COLLEGE OF SCIENCE

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General Statement
Nature, its origins and its evolution, its strengths and its frailties, its order and its perceived disarray, constitutes the realm of study classified as science. Scientists search for interconnecting relationships and traits of order to understand the nature of our universe. Each new discovery provides additional knowledge and frequently enables the solution of previously perplexing questions. Often technology is able to transform scientific discovery into applications which are beneficial to our everyday living. Technology would be impoverished were it not for the new knowledge continually being sought by scientists. At the same time, science could not progress without the advances in instrumentation and techniques generated by technology. Thus, a symbiotic relationship exists between science and technology, a relationship which permeates our everyday living. Technology would be impoverished were it not for the new knowledge continually being sought by scientists. At the same time, science could not progress without the advances in instrumentation and techniques generated by technology. Thus, a symbiotic relationship exists between science and technology, a relationship which permeates our everyday living.

For this reason, many students select a degree program in science to complete their prerequisite courses for professional study programs. The early admissions option to professional schools of dentistry or medicine in the zoology degree program provides the opportunity for a student to receive a degree in zoology if they are successful in gaining admission to a professional study program in medicine or dentistry prior to completion of a regular four-year degree program. To receive the degree, they must complete all requirements under this program and successfully complete their first year of medical or dental school.

In addition to the Departments of Biology, Chemistry, Mathematics, Physics and Astronomy, and Statistics, the College of Science includes the Cyclotron Institute, a research institute that emphasizes fundamental studies of nuclear science in which both undergraduate and graduate students participate. The College of Science offers MS and PhD programs in various departments.

General Degree Requirements
Degree requirements for science majors are organized into:

1. general requirements, including University Core Curriculum requirements and College of Science requirements;
2. requirements of the major field of study;
3. requirements of the minor field of study for those students completing a BA degree; and
4. electives.

With the exception of physical activity and general elective requirements, courses taken to satisfy degree requirements must be taken for letter grades.

Students are responsible for selecting the courses in their degree plan and assuring they abide by Texas A&M University Student Rules in meeting all degree requirements. Each department has advisors who should be consulted in developing degree programs.

General Requirements
General requirements include those which are required in every degree program at the University. Please refer to these requirements defined in the University Core Curriculum and graduation requirements in foreign language sections of this catalog. Special guidelines should be noted in the following categories:

American History

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. history course ¹</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>U.S. history course ¹</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total Semester Credit Hours</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

¹ Students seeking teacher certification must complete HIST 105 and HIST 106.

Three hours in history may be substituted by successfully completing the required four semesters of upper-level ROTC curriculum.

Government/Political Science

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>POLS 206</td>
<td>American National Government</td>
<td>3</td>
</tr>
<tr>
<td>POLS 207</td>
<td>State and Local Government</td>
<td>3</td>
</tr>
<tr>
<td>Total Semester Credit Hours</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Three hours in political science may be substituted by successfully completing the required four semesters of upper-level ROTC curriculum.

International and Cultural Diversity Requirements
The International and Cultural Diversity portion of the Graduation requirements may be fulfilled by 6 hours from the approved list of courses (see the International and Cultural Diversity requirements [http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements] page). These courses may be in addition to University Core Curriculum requirements, or
if a course in this category satisfies an area of the Core, it can be used to meet both requirements.

**Major Field of Study**
Each department sets its own requirements for the major. At least 12 semester hours in the major must be completed in advanced courses (300- or 400-level) in residence at Texas A&M.

**Minor Field of Study**
The BA degree requires a minor field of study or an area of emphasis for students pursuing teacher certification. A minor requires 15–18 semester hours in one discipline. Six of these hours must be advanced (300- or 400-level) courses. Students must contact the department offering the minor to determine course requirements. Students pursuing a BS degree may select an optional minor. Contact the department offering the minor to determine course requirements. Students must declare a minor no later than the date on which they apply for graduation.

**Electives**
Electives should be chosen to enhance the student’s degree program and/or complete professional school prerequisites if not contained in required courses in the degree plan. Elective courses must be above the minimum level required in other areas of the degree program. For example, MATH 102 is not acceptable because it is below the minimum requirement of calculus. Also, introductory courses to another field of study such as BIMS 101 and AGLS 101 will not count toward degree requirements. Lower-level ROTC courses are not acceptable as electives. Please consult an advisor when selecting electives.

