to aggregate level health promotion, health maintenance, health restoration and disease prevention.

5301. Community Health II: Role Design and Implementation (CL) (3:1:6 WB). Prerequisite: Successful completion of NURS 5300, NURS 5330, and concurrent enrollment in CDC Epidemiology Module. Study of the nursing role components inherent in community health. Identification of facilitators for and barriers to the implementation of community health in healthcare settings. Clinical practice involves collaboration and implementation of the community health role in selected healthcare settings.

5302. Community Health Foundation for Advanced Practice (3:1:6 WB). Study of the major basic concepts and the nursing role components inherent to community health. Facilitates the transition into the advanced practice community health role. The incorporation of interdisciplinary relationships and/or partnerships into the delivery of community health nursing.

5305. Rural Health and Cultural Competency CL (3:2:3 WB). This course will focus on the concepts important in rural health and cultural competency for the emerging nurse leader. The concept of rurality will be presented not as a dichotomy but as a continuum; a continuous movement of people and money from remote/rural through suburban to urban/metropolitan. This perspective will emphasize the interaction of communities across the rurality continuum with a focus on the contribution of social, economic, environmental, cultural, historical, and demographic characteristics to healthcare.


5311. Gerontics II: Role Design and Implementation (3:1:6 WB). Study of the nursing role components basic to collaboration and provision of gerontic care, including family dynamics related to the extended family and identification of families at risk. Clinical practice focuses on provision of care in a variety of settings.

5314. Leadership in Education I: Foundations of Nursing Education (3:3:0 WB). Prerequisite: NURS 5330. Focuses on the leadership role of the nurse educator by examining the foundational components of the formal teaching/learning process.

5315. Iron II:ship in Education II: Critical Elements of the Teaching Role (3:2:5:1.5 WB). Prerequisite: NURS 5314. The concepts and components of course development, implementation, evaluation, and revision in academic, continuing nursing education, or staff development setting will be emphasized as critical elements of the teaching role.

5316. Leadership in Education III: Evaluation and Outcomes (3:2:5:5 WB). Prerequisite: NURS 5314, 5315. Concepts related to student evaluation, test construction, evaluation of evidence based teaching and evaluation of distance learning/technology will be introduced. Program evaluation, accreditation processes and professional development of faculty will be discussed and analyzed.

5330. Theoretical and Clinical Foundation for Evidence-based Management of Health Problems (3:0:0 WB/WE). Exploration of theories in nursing as a basis for nursing therapies. Analysis of existing theories, theory construction and concept formulation and synthesis of specialized therapies such as counseling, touch, and comfort measures.

5333. Management of Acute and Episodic Conditions in Older Adults (3:1:6 WE). Addresses the theoretical and clinical foundation for evidence-based management strategies of acute health problems and common syndromes of older adults. Emphasis is on comprehensive assessment, clinical decision-making, and the implementation of scientifically based clinical management plans in collaboration with the healthcare team. The focus is on empowering the older adult to maintain or regain health through the framework of evidenced based care and use of best practices. Under the supervision of faculty and preceptors, clinical experiences occur in a variety of community-based healthcare settings that expose the student to both healthy and frail adult populations.

5334. Management of Chronic Health Conditions in Older Adults (3:1:6 WE). Addresses the theoretical and clinical foundation for evidence-based management strategies of chronic and complex health problems of older adults. Emphasis is placed on the management of older adults with multiple health problems. Clinical practice involves collaboration and implementation of the primary healthcare role in selected healthcare settings.

5340. Primary Healthcare Practice I: Advanced Assessment, Pathology, and Management (3:1:6 WE). Study of major concepts and theories of primary healthcare. Emphasis is on the application of nursing theory, pathophysiologic and epidemiological concepts and exploration of nursing therapies, skills and techniques essential to the provision of primary healthcare.

5341. Primary Healthcare Practice II: Advanced Role Application (3:1:6 WE). Study of nursing role components critical to primary healthcare. Identification of facilitators for and barriers to the implementation of primary healthcare. This course involves collaboration and implementation of the primary healthcare role in selected healthcare settings.

5342. Advanced Health Assessment (3:1:6 WE). Building upon basic physical assessment and history taking knowledge and skills, this course focuses on knowledge and clinical skills required for advanced practice nurses.

5343. Pharmacotherapeutics for Nurses in Advanced Practice (3:3:0 WB). Study of advanced pharmacologic and pharmacokinetics principles of drug categories used by nurses in advanced practice.

5344. Advanced Practice Role Development: Advanced Cardiac Life Support (3:2:3 WE). Explores the student’s ability to analyze and provide appropriate care in situations in which individuals are experiencing acute life-threatening physiological dysfunctions from the perspectives of ethics, law, and advanced clinical practice. This course is designed to prepare the student for participation in an Advanced Cardiac Life Support providers’ class according to the standards set by the American Heart Association.

5345. Advanced Practice Nursing: Application of Pathophysiology (3:3:0 WB). Study of the physiologic basis of disease for advanced practice nursing. Emphasis is placed on application of pathophysiologic concepts to the recognition of pathologic conditions and the management of clients with a variety of health problems across the life span.

5360. Clinical Research Management I: Introduction to Clinical Research Management (3:3:0 WB). Focuses on an overview of clinical research management. Content includes the defining of the core language of clinical trials research, drug and device development, basic steps in the research process, and the design and conduct of all phases of clinical trials.

5371. Professional Nursing Issues (3:3:0 WB). Analysis of role issues confronting the nursing profession. Issues are examined from historical, multidisciplinary, and global perspectives with an emphasis on synthesis of advanced nursing role knowledge in a societal level focus.

5372. Utilizing the Arts in Healthcare (3:3:0 WB). An introductory study and overview of current and past methods of incorporating the arts into the healthcare setting for patients, families and healthcare staff and professionals. Attention will be paid to cultural and age diversities and education, psychological and physical benefits derived from creative expression.

5374. Writing for Publication (3:3:0 WB). Develops expertise in writing/preparing manuscripts for publication. Special emphasis on choosing journals of manuscript topics, preparing a manuscript according to journal guidelines, and learning to navigate the publication process from inquiry letter, ten manuscript to peer review and final submission.

5375. Nursing Ethics through the Life Span (3:3:0 WB). Provides an opportunity to examine ethical issues that arise in advanced nursing practice throughout the life span of the client, providing an opportunity to implement evidence-based practice; understand the moral significance of nursing; recognize and clarify models of professional relationships; and identify and distinguish between ethical models. Ethical models will be utilized to justify ethical decisions in advanced nursing practice.

5376. Best Practices for Safe Healthcare Systems (3:3:0 WB). This graduate level interdisciplinary course is designed to explore solutions and practices that promote safer patient care and reduce risk in a variety of healthcare settings.

5377. Humanities in Professional Life (3:3:0 T). Nursing as a humanistic discipline is an elective course designed to provide opportunities for analyzing the humanistic aspects of nursing as a primary function of modern nursing practice for the master's prepared and advanced practice prepared nurse. The humanistic aspects of nursing have been described as follows in the Affirmation of Commitment, often recited at commencements: We believe that the nature and purpose of nursing encompasses a multifaceted approach to human need. We further believe in nursing as a professional discipline, involving clinical practice, and as a humanistic field where nurse and client share in the ordering, providing and sharing of human experience.

5378. Primary Health Care for Women (3:1:5:1.5 WE). Prerequisite: NURS 5342 or consent of instructor. Presents the theoretical and clinical basis for advanced practice nursing management of the woman who is essentially well or who has non-acute health problems. Emphasis is on the integration of primary health care screening, preventive health care, and health care promotion. Selected health problems common to women across the age continuum are addressed.


