INTERDISCIPLINARY ENGINEERING - BS

Earning a Bachelor of Science (BS) degree in interdisciplinary engineering (ITDE) allows students to develop unique skill sets and specialize in areas that may not be provided in a traditional department degree program. Such specializations may be driven by emerging technical fields or by a student’s desire to have an immersive interdisciplinary experience. ITDE students graduate with a specific set of skills resulting from a unique program of study.

In addition to the coursework students must take, remaining credits of specialization may either be determined through a pre-approved program of study or through a student-led design with approval from the ITDE Advisory Committee.

Many students enhance their education by participating in cooperative education and/or professional internships, which offer opportunities for employment in engineering positions while working toward a degree. Numerous study abroad programs are also available for gaining experience and perspectives in the international arena. Participation in student chapters of professional and honor societies provides leadership opportunities, collegial activities, and learning experiences outside the classroom. Many students also participate in research projects through individual directed studies courses with a professor.

Before commencing course work in the major, students must be admitted to the major or have the approval of the degree program.

The BS in ITDE degree is approved to be offered at the Texas A&M Higher Education Center in McAllen, Texas, and the Texas A&M University at Galveston campus. The program has not undergone ABET accreditation review at the Galveston campus.

Program Requirements

The freshman year is identical for degrees in aerospace engineering, architectural engineering, civil engineering, computer engineering, computer science, electrical engineering, electronic systems engineering technology, environmental engineering, industrial distribution, industrial engineering, interdisciplinary engineering, manufacturing and mechanical engineering technology, mechanical engineering, multidisciplinary engineering technology, nuclear engineering, ocean engineering, and petroleum engineering (Note: not all programs listed are offered in Qatar). The freshman year is slightly different for chemical engineering, biomedical engineering and materials science and engineering degrees in that students take CHEM 119 or CHEM 107/CHEM 117 and CHEM 120.

Students pursuing degrees in biological and agricultural engineering should refer to the specific curriculum for this major. It is recognized that many students will change the sequence and number of courses taken in any semester. Deviations from the prescribed course sequence, however, should be made with care to ensure that prerequisites for all courses are met.

<table>
<thead>
<tr>
<th>First Year</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td></td>
</tr>
<tr>
<td>CHEM 107</td>
<td>General Chemistry for Engineering Students 1,4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>16</td>
</tr>
<tr>
<td>ENGR 216/PHYS 216</td>
<td>Experimental Physics and Engineering Lab II - Mechanics 1</td>
</tr>
<tr>
<td>MATH 152</td>
<td>Engineering Mathematics II 1</td>
</tr>
<tr>
<td>PHYS 206</td>
<td>Newtonian Mechanics for Engineering and Science 1</td>
</tr>
<tr>
<td>University Core Curriculum (<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a>) 3</td>
<td>3</td>
</tr>
<tr>
<td>Select one of the following:</td>
<td>3-4</td>
</tr>
<tr>
<td>CHEM 120</td>
<td>Fundamentals of Chemistry II 1,4</td>
</tr>
<tr>
<td>University Core Curriculum (<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a>) 3,5</td>
<td></td>
</tr>
</tbody>
</table>

Total Semester Credit Hours 15-16

1 A grade of C or better is required.
2 Entering students will be given a math placement exam. Test results will be used in selecting the appropriate starting course which may be at a higher or lower level.
3 Of the 21 hours shown as University Core Curriculum electives, 3 must be from creative arts (see AREN curriculum for more information), 3 from social and behavioral sciences (see ISID curriculum for more information), 3 from language, philosophy and culture (see CVEN, EVEN and PETE curriculum for more information), 6 from American history and 6 from government/political science. The required 3 hours of international and cultural diversity and 3 hours of cultural discourse may be met by courses satisfying the creative arts, social and behavioral sciences, language, philosophy and culture, and American history requirements if they are also on the approved list of international and cultural diversity (http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/) courses and cultural discourse (http://catalog.tamu.edu/undergraduate/general-information/degree-information/cultural-discourse-requirements/) courses.
4 BMEN, CHEN and MSEN require 8 hours of fundamentals of chemistry which are satisfied with CHEM 119 or CHEM 107/CHEM 117 and CHEM 120; Students with an interest in BMEN, CHEN and MSEN can take CHEM 120 second semester freshman year. CHEM 120 will substitute for CHEM 107/CHEM 117.
5 For BS-PETE, allocate 3 hours to core communications course (ENG 210, COMM 203, COMM 205, or COMM 243) and/or 3 hours to UCC elective. For BS-MEEN, allocate 3 hours to core communications course (ENG 203, ENGL 210, or COMM 205) and/or 3 hours to UCC elective.
Second Year
Fall
ENGR 217/PHYS 217 Experimental Physics and Engineering Lab III - Electricity and Magnetism 1 2
ITDE 201 Foundations of Interdisciplinary Engineering 1 1
MATH 251 or MATH 253 Engineering Mathematics III 1 or Engineering Mathematics III 3
PHYS 207 Electricity and Magnetism for Engineering and Science 1 3
Technical elective 1,6 3

Select one of the following: 3
COMM 203 Public Speaking
COMM 205 Communication for Technical Professions
COMM 243 Argumentation and Debate
ENGL 203 Writing about Literature
ENGL 210 Technical and Professional Writing

Semester Credit Hours 15
Spring
MATH 308 Differential Equations 1 3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) 3 6
Technical elective 1,6 9

Semester Credit Hours 18
Summer
ITDE 399 High Impact Experience for Interdisciplinary Engineers 0

Semester Credit Hours 0
Third Year
Fall
ITDE 301 Interdisciplinary Engineering Experimentation 1 1
Select one of the following: 3
MATH 304 Linear Algebra 1
MATH 311 Topics in Applied Mathematics I 1
MATH 323 Linear Algebra 1
MATH 401 Advanced Engineering Mathematics 1
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) 3 3
Technical elective 1,6 9

Semester Credit Hours 16
Spring
Math/Science elective 1,7 3
Technical elective 1,6 15

Semester Credit Hours 18
Fourth Year
Fall
ITDE 401 Interdisciplinary Engineering Capstone Design I 1 3

Total Program Hours 128