**Curricular Options**

**Honors Program**
The College of Science participates in the University Honors Program designed to offer the superior student special opportunities for academic work of a range and depth appropriate to his or her capabilities and greater intellectual interests. For further information, refer to the section regarding the University Honors Program (http://catalog.tamu.edu/undergraduate/honors-undergraduate-research).

**Cooperative Education Program**
Cooperative education enables students to gain practical work experience and a salary while completing academic requirements. During the four-year academic program, co-op students complete two to four periods of work away from campus, gaining experience through on-the-job training and thus improving their opportunities for future employment. The Cooperative Education Office provides additional information about this program.

**Minor Field of Study**
Each department in the College of Science offers a minor. Students interested in pursuing a minor in a field in the College should contact the department offering the minor.

**Summer Internships**
A number of programs are available throughout the country which offer summer employment to students interested in specific fields of study and training. Each departmental advisor has information pertaining to these programs.

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### Integrated Fast Track Bachelor’s and Master’s Degrees

The Department of Mathematics provides the opportunity for ambitious and talented students to earn a bachelor’s and a master’s degree within a five-year period. Eligible students earn graduate credit during their undergraduate study which allows them to complete this option. Interested students should contact the Mathematics Department if interested in this program.

### Preparation for Professional Studies

Students interested in gaining admission to professional study programs in the health professions may do so through any course of study. Prerequisite course requirements may be completed as part of a regular degree program or through electives. Advising for students preparing for health profession careers is available, regardless of major, through the Office of Professional School Advising, 209 Koldus, (979) 847-8938.

### Medicine and Dentistry
Curricula in biology, chemistry, mathematics and physics within the College of Science readily accommodate the required courses needed for admission to professional studies in medicine and dentistry. Admission to medical and dental schools require the following prerequisites:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Chemistry</strong></td>
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</tr>
<tr>
<td>CHEM 101</td>
<td>Fundamentals of Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 10</td>
<td>Structure and Bonding</td>
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<tr>
<td>CHEM 113</td>
<td>Physical and Chemical Principles</td>
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<tr>
<td>CHEM 102</td>
<td>Fundamentals of Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 10</td>
<td>Chemistry of the Elements</td>
<td></td>
</tr>
<tr>
<td>CHEM 114</td>
<td>Qualitative Analysis</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 227</td>
<td>Organic Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHEM 237</td>
<td>Organic Chemistry Laboratory</td>
<td></td>
</tr>
<tr>
<td>CHEM 228</td>
<td>Organic Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHEM 238</td>
<td>Organic Chemistry Laboratory</td>
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</tr>
<tr>
<td></td>
<td><strong>Biochemistry</strong></td>
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<td>BICH 410</td>
<td>Comprehensive Biochemistry I</td>
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<tr>
<td></td>
<td><strong>Biology</strong></td>
<td></td>
</tr>
<tr>
<td>BIOL 111</td>
<td>Introductory Biology I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 112</td>
<td>Introductory Biology II</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Physics</strong></td>
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</tr>
<tr>
<td>PHYS 201</td>
<td>College Physics</td>
<td>4</td>
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<tr>
<td>or PHYS 218</td>
<td>Mechanics</td>
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</tr>
<tr>
<td>PHYS 202</td>
<td>College Physics</td>
<td>4</td>
</tr>
<tr>
<td>or PHYS 20</td>
<td>Electricity and Optics</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Statistics</strong></td>
<td></td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Biometry</td>
<td>3</td>
</tr>
<tr>
<td>STAT 302</td>
<td>Statistical Methods</td>
<td></td>
</tr>
<tr>
<td>STAT 303</td>
<td>Statistical Methods</td>
<td></td>
</tr>
</tbody>
</table>

**English**

English course (http://catalog.tamu.edu/undergraduate/course-descriptions/engl) 6
Early Admission Program
The College of Science offers two methods of awarding a baccalaureate degree to students who gain admission to professional school prior to completion of their degree. The Baccalaureate Degree Option for Students Granted Early Admission to Medical/Professional Programs is available to all students regardless of their major.