5380. Pediatric Primary Health Care I (3:1:6 WE). Prerequisite: NURS 5301, 5311, 5330, 5342, 5343, 5345, 5344 or ACLS. Designed to develop theoretical and research-based knowledge of child health issues and well-child assessment of infants, children, and adolescents in the context of family and cultures, the course develops advanced practice skills in comprehensive assessment as well as, management of current nursing and medical knowledge and practice.

5381. Pediatric Primary Health Care II (3:1:6 WE). Prerequisite: NURS 5380. Designed to further develop theoretical and research-based knowledge of diagnosis, treatment, and evaluation of pediatric patients with acute and chronic problems, the course develops advanced practice skills and comprehensive assessment and management strategies reflecting evidence-based nursing/medical knowledge and practice.

5386. Finance and Budgeting for Nurse Leaders (3:3:0 WB). Designed to provide graduate students with information and skills for developing budgets and managing financial issues in health care facilities, clinics, independent practice or a nursing unit.

5391. Principles of Advanced Research (3:3:0 WB). Course addresses components of the research process including the scientific method in quantitative and qualitative research design.


5450. Acute Care Nurse Practitioner Concepts and Diagnostic Skills I: Adult (4:2:6 WE). Designed to develop a beginning theoretical and research based knowledge of diagnosis, treatment of adults with acute and chronic health problems. Emphasis will be placed on applying this knowledge to the management of patients with disorders of selected body systems. Clinical activities focus on enhancing history and physical skills, delineating differential diagnoses, and learning initial clinical management of clients experiencing acute and chronic health problems. Basic role components of the Acute Care Nurse Practitioner will be introduced.

5462. Clinical Research Management III: Application to Clinical Trials (4:4:0 WB). This course examines key aspects of implementation of a clinical trial. The necessary skills to design a successful Clinical Research Associate and/or Study Site Coordinator are examined. Management of clinical trials from perspectives of the study sponsor and study site is discussed. A major focus is on the business components of implementing a clinical trial including communication and team building. Site and time management systems will be introduced and used. Content also includes clinical research associate skills, adverse event reporting and clinical audits.

5551. Acute Care Nurse Practitioner Concepts and Diagnostic Skills II: Adult (5:2:9 WE). Designed to build on major components critical to the knowledge of diagnosis, treatment, and evaluation of adults with acute and chronic health problems. Clinical practice focuses on research-based decision-making process in close collaboration with preceptors.

6000. Thesis (V-1:6 T). A planned process of scholarly inquiry, which implements a quantitative or qualitative design and contributes to nursing’s body of knowledge.

6030. Leadership in Education IV: Role and Practicum (3:5:8 WB). Prerequisite: NURS 5314, 5315, and 5316. Emphasizes leadership aspects of the faculty role in an academic, CE, or staff development setting with guidance of a preceptor.

6040. Clinical Research Management Practicum (5:0:15 WB). This provides the opportunity for a clinical immersion in activities concerned with management of clinical trials. 

6050. Acute Care Nurse Practitioner IV: Role and Practicum (6:1:15 WE). Emphasizes clinical practice. Clinical activities allow for immersion in advanced role. Function and responsibility of selected topics of the advanced practice role are addressed.

6060. Nursing Practicum (3:3:18 WE). Designed to build on major focused practicum for individuals pursuing expectations beyond basic graduate degree requirements. Variable credit 3 or 6 hours. Nurse Practitioner students are required to complete the majority of practicum in underserved areas.

6071. Supervised Teaching (V-1:3 T). Directed teaching in students' major area under close supervision of one or more faculty.

6080. Pediatric Nursing Practitioner Practicum (3:0:18 WE) (6:0:36 WE). Prerequisite: NURS 5341 and successful completion of required clinical and functional courses. A clinically-focused practicum for advanced practice nurses beyond basic graduate degree requirements. Variable credit of 3 to 6 hours. Pediatric nurse practitioner students are required to complete the majority of practicum in underserved areas.

6090. Gerontological Nurse Practitioner Practicum (3:0:18 WE) (6:0:36 WE). A synthesis of nursing theoretical and research-based knowledge to the management of the role of the advanced practice nurse. Emphasis is on role development along with the refinement of critical reasoning, skill development, and resource allocation. Under the guidance of a preceptor, students practice in a wide primary care setting.

6221. Administrative Role Development: The Nurse Administrator as Leader (2:2:0 T). Online seminar in contemporary issues in administrative circles. Explores issues from various professional, client, legal, ethical, policy and societal perspectives.

7370. The Quality Imperative (3:3:0 WE). Course provides an opportunity for doctoral students to study cutting edge issues in quality improvement and risk management in nursing.
Faculty Directory

Horn Professorships
(Date following departmental affiliation indicates calendar year of Horn Professorship appointment.)

Magne Kristiansen, Electrical Engineering, 1977
Robert J. Baker, Biological Sciences, 1979
William J. Conover, Information Systems and Quantitative Sciences, 1981
Shelby D. Hunt, Marketing, 1983
James G. Hunt, Management, 1984
Janet W. Pérez, Classical and Modern Languages and Literatures, 1986
David B. Knaff, Chemistry and Biochemistry, 1987
Richard A. Bartsch, Chemistry and Biochemistry, 1988
Mary Jeanne Van Appledorn, Music, 1989
Allan J. Kvethe, History, 1990
Clyde F. Martin, Mathematics and Statistics, 1991
Kishor C. Mehta, Civil Engineering, 1991
Purnendu K. Dasgupta, Chemistry and Biochemistry, 1992
Sankar Chatterjee, Museum Science and Geosciences, 1994
Clyde Hendrick, Psychology, 1996
Kenneth Ketner, Institute for Studies in Pragmatics, 1999
Daniel Benson, Law, 2000
Stefan Estreicher, Physics, 2000
Henryk Temkin, Electrical Engineering, 2000
Frits Ruymgaart, Mathematics and Statistics, 2001
William Westney, Music, 2001
Peter Westfall, Information Systems and Quantitative Sciences, 2002
Loretta Bradley, Educational Psychology, 2003
Wijesuriya Dayawansa, Mathematics and Statistics, 2003
Hafid Gafaiti, Classical and Modern Languages and Literatures, 2004
Vivien Allen, Plant and Soil Science, 2005
Susan Hendrick, Psychology, 2005
Greg McKenna, Chemical Engineering, 2005
Sunanda Mitra, Electrical and Computer Engineering, 2005
Marilyn Phelan, Law, 2005
Michael Galyean, Animal and Food Sciences, 2006
James Watkins, Architecture, 2006
William R. Casto, Law, 2007
Eileen Johnson, Museum Science, 2007
W. David Nes, Chemistry and Biochemistry, 2007

Teaching Faculty
(Date following departmental affiliation indicates calendar year of Horn Professorship appointment.)

A
Abidi, Noureddine, Research Assistant Professor of Plant and Soil Science, 2006. B.S., University of Med I (Morocco), 1991; M.S., 1992; Ph.D., Montpellier II (France), 1996.
Aguirre-Muñoz, Zenaida, Associate Professor of Curriculum and Instruction, 2004. B.A., California (Santa Barbara), 1992; Ph.D., California (Los Angeles), 2000.
Ahsan, Fakhruil, Assistant Professor of Pharmaceutical Sciences, 2001. B.S., Dhaka (Bangladesh), 1990; M.S., 1992; Ph.D., Madrid (Spain), 1999.
Amor, Cheryl M., Associate Professor of Interior Design, 2000. B.Arch., Constantine (Algeria), 1984; M.Phil., New Castle upon Tyne (U.K.), 1987; Ph.D., Missouri (Columbia), 2000.


