ENVIRONMENTAL ENGINEERING - BS

The BS in Environmental Engineering degree coursework is specifically designed to educate students to solve environmental challenges facing public and environmental health, such as water treatment, waste management and climate change. The degree offers a broad range of coursework in the natural sciences and engineering, providing a multidisciplinary approach that merges with engineering principles to solve emerging and existing environmental issues. The program is appropriate for those who wish to protect human health and welfare while minimizing the adverse effects of human activity on the environment.

This program is approved to be offered at the Texas A&M University at 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, ocean engineering, and petroleum engineering (Note: not all programs listed are offered in Qatar). The freshman year is slightly different for chemical engineering, petroleum engineering (Note: not all programs listed are offered in Qatar). 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, ocean engineering, petroleum engineering, 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.

First Year

Fall

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 107</td>
<td>General Chemistry for Engineering</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Students¹,²</td>
<td></td>
</tr>
<tr>
<td>CHEM 117</td>
<td>General Chemistry for Engineering</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Students Laboratory¹,²</td>
<td></td>
</tr>
<tr>
<td>ENGL 103 or ENGL 104</td>
<td>Introduction to Rhetoric and</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Composition¹</td>
<td></td>
</tr>
<tr>
<td>ENGR 102</td>
<td>Engineering Lab I - Computation</td>
<td>2</td>
</tr>
<tr>
<td>MATH 151</td>
<td>Engineering Mathematics I¹,²</td>
<td>4</td>
</tr>
<tr>
<td>University Core Curriculum (<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)%C2%B9,%C2%B2">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)¹,²</a></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Semester Credit Hours: 16

Spring

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 216/ PHYS 216</td>
<td>Experimental Physics and Engineering Lab II - Mechanics¹,²</td>
<td>2</td>
</tr>
<tr>
<td>MATH 152</td>
<td>Engineering Mathematics II¹</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 206</td>
<td>Newtonian Mechanics for Engineering and Science¹</td>
<td>3</td>
</tr>
<tr>
<td>University Core Curriculum (<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)%C2%B9,%C2%B2">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)¹,²</a></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Second Year

Fall

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 113 or ECCB 205</td>
<td>Essentials in Biology or Fundamentals of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 221</td>
<td>Engineering Mechanics: Statics</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 217/ PHYS 217</td>
<td>Experimental Physics and Engineering Lab III - Electricity and Magnetism</td>
<td>2</td>
</tr>
<tr>
<td>EVEN 201</td>
<td>Introduction to the Environmental Engineering Profession</td>
<td>1</td>
</tr>
<tr>
<td>MATH 251</td>
<td>Engineering Mathematics III</td>
<td>3</td>
</tr>
<tr>
<td>STAT 211</td>
<td>Principles of Statistics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 207</td>
<td>Electricity and Magnetism for Engineering and Science</td>
<td>3</td>
</tr>
</tbody>
</table>

Semester Credit Hours: 15

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 IDIS 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 (ENGL 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 (ENGL 203, ENGL 210, or COMM 205) and/or 3 hours to UCC elective.
Spring
CVEN 302  Computer Applications in Engineering and Construction  3
EVEN 301/ CVEN 301  Environmental Engineering  3
EVEN 304/ CVEN 304  Environmental Engineering Lab  1
EVEN 311/ CVEN 311  Fluid Dynamics  3
MATH 308  Differential Equations  3
Earth science  4
Select one of the following:
ATMO 201 & ATMO 202  Weather and Climate and Weather and Climate Laboratory
GEOG 203 & GEOG 213  Planet Earth and Planet Earth Lab
GEOL 104  Physical Geology
GEOS 210 & ATMO 202  Climate Change and Weather and Climate Laboratory
OCNG 251 & OCNG 252  Oceanography and Oceanography Laboratory
SCSC 301  Soil Science

Semester Credit Hours  17

Third Year
Fall
BAEN 320  Engineering Thermodynamics  3
CVEN 322  Civil Engineering Systems  3
EVEN 320  Principles of Environmental Engineering Chemistry  3
EVEN 339/ CVEN 339  Water Resources Engineering  3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)  3
High Impact Experience
EVEN 399  Mid-Curriculum Professional Development

Semester Credit Hours  15

Spring
COMM 205 or ENGL 210  Communication for Technical Professions or Technical and Professional Writing  3
EVEN 402/ CVEN 402  Engineered Environmental Systems  3
EVEN 404  Environmental Unit Operations Laboratory  1
EVEN 406  Environmental Protection and Public Health  3
EVEN 413/ CVEN 413  Natural Environmental Systems  3
Engineering science  3
Select one of the following:
CHEN 204  Elementary Chemical Engineering
CVEN 305  Mechanics of Materials
ECEN 215  Principles of Electrical Engineering
MEEN 222/ MSEN 222  Materials Science
MSEN 201  Fundamentals of Materials Science and Engineering

Semester Credit Hours  16

Fourth Year
Fall
BAEN 477  Air Pollution Engineering  3
CVEN 423  Geomatics for Civil Engineering  3
EVEN 400  Design Problems in Environmental Engineering I  7
Environmental engineering  6
Select two of the following:
BAEN 465  Design of Biological Waste Treatment Systems
BAEN 469  Water Quality Engineering
EVEN 458/ CVEN 458  Hydraulic Engineering of Water Distribution Systems
EVEN 462/ CVEN 462  Engineering Hydrogeology
EVEN 463/ CVEN 463  Engineering Hydrology
EVEN 466  Sustainability and Life Cycle Analysis
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)  3

Semester Credit Hours  17

Spring
EVEN 401  Design Problems in Environmental Engineering II  2
PHIL 482/ ENGR 482  Ethics and Engineering  3
Environmental engineering  3
Select one of the following:
BAEN 465  Design of Biological Waste Treatment Systems
BAEN 469  Water Quality Engineering
EVEN 458/ CVEN 458  Hydraulic Engineering of Water Distribution Systems
EVEN 462/ CVEN 462  Engineering Hydrogeology
EVEN 463/ CVEN 463  Engineering Hydrology
EVEN 466  Sustainability and Life Cycle Analysis
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)  3
Technical elective  8

Semester Credit Hours  14

Total Semester Credit Hours  97

6 All students are required to complete a high-impact experience in order to graduate. The list of possible high-impact experiences is available in the EVEN advising office.
7 All students must take at least two courses in their major that are designated as writing intensive (W) or communications intensive (C). EVEN 201 and EVEN 400 taken at Texas A&M satisfy this requirement.
Other EVEN courses may be approved as W/C courses at a later date. A grade of C or better is required in these courses.

Select from ATMO 363; BAEN 464, BAEN 468; BESC 357, BESC 367, BESC 403; CVEN 306, CVEN 307, CVEN 315, CVEN 454, CVEN 455, CVEN 465; ECCB 420; GEOG 467, GEOS 410; OCEN 362; OCNG 350; SCSC 405; SENG 310.

A grade of C or better is required in all science, mathematics and engineering courses taken to satisfy degree requirements.

**Total Program Hours 128**