Most students complete a four-year program prior to acceptance to professional school and thus it is advised a degree program leading to a standard baccalaureate degree be selected.

Veterinary Medicine
Please refer to the Admission Requirements—Professional Curriculum listed in the College of Veterinary Medicine and Biomedical Sciences.

Other Allied Health Programs
There are many allied health fields students may prepare for through degree programs in the College of Science. Prerequisite requirements for admission should be completed as part of a degree granting program.

Teacher Certification
The Secondary Teaching Certificate may be obtained in conjunction with a major in the College of Science. Requirements for teacher certification may be found at the aggieTEACH (http://aggieteach.tamu.edu) website.

Curricula in University Studies
The College of Science has four different University Studies degree plans. A University Studies Degree generally consists of a concentration of 21-24 hours and two minors of 15-18 hours each. Some concentrations and minors contain required courses that have additional prerequisites. One of the two minors must be completed in a college outside of the College of Science. The student’s diploma will list Bachelor of Science in University Studies. The student’s area of concentrations and the two minors will be indicated on the student’s transcript.

Interested students must complete the online application and have necessary minor field approvals. The degree plans and applications may be found at www.science.tamu.edu/academics/degrees.php.

Majors

College of Science
- Bachelor of Science in University Studies, Mathematics for Business Concentration (http://catalog.tamu.edu/undergraduate/science/mathematics-business-university-studies-bs)
- Bachelor of Science in University Studies, Mathematics for Teaching Concentration (http://catalog.tamu.edu/undergraduate/science/mathematics-teaching-university-studies-bs)
- Bachelor of Science in University Studies, Mathematics for Pre-Professionals Concentration (http://catalog.tamu.edu/undergraduate/science/mathematics-preprofessionals-university-studies-bs)
- Bachelor of Science in University Studies, Science for Secondary Teaching Concentration (http://catalog.tamu.edu/undergraduate/science/science-secondary-teaching-university-studies-bs)

Department of Biology
- Bachelor of Arts in Biology (http://catalog.tamu.edu/undergraduate/science/biology/ba)
- Bachelor of Science in Biology (http://catalog.tamu.edu/undergraduate/science/biology/bs)
- Bachelor of Science in Microbiology (http://catalog.tamu.edu/undergraduate/science/biology/microbiology-bs)
- Bachelor of Science in Molecular and Cell Biology (http://catalog.tamu.edu/undergraduate/science/biology/molecular-cell-biology-bs)
- Bachelor of Science in Zoology (http://catalog.tamu.edu/undergraduate/science/biology/zoology-bs)

Department of Chemistry
- Bachelor of Arts in Chemistry (http://catalog.tamu.edu/undergraduate/science/chemistry/ba)
- Bachelor of Arts in Chemistry, Biological Chemistry or Medical, Dental, Pharmacy School Track (http://catalog.tamu.edu/undergraduate/science/chemistry/bs-biological-chemistry-medical-dental-pharmacy-track)
- Bachelor of Arts in Chemistry, Chemical Education Track (http://catalog.tamu.edu/undergraduate/science/chemistry/bs-chemical-education-track)
- Bachelor of Arts in Chemistry, Environmental Chemistry Track (http://catalog.tamu.edu/undergraduate/science/chemistry/bs-environmental-chemistry-track)
- Bachelor of Science in Chemistry (http://catalog.tamu.edu/undergraduate/science/chemistry/bs)
- Bachelor of Science in Chemistry, Biological Chemistry Track (http://catalog.tamu.edu/undergraduate/science/chemistry/bs-biological-chemistry-track)
- Bachelor of Science in Chemistry, Environmental Chemistry Track (http://catalog.tamu.edu/undergraduate/science/chemistry/bs-environmental-chemistry-track)