Aruffi, Thomas L., Adjunct Faculty in Biological Sciences and Natural Resources Management, 2005. B.S., Kent State, 1974; M.S., 1977; Ph.D., New Mexico State, 1984.


Atanasov, Momchil, Associate Professor of Cell Biology and Biochemistry, 1999. B.S., Bulgaria (Sofia), 1996; Ph.D., Texas Tech, 2002.


Aycok, Wendell Marshall, Professor of English and Comparative Literature; Coordinator of Interdisciplinary Studies; and Associate Dean, Graduate School, 1969. B.A., Texas Tech, 1962; M.A., 1965; Ph.D., South Carolina, 1969.

B


Bae, Sungwon, Assistant Professor of Health, Exercise, and Sport Sciences, 2006. B.S., Yeungnam (Korea), 1994; M.S.A., Ohio, 1998; Ph.D., Florida State, 2004.


Baker, Robert James, Horn Professor of Biological Sciences and Heritage Management and Director, Natural Science Research Laboratory, 1967. B.S., Arkansas (Monticello), 1963; M.S., Oklahoma State, 1965; Ph.D., Arizona, 1967.


Banda, Devender, Assistant Professor of Educational Psychology and Leadership, 2005. B.M.R., Osmania (India), 1990; M.A., Anna- malia (India), 1992; M.S., Penn State, 2002; Ph.D., 2004.


Barnes, Calvin Glenn, Professor of Geosciences, 1982. B.S., Nebraska (Lincoln), 1975; M.S., Oregon, 1978; Ph.D., 1982.


Beale, Elmus G., Associate Professor of Cell Biology and Biochemistry, 1993. B.S., Oklahoma State, 1970; Ph.D., Baylor (Coll. of Medicine), 1977.
<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Role</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bishop, Gary M.</td>
<td>Professor of History and Dean, Honors College</td>
<td>B.S., Texas, 1974; M.A., 1986; Ph.D., California (Los Angeles), 1974.</td>
</tr>
<tr>
<td>Benson, Daniel H.</td>
<td>Adjunct Professor of Law and Former Horn Professor of Law, 1973</td>
<td>B.A., Texas, 1958; J.D., 1961; M.A. Texas Tech, 1974; Admitted to practice in the District of Columbia and Texas, 1974.</td>
</tr>
<tr>
<td>Beyer, Walter L.</td>
<td>Professor of Physics, 1984.</td>
<td>B.S., Tübingen (Germany), 1960; M.S., 1964; Ph.D., California (Berkeley), 1968.</td>
</tr>
<tr>
<td>Bickel, Ulrich</td>
<td>Professor of Pharmaceutical Sciences, 1999.</td>
<td>Doctor of Medicine, Ulm (Germany), 1985.</td>
</tr>
<tr>
<td>Biglaiser, Glen</td>
<td>Assistant Professor of Political Sciences, 2005.</td>
<td>B.S., Arizona State, 1985; M.A., California (Los Angeles), 1992; Ph.D., 1996.</td>
</tr>
<tr>
<td>Blackburn, Jeff</td>
<td>Adjunct Professor of Law and Director of the Innocence Project, 2005.</td>
<td>B.S., Alabama, 1980; J.D., Houston, 1986. Admitted to practice in Texas and before the U.S. District Court for the Northern District of Texas, and the Fifth U.S. Circuit Court of Appeals.</td>
</tr>
<tr>
<td>Blake, Robert E. Jr.</td>
<td>Assistant Professor of Chemistry and Biochemistry, 2001.</td>
<td>B.A., California (San Diego), 1989; Ph.D., California Inst. of Tech., 1996.</td>
</tr>
<tr>
<td>Blanton, Michael P.</td>
<td>Associate Professor of Pharmacology and Neurosciences, 1995.</td>
<td>B.A., California (Santa Cruz), 1985; Ph.D., 1989.</td>
</tr>
<tr>
<td>Blockey, M. Kathryn</td>
<td>Assistant Professor of Psychology, 2001.</td>
<td>B.S., Oklahoma, 1994; M.S., 1996; Ph.D., Georgia Tech, 2001.</td>
</tr>
<tr>
<td>Botella, John</td>
<td>Professor of Civil and Environmental Engineering and Dean, Graduate School, 1984. B.S.A.E., Colorado State, 1965; M.S.A.E., 1967; Ph.D., Penn State, 1973; Reg. Prof. Engr. (Texas).</td>
<td></td>
</tr>
<tr>
<td>Bostwick, Michael</td>
<td>Assistant Professor of Chemistry and Biochemistry, 2005.</td>
<td>B.S., Freiburg (Germany), 1990; Ph.D., Heidelberg (Germany), 1994.</td>
</tr>
<tr>
<td>Botsmark, Mario A.</td>
<td>Professor of Biological Sciences, 1978.</td>
<td>B.Sc., Otago (New Zealand), 1971; Ph.D., 1975.</td>
</tr>
<tr>
<td>Bradley, Samuel</td>
<td>Assistant Professor of Advertising, 2006.</td>
<td>B.A., New Mexico State, 1997; M.S., Kansas State, 2001; Ph.D., Indiana, 2005.</td>
</tr>
</tbody>
</table>

Chester, Ron Keith, Professor of Biological Sciences, 2000. B.S., Oklahoma, 1973; M.S., Memphis State, 1976; Ph.D., Oklahoma, 1981.

Chestnutt, Jacqueline, Faculty Associate in Laboratory Sciences and Primary Care and Lab Manager, Clinical Laboratory Science, 2002. B.S., Texas Tech HSC, 1997.


Chiriva-Internati, Maurizio, Assistant Professor of Microbiology and Immunology, 2002. B.A., Inst. Tech. (Italy), 1987; Ph.D., Milan (Italy), 1996.


Christensen, Bruce E., Assistant Professor and Clinical Coordinator and Physician Assistant Studies, 2007. B.S Nebraska (Medical Center), 1992; M.P.A.S., Nebraska (Medical Center), 1997.

Christensen, Lars, Assistant Professor of Mathematics and Statistics, 2006. B.S., Copenhagen (Denmark), 1994; M.S., 1996; Ph.D., 1999.


Chua, Kevin, Assistant Professor of Art, 2006. B.A., Northwestern, 1996; Ph.D., California (Berkeley), 2005.

Chung, Yun Shun, Assistant Professor of Heritage Management, 2001. B.A., Yonsei (Korea), 1993; M.A., Reinwardt Academy (The Netherlands), 1997; Ph.D., Cambridge (United Kingdom), 2002.

Chyu, Ming-Chien, Professor of Mechanical Engineering, 1984. B.S., Tsinghua (Taiwan), 1977; M.S., Iowa State, 1980.

Ciancy, Donald K., Professor of Accounting and Associate Dean, Rawls College of Business, 1982. B.S., Penn State, 1970; M.B.A., 1971; Ph.D., 1976.


Cloyd, Nancy Ann, Associate Professor of Physical Therapy, 1983. B.S., Kansas, 1970; M.S., Texas Woman's, 1983; Ph.D., Texas Tech, 1989.

Coates, Penelope W., Associate Professor of Cell Biology and Biochemistry, 1978. B.S., St. Lawrence 1955; M.M.A., Texas (Southwestern), 1957; Ph.D., 1969.

Coates, Sally, Instructor in Nursing and Social Worker, 2003. B.A. Texas Tech, 1989; M.S.W.-L.M.S.W., Texas (Arlington), 1993.

Cobb, George P., Professor of Environmental Toxicology, 1997. B.S., Coll. of Charleston, 1982; Ph.D., South Florida, 1989.


