CIVIL ENGINEERING - BS, WATER RESOURCES ENGINEERING TRACK

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.

First Year

**Fall**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 107</td>
<td>General Chemistry for Engineering Students</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 117</td>
<td>General Chemistry for Engineering Students Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>ENGL 103 or ENGL 104</td>
<td>Introduction to Rhetoric and Composition</td>
<td>3</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 I</td>
<td>4</td>
</tr>
<tr>
<td>University Core Curriculum</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Semester Credit Hours total:** 16

**Spring**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 216/</td>
<td>Experimental Physics and Engineering Lab</td>
<td>2</td>
</tr>
<tr>
<td>PHYS 216</td>
<td>II - Mechanics</td>
<td>1</td>
</tr>
<tr>
<td>MATH 152</td>
<td>Engineering Mathematics II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 206</td>
<td>Newtonian Mechanics for Engineering and Science</td>
<td>3</td>
</tr>
<tr>
<td>University Core Curriculum</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Select one of the following:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 120</td>
<td>Fundamentals of Chemistry II</td>
<td>1, 4</td>
</tr>
</tbody>
</table>

**Second Year**

**Fall**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 207</td>
<td>Introduction to the Civil Engineering Profession</td>
<td>2</td>
</tr>
<tr>
<td>CVEN 221</td>
<td>Engineering Mechanics: Statics</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 250</td>
<td>Introduction to Graphics and Visualization Applications in Civil Engineering Design</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 217/</td>
<td>Experimental Physics and Engineering Lab</td>
<td>2</td>
</tr>
<tr>
<td>PHYS 217</td>
<td>III - Electricity and Magnetism</td>
<td>3</td>
</tr>
<tr>
<td>MATH 251</td>
<td>Engineering Mathematics III</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 207</td>
<td>Electricity and Magnetism for Engineering and Science</td>
<td>3</td>
</tr>
<tr>
<td>STAT 211</td>
<td>Principles of Statistics I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Semester Credit Hours total:** 18

**Spring**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 302</td>
<td>Computer Applications in Engineering and Construction</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 303</td>
<td>Civil Engineering Measurement</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 305</td>
<td>Mechanics of Materials</td>
<td>3</td>
</tr>
</tbody>
</table>
A grade of C or better is required in all science, mathematics and engineering courses taken to satisfy degree requirements.

**Total Program Hours 128**

**Water Resources Engineering Track - Technical Coursework**

Technical coursework for the BS in Civil Engineering, Water Resources Engineering Track are composed of breadth courses (10-12 semester credit hours), design courses (6-15 semester credit hours), focus courses (2-13 semester credit hours), a science course (3 semester credit hours), and a capstone design course (3 semester credit hours), as delineated below, for a total of 35 semester credit hours. A substitution for any course in the track must be approved in writing by the Civil and Environmental Engineering Undergraduate Student Services Office.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 301/</td>
<td>Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EVEN 301</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVEN 339/</td>
<td>Water Resources Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EVEN 339</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVEN 402/</td>
<td>Environmental Engineering Lab</td>
<td>1</td>
</tr>
<tr>
<td>EVEN 402</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVEN 406/</td>
<td>Environmental Protection and Public Health</td>
<td>3</td>
</tr>
<tr>
<td>EVEN 406</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVEN 455</td>
<td>Urban Stormwater Management</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 458/</td>
<td>Hydraulic Engineering of Water</td>
<td>3</td>
</tr>
<tr>
<td>EVEN 458</td>
<td>Distribution Systems</td>
<td></td>
</tr>
<tr>
<td>CVEN 462/</td>
<td>Engineering Hydrogeology</td>
<td>3</td>
</tr>
<tr>
<td>EVEN 462</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVEN 465</td>
<td>Coastal Resilience</td>
<td>3</td>
</tr>
<tr>
<td>EVEN 402</td>
<td></td>
<td></td>
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</tbody>
</table>

**BREADTH**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 301</td>
<td>Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 339</td>
<td>Water Resources Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 402</td>
<td>Environmental Engineering Lab</td>
<td>1</td>
</tr>
<tr>
<td>CVEN 406</td>
<td>Environmental Protection and Public Health</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 455</td>
<td>Urban Stormwater Management</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 458</td>
<td>Hydraulic Engineering of Water</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 462</td>
<td>Engineering Hydrogeology</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 465</td>
<td>Coastal Resilience</td>
<td>3</td>
</tr>
</tbody>
</table>