Department of Mathematics
- Bachelor of Arts in Mathematics (http://catalog.tamu.edu/undergraduate/science/mathematics/ba)
- Bachelor of Arts in Mathematics and Master of Science in Mathematics, 5-Year Degree Program (http://catalog.tamu.edu/undergraduate/science/mathematics/ba-ms)
- Bachelor of Science in Mathematics (http://catalog.tamu.edu/undergraduate/science/mathematics/bs)
- Bachelor of Science in Mathematics and Master of Science in Mathematics, 5-Year Degree Program (http://catalog.tamu.edu/undergraduate/science/mathematics/bs-ms)
- Bachelor of Science in Applied Mathematical Sciences, Actuarial Emphasis (http://catalog.tamu.edu/undergraduate/science/mathematics/applied-mathematics-bs-actuarial-emphasis)
- Bachelor of Science in Applied Mathematical Sciences, Biological Science Emphasis (http://catalog.tamu.edu/undergraduate/science/mathematics/applied-mathematics-bs-biological-science-emphasis)
- Bachelor of Science in Applied Mathematical Sciences, Computational Emphasis (http://catalog.tamu.edu/undergraduate/science/mathematics/applied-mathematics-bs-computational-emphasis)
- Bachelor of Science in Applied Mathematical Sciences, Economics Emphasis (http://catalog.tamu.edu/undergraduate/science/mathematics/applied-mathematics-bs-economics-emphasis)
• Bachelor of Science in Applied Mathematical Sciences, Math Emphasis (http://catalog.tamu.edu/undergraduate/science/mathematics/applied-mathematics-bs-math-emphasis)
• Bachelor of Science in Applied Mathematical Sciences, Statistics Emphasis (http://catalog.tamu.edu/undergraduate/science/mathematics/applied-mathematics-bs-statistics-emphasis)
• Bachelor of Science in Applied Mathematical Sciences and Master of Science in Mathematics, 5-Year Degree Program (http://catalog.tamu.edu/undergraduate/science/mathematics/applied-mathematical-sciences-bs-ms)

Department of Physics and Astronomy
• Bachelor of Arts in Physics (http://catalog.tamu.edu/undergraduate/science/physics-astronomy/physics-ba)
• Bachelor of Science in Physics (http://catalog.tamu.edu/undergraduate/science/physics-astronomy/physics-bs)

Department of Statistics
• Bachelor of Science in Statistics (http://catalog.tamu.edu/undergraduate/science/statistics-bs)

Minors

Department of Biology
• Bioinformatics Minor (http://catalog.tamu.edu/undergraduate/science/biology/bioinformatics-minor)
• Biology Minor (http://catalog.tamu.edu/undergraduate/science/biology/minor)

Department of Chemistry
• Chemistry Minor (http://catalog.tamu.edu/undergraduate/science/chemistry/minor)

Department Mathematics
• Mathematics Minor (http://catalog.tamu.edu/undergraduate/science/mathematics/minor)

Department of Physics
• Astrophysics Minor (http://catalog.tamu.edu/undergraduate/science/physics-astronomy/astrophysics-minor)
• Physics Minor (http://catalog.tamu.edu/undergraduate/science/physics-astronomy/physics-minor)

Department of Statistics
• Statistics Minor (http://catalog.tamu.edu/undergraduate/science/statistics/minor)

Masters

Department of Biology
• Master of Science in Biology (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/biology/ms)
• Master of Science in Microbiology (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/biology/microbiology-ms)

Department of Chemistry
• Master of Science in Chemistry (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/chemistry/ms)

Department of Mathematics
• Master of Science in Mathematics (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/mathematics/ms)

Department of Physics and Astronomy
• Master of Science in Astronomy (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/physics-astronomy/astronomy-ms)
• Master of Science in Physics (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/physics-astronomy/physics-ms)

Department of Statistics
• Master of Science in Analytics (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/statistics/analytics-ms)
• Master of Science in Statistics (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/statistics/ms)

Doctoral

Department of Biology
• Doctor of Philosophy in Biology (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/biology/phd)
• Doctor of Philosophy in Microbiology (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/biology/microbiology-phd)

Department of Chemistry
• Doctor of Philosophy in Chemistry (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/chemistry/phd)

Department of Mathematics
• Doctor of Philosophy in Mathematics (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/mathematics/phd)

Department of Physics and Astronomy
• Doctor of Philosophy in Applied Physics (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/physics-astronomy/applied-physics-phd)
• Doctor of Philosophy in Astronomy (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/physics-astronomy/astronomy-phd)
• Doctor of Philosophy in Physics (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/physics-astronomy/physics-phd)

Department of Statistics
• Doctor of Philosophy in Statistics (http://catalog.tamu.edu/graduate/colleges-schools-interdisciplinary/science/statistics/phd)