Cobos, Eduardo, Professor of Internal Medicine and Joint Faculty in Microbiology and Immunology, 1994. B.S., Texas (El Paso), 1977; Texas (San Antonio), M.D., 1981.
Cogan, Rosemary, Professor of Psychology, 1966. B.A., Missouri, 1964; M.A., 1966; Ph.D., 1971; Licensed Psychologist (Texas), ABPP.
Cohen, Lee Michael, Associate Professor of Psychology, 2000. B.A., California (San Diego), 1994; M.S., Oklahoma State, 1996; Ph.D., 1999; Licensed Psychologist (Texas).
Cooke, Daniel E., Associate Professor of Psychology, 2002. B.S., Texas A&M, 1986; M.A., Missouri (Columbia), 1989; Ph.D., 1992; Licensed Psychologist (Texas).
Cox, Stephen B., Assistant Professor of Environmental Toxicology, 2002. B.S., Texas Tech, 1993; Ph.D., 1999.
Cummings, Scott R., Associate Professor of Agricultural Education and Communications, 2002. B.S., Texas A&M, 1985; M.P.H., Texas, 1989; Dr.P.H., Texas, 1995.
Dickens, James, Associate Professor of Electrical and Computer Engineering, 1999. B.S.E.E., Texas Tech, 1991; M.S.E.E., 1993, Ph.D., 1995; Reg. Prof. Engr. (Texas).
Dillon, Rosemary L., Assistant Professor of Legal Practice, 2004. B.A., Providence Coll., 1977; M.S.J., Northwestern, 1980; J.D., New Mexico, 1992; Admitted to practice in New Mexico and before the U.S. Court of Appeals for the Tenth Circuit and the U.S. District Court for New Mexico.
Dini, Michael Lawrence, Associate Professor of Biological Sciences, 1992. B.S., St. Mary's Coll. of Calif., 1977; Ph.D., Notre Dame, 1989.
Doerfert, David L., Associate Professor of Agricultural Education and Communications, 2002. B.S., Wisconsin (River Falls), 1982; M.S., Ohio State, 1989; Ph.D., 1989.


Freeman, Arthur S., Associate Professor of Pharmacology and Neuroscience, 1994, B.A., Colorado (Boulder), 1977; Ph.D., Medical Coll. of Virginia, 1982.

Frezza, Eldo, Associate Professor of Surgery and Joint Faculty in Microbiology and Immunology, 2003. M.D., Padua (Italy), 1989; M.B.A., Texas Tech, 2005.


Fuertes, Michael J., Assistant Professor of Chemistry and Biochemistry, 2005. B.S., Michigan State, 1994; M.S., Chicago, 1997; Ph.D., 2002.


G


Galvin, Toni, Associate Professor of Nursing, 1989. B.S.N., Texas Christian, 1970; M.S.N., Texas (Health Science Center), 1976; Post-Grad., East Texas State, 1994.


Gangopadhyay, Shubhra, Adjunct Faculty in Physics, 1986. B.S., Jalabpur (India), 1975; M.S., 1977; Ph.D., Indian Inst. of Tech. (India), 1982.


Garos, Sheila, Associate Professor of Psychology, 1998. B.S.W., Arizona State, 1981; M.C., 1995; Ph.D., 1998; Licensed Psychologist (Texas).


Gibson, Thomas L., Associate Professor of Physics and Engineering Physics, 1985. B.S., Cameron, 1977; Ph.D., Oklahoma, 1982.


Gitz, Dennis, Adjunct Faculty in Plant and Soil Science, 2006. B.S., Miami University, 1998; M.S., 1992; Ph.D., 1996.


Green, Alexa, Professor of Nursing and Dean, School of Nursing, 2000. A.D.N. Alvin Community Coll., 1970; B.S.N., Texas (Medical Branch), 1984; M.S.N., Texas (Health Science Center), 1986; Ph.D., Texas Woman's, 1990.

Green, Bobby Lynn, Associate Professor of Engineering Technology, 1986. B.S.E.E., Texas Tech, 1975; M.S.E.E., 1979; Reg. Prof. Engr.


Griswold, John, Chairperson and Professor of Surgery and Joint Faculty of Microbiology and Immunology, 1996. B.S., Notre Dame, 1977; M.D., Creighton, 1981.


Guanaje, Jayarama Bhat, Associate Professor of Pharmaceutical Sciences, 2004. B.S., Mysore (India), 1980; M.S., 1982; Ph.D., Bangalore (India), 1989.

Guner, Nuray, Visiting Associate Professor of Finance, 2005. B.S., Middle East Technical (Turkey), 1987; M.B.A., North Carolina (Chapel Hill), 1991; Ph.D., 1996.


Hamood, Abdul, Professor of Microbiology and Immunology, 1990. M.S., Missouri, 1984; Ph.D., 1985.


Han, Seon, Assistant Professor of Mechanical Engineering, 2004. B.E., Cooper Union, 1996; M.S., Rutgers, 1998; Ph.D., 2001.


Hargan, Donald R., Professor of Honors, Geosciences; President Emeritus, 1969. B.S., Texas, 1959; M.S., Texas A&M; 1960; Ph.D., Texas, 1969.


Hardy, Daniel M., Associate Professor of Cell Biology and Biochemistry, 1995; B.S., South Dakota School of Mines and Tech., 1979; Ph.D., New Mexico, 1986.


Harp, Dennis Andrew, Professor of Electronic Media and Communications and Associate Dean for Faculty Affairs, 1973. B.S., Southwest Texas State, 1965; M.S., Texas A&M Commerce, 1966; Ed.D., 1972.

Harp, Shelley Sue, Professor of Retailing, 1982. B.S., Lamar, 1972; M.S., Texas Tech, 1977; Ph.D., Texas Woman’s, 1982.


Harris, Kitty S., Associate Professor of Addictive Disorders and Recovery Studies and Director, Center for the Study of Addiction and Recovery, 2002. B.S., North Texas State, 1973; M.S., 1974; Ph.D., Texas Tech, 1983.

Harris, Steven M., Associate Professor of Marriage and Family Therapy and Associate Dean, College of Human Sciences, 1996. B.S., Bringham Young, 1990; M.A., Syracuse, 1992; Ph.D., 1996.


Hart, Justin, Assistant Professor of History, 2005. B.S., Southern Methodist, 1996; Ph.D., Rutgers, 2004.


Hicks, Candace Bourland, Assistant Professor of Speech, Language and Hearing Sciences and Program Director, Audiology, 2000. B.S.E., Arkansas State, 1992; M.S., Purdue, 1995; Ph.D., Vanderbilt, 2000.


Holterhoff, Peter F., Assistant Professor of Geosciences, 2006. B.S., Ohio, 1986; M.S., Nebraska, 1988; Ph.D., Cincinnati, 1993.


Hooper, Michael J., Associate Professor of Environmental Toxicology, 1997. B.S., California Polytechnic, 1980; Ph.D., California (Davis), 1988.


Hoover, Linda C., Professor of Restaurant, Hotel, and Institutional Management and Dean, College of Human Sciences, 1990. B.S., Texas Tech, 1974; M.S., Texas Woman's, 1979; Ph.D., 1989.


Hopper, Norman W., Piper Professor of Plant and Soil Science and Associate Dean, College of Agricultural Sciences and Natural Resources, 1976. B.S., Texas Tech, 1965; M.S., 1967; Ph.D., Iowa State, 1970.


Johnston, Barbara, Professor of Nursing and Associate Dean for Administrative and Student Affairs, 1998. B.S.N., Hunter Coll., 1959; M.S.N., 1977; Ph.D., Hofstra, 1994.

Johnston, Craig S., Assistant Professor of Rehabilitation Counseling, 2004; B.A., Bowling Green State, 1995; M.R.C., 1997; Ph.D., Ohio State, 2005.