**DESIGN**

Select 3-9 hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 402</td>
<td>Engineered Environmental Systems</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 402</td>
<td>Engineered Environmental Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

**FOCUS**

Select 2-13 hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAEN 320</td>
<td>Engineering Thermodynamics</td>
<td>2</td>
</tr>
<tr>
<td>or MEEN</td>
<td>Principles of Thermodynamics</td>
<td></td>
</tr>
<tr>
<td>CVEN 314</td>
<td>Sensor Technology in Civil Engineering</td>
<td>2</td>
</tr>
<tr>
<td>or CVEN 314</td>
<td>Sensor Technology for the Built Environment</td>
<td></td>
</tr>
<tr>
<td>CVEN 406</td>
<td>Environmental Protection and</td>
<td>2</td>
</tr>
<tr>
<td>EVEN 406</td>
<td>Public Health</td>
<td></td>
</tr>
</tbody>
</table>

A total of 35 hours of technical coursework is required. Technical coursework is divided into five categories: breadth courses, design courses, focus courses, a science course, and a capstone design course. The total number of hours between breadth, design, and focus courses must add up to 29 hours. The choice of courses to be taken in each of the five categories depends on the track chosen and must be made in consultation with the student’s advisor and/or the Civil and Environmental Engineering Undergraduate Student Services Office to ensure pre- and co-requisites are satisfied. Capstone design courses must include more than one civil engineering context.

All students must take at least two courses in their major that are designated as writing intensive (W). CVEN 207 and CVEN 424 taken at Texas A&M satisfy this requirement. Other CVEN courses may be approved as W courses at a later date. A grade of C or better is required in these courses.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 413/</td>
<td>Natural Environmental Systems</td>
</tr>
<tr>
<td>EVEN 413</td>
<td></td>
</tr>
<tr>
<td>CVEN 423</td>
<td>Geomatics for Civil Engineering</td>
</tr>
<tr>
<td>CVEN 436</td>
<td>Case Histories in Geotechnical Engineering</td>
</tr>
<tr>
<td>CVEN 450</td>
<td>AutoCAD in Civil Engineering</td>
</tr>
<tr>
<td>CVEN 463/</td>
<td>Engineering Hydrology</td>
</tr>
<tr>
<td>EVEN 463</td>
<td></td>
</tr>
<tr>
<td>CVEN 464</td>
<td>Environmental Fluid Mechanics</td>
</tr>
<tr>
<td>CVEN 485</td>
<td>Directed Studies $^2$</td>
</tr>
<tr>
<td>CVEN 491</td>
<td>Research $^2$</td>
</tr>
<tr>
<td>EVEN 466</td>
<td>Sustainability and Life Cycle Analysis</td>
</tr>
</tbody>
</table>

**SCIENCE**
Select 3 hours from the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATMO 201</td>
<td>Weather and Climate</td>
</tr>
<tr>
<td>ATMO 363</td>
<td>Introduction to Atmospheric Chemistry and Air Pollution</td>
</tr>
<tr>
<td>BESC 201</td>
<td>Introduction to Bioenvironmental Sciences</td>
</tr>
<tr>
<td>BIOL 113</td>
<td>Essentials in Biology</td>
</tr>
<tr>
<td>ECCB 205</td>
<td>Fundamentals of Ecology</td>
</tr>
<tr>
<td>GEOG 203</td>
<td>Planet Earth</td>
</tr>
<tr>
<td>GEOL 104</td>
<td>Physical Geology</td>
</tr>
<tr>
<td>GEOL 320</td>
<td>Geology for Civil Engineers</td>
</tr>
<tr>
<td>GEOS 105</td>
<td>Introduction to Environmental Geoscience</td>
</tr>
<tr>
<td>OCNG 310</td>
<td>Physical Oceanography</td>
</tr>
<tr>
<td>RWFM 375</td>
<td>Conservation of Natural Resources</td>
</tr>
</tbody>
</table>

**CAPSTONE DESIGN**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 400</td>
<td>Design Problems in Civil Engineering</td>
</tr>
</tbody>
</table>

| Total Semester Credit Hours | 35 |

$^1$ The following courses satisfy the laboratory course requirement: CVEN 304/EVEN 304, CVEN 336, CVEN 342 or CVEN 343, CVEN 365, EVEN 404.

$^2$ Up to 2 hours of CVEN 485 or CVEN 491 may be used.