Jones, T. Dale, Associate Professor of Legal Practice, 1999. B.S., Texas Tech, 1965; J.D., Texas, 1986. Admitted to practice in Texas and before the U.S. District Court for the Northern District of Texas; The Fifth, Tenth, and Eleventh Federal Circuit Courts of Appeal; and the U.S. Supreme Court.


Jumper, Cynthia A., Associate Professor of Internal Medicine and Joint Faculty in Microbiology and Immunology, 1994. B.S.N., West Texas State, 1981; B.S.; 1984; M.D., Texas Tech HSC, 1988; M.P.H., Texas (Houston), 1996.

K


Kavanagh, Jean Stephans, Associate Professor of Landscape Architecture, 1990. B.A., Cornell, 1976; M.L.A., 1982; FASLA.


Kendall, Ronald J., Chairperson and Professor of Environmental Toxicology and Director, Inst. of Environmental and Human Health, 1997. B.S., South Carolina, 1974; M.S., Clemson, 1976; Ph.D., Virginia Tech, 1980.


Kennedy, Ronald C., Chairperson and Professor of Microbiology and Immunology, 2001. B.A., Rutgers, 1976; M.S., 1977; Ph.D., Hawaii, 1981.

Keener, Kenneth Laine, Hon. Professor; Director, Inst. for Studies in Pragmatism; Charles Sanders Peirce Interdisciplinary Professor, College of Arts and Sciences and School of Nursing, 1971. B.A., Oklahoma State, 1961; M.A., 1967; M.A., California (Los Angeles), 1968; Ph.D., California (Santa Barbara), 1972.


Jeter, Randall R., Associate Professor of Biological Sciences, 1985. B.S., Arizona, 1974; M.S., Oklahoma, 1976; Ph.D., California (Davis), 1982.


Khare, Rajesh S., Assistant Professor of Chemical Engineering, 2005. B.S., Bombay (India), 1989; Ph.D., Delaware, 1994.

Kiesling, Ernst W., Professor of Civil and Environmental Engineering, 1956. B.S., Texas Tech, 1955; M.S., Michigan State, 1959; Ph.D., 1966; Reg. Prof. Eng. (Texas).


Kim, Sukwon, Assistant Professor of Health, Exercise, and Sport Sciences, 2006. B.S., Kyung-Hee (Korea); M.S., Oregon, 2000; M.S., Virginia Tech, 2003; Ph.D., 2006.


Kim, Yen-Siong, Assistant Professor of Restaurant, Hotel, and Institutional Management, 2003. B.S., Soochunhyung (Korea), 1993; M.S., 1995; Ph.D., Oklahoma State, 2002.


Kimball, Thomas G., Associate Professor of Educational Psychology and Counseling, 2004. B.S., Brigham Young, 1970; M.S., 1973; M.T. (ASCP), Utah Valley Hospital, 1974; M.A., 1975; Ph.D., Texas State, 2005.


Kisling, Ernst W., Professor of Religion, 1943. B.S., Missouri, 1941; M.A., Illinois (Urbana-Champaign), 1943; Ph.D., Chicago, 1946; Reg. Prof. Eng. (Texas).

Kim, Sung Hun, Associate Professor of Chemical Engineering, 1995. B.S., Bombay (India), 1989; Ph.D., Delaware, 1994.

Kisling, Ernst W., Professor of Chemical Engineering, 1956. B.S., Texas Tech, 1955; M.S., Michigan State, 1959; Ph.D., 1966; Reg. Prof. Eng. (Texas).


Kim, Yen-Siong, Assistant Professor of Restaurant, Hotel, and Institutional Management, 2003. B.S., Soochunhyung (Korea), 1993; M.S., 1995; Ph.D., Oklahoma State, 2002.


Kimball, Thomas G., Associate Professor of Educational Psychology and Counseling, 2004. B.S., Brigham Young, 1970; M.S., 1973; M.T. (ASCP), Utah Valley Hospital, 1974; M.A., 1975; Ph.D., Texas State, 2005.


Kisling, Ernst W., Professor of Religion, 1943. B.S., Missouri, 1941; M.A., Illinois (Urbana-Champaign), 1943; Ph.D., Chicago, 1946; Reg. Prof. Eng. (Texas).
Laski, Melvin E., Professor of Physiology, 1993. B.A., Lewis Coll., 1971; M.D., Abraham Lincoln (School of Medicine), 1976.


Lawson, William D., Assistant Professor of Civil and Environmental Engineering, 2006. B.S., Texas A&M; 1982; M.S.; 1984; Ph.D., Texas Tech, 2004; Reg. Prof. Engr. (Texas).


LeVering, Kate, Associate Professor of Education, 2000. B.S., Texas Tech, 1992; M.S., 1995; Ph.D., Manitoba University, 1999.


Lee, Calvin L., Associate Professor of Law; Associate Dean for Student Affairs, School of Law, 2003. B.A., Norfolk State, 1978; J.D., Virginia, 1978. Admitted to practice in Virginia and before the U.S. Army Court of Criminal Appeals.


Liang, Daan, Assistant Professor of Engineering Technology, 2004. B.Eng., Tianjin (China), 1997; M.S., Buffalo (New York), 1999; Ph.D., 2001; Reg. Prof. Engr. (Texas).


Liman, Surya D., Associate Professor of Industrial Engineering, 1999. B.S., Florida, 1986; M.E., 1987; Ph.D., 1991; Reg. Prof. Engr. (Texas).


Littell, Gwynne H., Associate Professor of Cell Biology and Biochemistry, 1972. B.S., Emory, 1964; M.S., Medical Coll. of Georgia, 1966; Ph.D., 1970.


Lodhi, Mohammad Arfin Khan, Professor of Physics, 1963. B.Sc., Hons. Karachi (Pakistan), 1952; M.Sc., D.I.C., Imperial Coll. of Science and Technology, 1956; Ph.D., 1958.


Lusk, James, Sgt. 1st Class, U.S. Army, Military Science Instructor, 2006.

Lutherer, Lorenz O., Professor of Physiology, 1973. A.B., Haverford Coll., 1958; M.S., Iowa Coll. of Medicine, 1964; Ph.D., Florida Coll. of Medicine, 1969; M.D., Texas Tech (School of Medicine), 1977.


Lyte, Mark, Professor of Pharmacy Practice and Joint Faculty in Microbiology and Immunology; Adjunct Faculty in Animal and Food Sciences, 2005. B.S., Fairleigh Dickinson, 1976; M.S., Weizmann Inst. of Science (Israel), 1979; Ph.D., 1983.

M

Ma, Yanzhang, Assistant Professor of Mechanical Engineering, 2002. B.S., Jilin University (China), 1985; M.S., 1987; Ph.D., 1995.


MacDonald, Clinton C., Associate Professor of Cell Biology and Biochemistry, 1995. B.A., Middlebury Coll., 1980; Ph.D., State U. of New York (Stony Brook), 1990.


Maugel, Steven A., Adjunct Faculty in Plant and Soil Science, 2002. B.S., California (Santa Cruz), 1988; M.S., California (Davis), 1992; Ph.D., 1996.


Mauder, A. Bruce, Adjunct Faculty in Plant and Soil Science, 1993. B.S., Nebraska, 1956; M.S., Purdue, 1958; Ph.D., 1960.


Maxwell, Elvin E., Program Director, Associate Professor of Physician Assistant Studies, 2003. B.S., Nebraska, 1977; M.A., Webster Coll., 1981; M.P.A.S., Nebraska (Medical Center), 1999.


Mayer, Michael F., Assistant Professor of Chemistry and Biochemistry, 2004. B.S., Wisconsin (Oshkosh), 1994; Ph.D., Wisconsin (Milwaukee), 2000.


Oler, James W., Associate Professor of Mechanical Engineering, 1980. B.S., Texas, 1974; M.S., 1976; Ph.D., Purdue, 1980.


Owen, Donna C., Garrison Professor of Nursing and Department Chairperson of Undergraduate Traditional Program, 1998. B.A., Case Western Reserve, 1978; B.S.N., 1979; M.S., Boston, 1984; Ph.D., Case Western Reserve, 1992.


Pappas, Dimitri, Associate Professor of Chemistry and Biochemistry, 2005. B.S., Florida, 1998; Ph.D., 2002.

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Pappas, Dimitri, Associate Professor of Chemistry and Biochemistry, 2005. B.S., Florida, 1998; Ph.D., 2002.

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Pappas, Dimitri, Associate Professor of Chemistry and Biochemistry, 2005. B.S., Florida, 1998; Ph.D., 2002.


Pence, Barbara C., Professor of Pathology; Cell Biology and Biochemistry; and Adjunct Faculty in Nutrition, Hospitality, and Retailing; and Environmental and Human Health, 1987. B.A., Texas Tech, 1977; M.S., 1979; Ph.D., 1984.

Pence, Danny B., Joint Faculty in Pathology, Microbiology and Immunology; and Adjunct Faculty in Natural Resources Management, 1976. B.S., Western Kentucky State Coll., 1965; M.S., Louisiana State (Medical Center), 1967; Ph.D., Louisiana State (Medical Center), 1970.


Perl, Robert D., Associate Professor of Architecture, 1979. B.Arch., Cincinnati, 1976; M.Arch., California (Berkeley), 1979; Reg. Arch. (Texas).


Perry, Gad, Assistant Professor of Natural Resources Management, 2002. B.S., Tel Aviv (Israel), 1987; M.S., 1990; Ph.D., Texas, 1995.


Pfarr, Curt M., Associate Professor of Cell Biology and Biochemistry, 1996. B.S., Oregon, 1985; Ph.D., Colorado, 1990.

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Reilly, Brian, Associate Professor of Biological Sciences and Microbiology and Immunology, 1999. B.S., Northern Colorado, 1980; M.Sc., 1982; Ph.D., New Mexico, 1989.


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Rice, Sean H., Associate Professor of Biological Sciences, 2005. B.A., California (Santa Cruz), 1984; Ph.D., Arizona, 1991.

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Rideout-Hanzak, Sandra, Assistant Professor of Natural Resources Management, 2005. B.S., Ball State, 1987; M.S., Stephen F. Austin State, 1997; Ph.D., 2001.

Ridley, Moira, Associate Professor of Geosciences, 1998. B.S., Capetown (South Africa), 1987; M.S., 1992; Ph.D., Nebraska, 1997.

Riggs, James B., Professor of Chemical Engineering, 1983. B.S., Texas, 1969; M.S., 1972; Ph.D., California (Berkeley), 1977.

Ritchey, Robert J., Associate Professor of Finance, 1982. B.S., Kansas State, 1980; M.Sc., 1982; Ph.D., New Mexico, 1989.


Rolle, Rial D., Professor of Microbiology and Immunology and Associate Dean, Faculty Affairs and Development, 1983. B.A., Missouri (Columbia), 1974; M.S., 1976; Ph.D., 1978.


Roman-Shriver, Carmen R., Associate Professor of Nutritional Sciences, 1997. B.S., Puerto Rico, 1970; M.S., Texas Woman's, 1979; Ph.D., Ohio State, 1987.


S


Shannon, Brian D., Charles Porterford Professor of Law and Associate Dean for Academic Affairs, School of Law, 1988. B.S., Angelo State, 1979; J.D., Texas, 1982. Admitted to practice in Texas.
Shaw, Robert W., Associate Professor of Chemistry and Biochemistry, 1981. B.A., West Virginia, 1971; Ph.D., Penn State, 1976.
Shome, Goutam, Adjunct Faculty in Animal and Food Sciences, 2007. M.G.G.S., Dhaka Medical College (Bangladesh); Ph.D., Tsukuba (Japan), 1992.
Shonrock, Michael, Associate Professor of Educational Psychology and Leadership and Vice President for Student Affairs, 1990. B.S., Western Illinois, 1979; M.S., 1981; Ed.S., Pittsburgh State, 1987; Ph.D., Kansas, 1991.


Sridaromont, Kathryn L., Associate Professor of Nursing, 1991. B.S.N., Ph.D., University of Texas (Galveston), 1992.

Sridara, S., Associate Professor of Cell Biology and Biochemistry, 1982; B.S., Mysore (India), 1958; M.S., 1959; Ph.D., Indian Inst.of Tech. (India), 1965.


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Stickley, Lois A., Assistant Professor and Assistant Program Director in Physical Therapy, 1996. B.S., Texas Woman’s, 1982; M.S., 1987, Ph.D., Texas Tech, 2002.


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Suppe, Frederick, Professor and Chairperson of Classical and Modern Languages and Literatures and Adjunct Faculty in Philosophy, 2000. A.B., California (Riverside), 1962; A.M., Michigan, 1964; Ph.D., 1967.

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Tatum, Tootie, Assistant Professor of Molecular Pathology, 2002. B.S., Texas Tech, 1994; M.S., 1997; Ph.D., New Mexico, 2002.
Taylor, Michael A., Associate Professor of Physician Assistant Studies, 2004. B.S., Oklahoma (Health Sciences Center), 1982; M.P.A.S., Nebraska (Medical Center), 1997.
Temkin, Henryk, Horn and Maddox Professor of Electrical and Computer Engineering and Joint Professor of Physics, 1996. B.S., U. Libre de Bruxelles (Brussels), 1969; M.A., Yeshiva, 1971; Ph.D., Stevens Inst. of Tech., 1975.
Tenne, Thomas E. Jr., Professor of Pharmacology and Neuro-science, 1978. B.A., Dallas, 1971; Ph.D., Texas Health Science Center (San Antonio) 1976.
Terrell, Gary R., Adjunct Faculty in Law, 1995. B.A., Angelo State, 1974; J.D., Texas Tech, 1977. Admitted to practice in Northern, Eastern, Western and Southern Federal and Bankruptcy Districts of Texas; Federal and Bankruptcy District of Nebraska; Fifth and Eighth U.S. Circuit Courts of Appeal; and U.S. Supreme Court.
Thekkumara, Thomas J., Professor of Pharmaceutical Sciences and Associate Dean of Research, 2000. B.S., Kerala (India), 1976; M.S., Kanpur (India), 1978; Ph.D., 1984.
Thomas, Annie, Assistant Professor of Nursing, 2005. Rajkumari Amrit Kaur Coll. of Nursing (India), 1990; M.S.N., 1998; Ph.D., Chaudhury Charan Singh (India), 2005.
Thomas, Jeffrey H., Assistant Professor of Cell Biology and Biochemistry, 2005. B.A., Virginia, 1989; Ph.D., Massachusetts Inst. of Tech., 1997.
Thomas, Julie, Associate Professor of Curriculum and Instruction, 1995. B.A., Nebraska ( Kearney), 1973; M.A., 1983; Ph.D., Nebraska (Lincoln), 1995.
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Tod, Reese, Assistant Professor of Curriculum and Instruction, 2003. B.A., Southern Methodist; M.S., Oklahoma State; Ph.D., Oklahoma, 2003.
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Torres-MacDonald, MaryAlice, Associate Professor of Architecture, 2002. B.Arch., Texas, 1987; M.S., Cambridge (England), 1991.
Trost, Thomas F., Professor of Electrical and Computer Engineering and Engineering Physics, 1970. B.S.E.E., Case Inst. of Tech., 1964; M.S.E.E., 1966; Ph.D., Case Western Reserve, 1969; Reg. Prof. Engr. (Texas).

U
Upchurch, Dan R., Adjunct Faculty in Plant and Soil Science, 1986. B.S., New Mexico State, 1978; M.S., California (Davis), 1980; Ph.D., Texas Tech, 1985.
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Veronin, Michael, Assistant Professor of Pharmacy Administration, B.S., Arizona, 1977; M.S., North Texas, 1991; Ph.D., 2000.


Villalobos, Carlos, Associate Professor of Natural Resources Management, 1999. B.S., Chihuahua (Mexico), 1980; M.S., 1988; Ph.D., Texas Tech, 1995.


Volobouev, Igor, Assistant Professor of Physics, 2006. M.S., Moscow Inst. of Physics and Tech. (Russia), 1993; Ph.D., Southern Methodist, 1997.


W

Wagner, Tillmann, Assistant Professor of Marketing, 2005. B.A., U. of Applied Sciences (Germany), 1998; M.B.A., Texas (Pan American), 1999; Ph.D., St. Gallen (Switzerland), 2005.


Wampler, Richard S., Professor of Marriage and Family Therapy, 1989. B.A., Indiana, 1964; M.S.W., Georgia, 1981; Ph.D., Pennsyl-


Watson, Pat, Assistant Professor of Curriculum and Instruction, 2003. B.S., Southwest Missouri State, 1976; M.S., 1978; Ph.D., Missouri, 2000.


Weber, Joseph, Assistant Professor of Chemistry and Biochemistry, 2004. M.S., Technical U. of Hannover (Germany), 1980;

Weber, Daniel R., Assistant Professor of Cell Biology and Biochemistry, 1993; B.A., DePauw, 1978; Ph.D., Miami, 1984.

Weeks, Brandon L., Assistant Professor of Chemical Engineering, 2004. B.S., California (Riverside), 1993; Ph.D., Cambridge (England), 2000.


Weiss, Margaret T., Associate Professor of Pharmaceutical Sciences, 1989. B.S., Loyola, 1970; Ph.D., Medical U. of South Carolina, 1983.


Westfall, Peter, Horn Professor of Statistics, 1983. B.S., California (Davis), 1979; M.S., 1981; Ph.D., 1983.


Wiesner, Theodore F., Associate Professor of Chemical Engineering, 1986. B.S., Kansas State, 1977; M.S., Houston, 1985; Ph.D., Georgia Tech, 1984.


Williams, Simon C., Associate Professor of Cell Biology and Biochemistry and Joint Faculty in Microbiology and Immunology, 1995; B.A., Trinity Coll. (Ireland), 1983; Ph.D., Roswell Park Mem. Inst. (New York), 1989.


Wilson, Kris, Assistant Professor of Animal and Food Sciences, 2006. Associate Degree, South Plains Coll., 1998; M.S., Texas A&M, 2003; Ph.D., Texas Tech, 2006.


Woldstad, Jeffrey C., Professor of Industrial Engineering; Coordinator of Engineering Physics; and Associate Dean, College of Engineering, 2003. B.S., Puget Sound, 1983; M.S., 1984; Ph.D., Michigan, 1989.


Woodward, Jason, Assistant Professor of Plant and Soil Science, 2006. B.S., Southwestern Oklahoma State, 1999; M.S., Oklahoma State, 2002; Ph.D., Georgia, 2006.


Wu, Guoyao, Adjunct Faculty in Animal and Food Sciences, 2003. B.S., South China Agricultural, 1982; M.S., Beijing Agricultural (China), 1984; Ph.D., China, 1989.


Xie, Zhixin, Assistant Professor of Biological Sciences, 2005. B.S., Zhejiang Agricultural (China), 1984; M.S., 1987; Ph.D., Idaho, 2000.

Xu, Wenwei, Associate Professor of Plant and Soil Science, 1998. B.S., Gansu Agriculture (China), 1982; M.S., Chinese Academy of Ag. Science, 1985; Ph.D., Missouri (Columbia), 1992.
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A

Abernathy, John, Professor of Plant and Soil Science and Dean, College of Agricultural Sciences and Natural Resources, Emeritus, 1998-2004.

Adamcik, Joe Alfred, Associate Professor of Chemistry and Biochemistry, Emeritus, 1957-1988.

Ainsworth, Charles Leonard, Professor of Educational Psychology and Leadership and Vice Provost For Academic Affairs, Emeritus, 1967-1995.

Allen, Archie Cornelius, Associate Professor of Biological Sciences, Emeritus, 1963-1986.


Andersen, Carl, Associate Professor of Human Development and Family Studies, Emeritus, 1965-2002.

Anderson, Lane Kent, Ernst and Young Professor of Accounting, Emeritus, 1978-2005.


Arnold, Marion Denson, Professor of Petroleum Engineering, Emeritus, 1984-1998.

Arterburn, Joyce, Assistant Professor of Health, Exercise, and Sport Sciences, Emeritus, 1963-2004.


Askins, Billy Earl, Professor and Chairperson of Curriculum and Instruction, Emeritus, 1967-2002.

Ater, Elizabeth Carolyn, Associate Professor of Merchandising, Environmental Design, and Consumer Economics, Emeritus, 1969-1996.

Austin, Larry Morton, Professor of Business Administration, Emeritus, 1976-1996.


Ayoub, Mohamed Mohamed, Horn Professor of Industrial Engineering, Emeritus, 1961-2000.

B

Bacon, Thomas Ivey, Associate Professor of Classical and Modern Languages and Literatures, Emeritus, 1964-1977.


Bennett, William, Professor of Agronomy and Associate Dean, College of Agricultural Sciences and Natural Resources, Emeritus, 1979-2004.


Bethea, Robert Morrison, Professor of Chemical Engineering, Emeritus, 1966-1998.


Faculty Directory

Bogle, James, Professor of Music, Emeritus, 1976-2005.
Bowlin, Oswald, Professor of Finance, Emeritus, 1968-2005.
Bradford, John Ross, Professor of Chemical Engineering and Dean of Engineering, Emeritus, 1943-1993.
Bravo, Roberto, Associate Professor of Classical and Modern Languages and Literatures, Emeritus, 1975-2004.
Bravoco, Ralph R., Associate Professor of Information Systems and Quantitative Sciences, Emeritus, 1982-2005.
Brewer, Charles William, Associate Professor of English, Emeritus, 1972-1996.
Brogniez, Raymond Hector, Associate Professor of Architecture, Emeritus, 1965-1979.
Burnett, John, Associate Professor of Political Science, Emeritus, 1968-2005.
Burns, Jane Offutt, Professor of Accounting, Emeritus, 1986-1997.
Buster, Edna Walker, Associate Professor of Clothing and Textiles, Emeritus, 1927-1955.
Butler, Lester G., Associate Professor of Curriculum and Instruction, Emeritus, 1974-2002.

C
Camp, Earl D., Professor of Biological Sciences, Emeritus, 1945-1985.
Campbell, Robert Gordon, Associate Professor of Anthropology, Emeritus, 1969-1993.
Carter, Ralph Marlin, Associate Professor of Educational Psychology and Leadership, Emeritus, 1971-1991.
Caskey, Owen Laverne, Professor of Educational Psychology and Leadership, Emeritus, 1947-1983.
Cogan, Dennis Clark, Professor of Psychology, Emeritus, 1968-2005.
Cornett, Joe D., Professor of Educational Psychology and Leadership, Emeritus, 1968-1997.
Coulter, Murray Whitfield, Associate Professor of Biological Sciences, Emeritus, 1964-1998.
Cravens, Sydney Paul, Associate Professor of Classical and Modern Languages and Literatures, Emeritus, 1972-2002.
Crider, John Richard, Associate Professor of English, Emeritus, 1966-1996.
Curl, Samuel Everett, Professor of Animal and Food Sciences and Dean, College of Agricultural Sciences and Natural Resources, Emeritus, 1981-1997.
Cutler, Paul Frederick, Professor of Music, Emeritus, 1968-2000.

D
Das Gupta, Kamalaksha, Professor of Physics, Emeritus, 1966-1985.
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Davies, Lewis James Sr., Associate Professor of Sociology, Emeritus, 1962-1986.
Deethardt, John Fred Jr., Professor of Communications Studies, Emeritus, 1968-1989.
Dunn, Roy Sylvan, Associate Professor of Sociology, Emeritus, 1956-1977.
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Durland, Donald Lewis, Professor of Art, Emeritus, 1969-1996.
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E
Elliot, Arthur McAuley, Professor of Biological Sciences, Emeritus, 1961-1995.
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F
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Flynn, George Quiltman, Professor of History, Emeritus, 1974-1999.
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G
Gately, Mary Sue, Professor of Accounting, Emeritus, 1981-1998.
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Greer, Hiram Varner, Associate Professor of Art, Emeritus, 1963-1982.

H
Hagler, Marion Otho, Horn Professor of Electrical and Computer Engineering and Associate Dean, College of Engineering, Emeritus, 1967-2000.
Hanna, James Walter, Associate Professor of Art, Emeritus, 1968-2001.
Hanna, Paul Dean Jr., Professor of Art, Emeritus, 1960-1993.
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Hartwell, William, Associate Professor of Music, Emeritus, 1974-2005.
Houck, Marilyn, Associate Professor of Biological Sciences, Emeritus, 1992-2004.

J
Jackson, Raymond Carl, Horn Professor of Biological Sciences, Emeritus, 1971-1997.
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K
Kelsey, Clyde E. Jr., Professor of Educational Psychology and Leadership, Emeritus, 1972-1987.
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L
Lawrence, James, Professor of Mechanical Engineering, Emeritus, 1962-2004.
Locke, Bill Jr., Professor of Psychology, Emeritus, 1969-1996.
Marple, Annette Wilson, Associate Professor of Law, Emeritus, 1973-1992.
Martin, Robert Edward, Associate Professor of Mechanical Engineering, Emeritus, 1949-1985.
Marx, John, Associate Professor of Chemistry and Biochemistry, Emeritus, 1968-2005.
Matthews, Jerry, Associate Professor of Sociology, Anthropology, and Social Work, Emeritus, 1972-2005.
Mattson, Bruce Douglas, Professor of Educational Psychology and Leadership, Emeritus, 1965-1983.
Maxwell, Henry James, Professor of Classical and Modern Languages and Literatures, Emeritus, 1963-1989.
McNally, James Faber, Associate Professor of Health, Exercise, and Sport Sciences, Emeritus, 1952-1989.
McPherson, Clinton Marsud, Associate Professor of Chemistry and Biochemistry, Emeritus, 1956-1984.
Mehaffie, Shamus, Professor of Educational Psychology and Leadership, Emeritus, 1971-1990.
Mezack Michael III, Associate Professor of Educational Psychology and Leadership, Emeritus, 1975-1996.
Miller, John David, Associate Professor of Mathematics and Statistics, Emeritus, 1968-1996.
Mittler, Gene Allen, Professor of Art, Emeritus, 1982-1995.
Moon, Marvin Lee, Associate Professor of Art, Emeritus, 1973-1996.
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Nelson, Otto Millard, Associate Professor of History and Associate Dean, College of Arts & Sciences, Emeritus, 1965-2000.
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Patterson, William Taylor, Professor of Classical and Modern Languages and Literatures, Emeritus, 1961-1995.
Peterson, Arlin, Professor of Educational Psychology and Leadership, Emeritus, 1972-2001.
Pettit, Russell Dean, Associate Professor of Natural Resources Management, Emeritus, 1969-1989.
Pillow, Fannie Ernestine, Associate Professor of Educational Psychology and Leadership, Emeritus, 1965-1976.
Platten, Marvin Roger, Associate Professor of Curriculum and Instruction, Emeritus, 1971-1993.
Preston, Rodney Leroy, Horn Professor of Animal and Food Sciences and Thornton Distinguished Chair, Emeritus, 1982-1996.

Queen, John William, Associate Professor of Art, Emeritus, 1960-1991.
Quilliam, William Reed Jr., George Herman Mahon Professor of Law, Emeritus, 1966-1995.

Randolph, Paul, Professor of Business Administration, Emeritus, 1983-2005.
Ransell, Joseph Morton, Associate Professor of Philosophy, Emeritus, 1974-2000.
Reavis, Charles Augustus, Professor of Educational Psychology and Leadership, Emeritus, 1976-2002.
Rebstock, Charles Wesley, Associate Professor of Educational Psychology and Leadership, Emeritus, 1966-1982.
Reid, Maryanne, Associate Professor of Educational Psychology and Leadership, Emeritus, 1963-1995.
Roberts, Dayton Young, Professor of Educational Psychology and Leadership, Emeritus, 1973-1990.
Roberts, Larry Spurgeon, Professor of Biological Sciences, Emeritus, 1979-1990.
Ronshausen, Nina Lorraine, Associate Professor of Educational Psychology and Leadership, Emeritus, 1975-1996.
Rooker, Robert Alan, Associate Professor of Mass Communications, Emeritus, 1963-1990.
Rooze, Gene Edward, Professor of Curriculum and Instruction, Emeritus, 1969-1996.
Rude, Carolyn, Professor of English, Emeritus, 1982-2005.
Rude, Donald, Professor of English, Emeritus, 1972-2005.

Schaefer, Roger Carl, Associate Professor of Political Science, Emeritus, 1975-2002.
Schmidly, David James, Professor of Biological Sciences and President, Emeritus, 1996-2002.
Shine, Henry, Professor of Chemistry and Biochemistry, Emeritus, 1954-2000.
Smith, Roland Edgar, Professor of Political Science, Emeritus, 1968-1986.
Sorensen, George Wendell III, Professor of Theatre and Dance, Emeritus, 1976-1996.
Stem, Carl Herbert, Dean of Business Administration, Emeritus, 1975-1997.
Stephen, Francis B., Professor of Art, Emeritus, 1967-1983.
Street, Betty Ann, Associate Professor of Art, Emeritus, 1967-1995.

T
Tereshkovich, George, Professor of Plant and Soil Science, Emeritus, 1968-1995.
Thomas, Henry Coffman, Professor of Physics, Emeritus, 1958-1984.
Thomas, Orlan Earl, Associate Professor of Music, Emeritus, 1967-2002.

Thompson, Virginia Mahaley, Associate Professor of Architecture, Emeritus, 1964-1997.
Tock, Richard, Professor of Chemical Engineering, Emeritus, 1974-2004.
Traylor, Idris, Associate Professor of History; Executive Director, Office of International Affairs; and Director, International Cultural Center, Emeritus, 1966-2005.

U

V

W
Walker, Harry Stuart, Associate Professor of Economics, Emeritus, 1953-1986.
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White, Gary Elbert, Professor of Accounting, Emeritus, 1979-1999.
Williams, Peggy Jean, Associate Professor of Health, Exercise, and Sport Sciences, Emeritus, 1962-1993.
Willis-Aarnio, Peggy, Professor of Theatre and Dance, Emeritus, 1972-2003.
Wilson, Margaret Eileen, Professor of Health, Exercise, and Sport Sciences, Emeritus, 1965-1990.

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Zintgraff, Paul Edward, Professor of Educational Psychology and Leadership, Emeritus, 1974-1984.
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