CIVIL ENGINEERING - BS, ENVIRONMENTAL 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, 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

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>CHEM 107</td>
<td>General Chemistry for Engineering Students</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CHEM 117</td>
<td>General Chemistry for Engineering Students Laboratory</td>
<td>1</td>
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<tr>
<td></td>
<td>ENGL 103 or ENGL 104</td>
<td>Introduction to Rhetoric and Composition or Composition and Rhetoric</td>
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<tr>
<td></td>
<td>ENGR 102</td>
<td>Engineering Lab I - Computation</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>MATH 151</td>
<td>Engineering Mathematics I</td>
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<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>)</td>
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<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Spring</td>
<td>ENGR 216/PHYS 216</td>
<td>Experimental Physics and Engineering Lab II - Mechanics</td>
<td>2</td>
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<tr>
<td></td>
<td>MATH 152</td>
<td>Engineering Mathematics II</td>
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<tr>
<td></td>
<td>PHYS 206</td>
<td>Newtonian Mechanics for Engineering and Science</td>
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<tr>
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<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>)</td>
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<td>Select one of the following:</td>
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<tr>
<td></td>
<td>CHEM 120</td>
<td>Fundamentals of Chemistry II</td>
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<td>Total Semester Credit Hours</td>
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Second Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>Fall</td>
<td>CVEN 207</td>
<td>Introduction to the Civil Engineering Profession</td>
<td>2</td>
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<tr>
<td></td>
<td>CVEN 221</td>
<td>Engineering Mechanics: Statics</td>
<td>3</td>
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<tr>
<td></td>
<td>CVEN 250</td>
<td>Introduction to Graphics and Visualization Applications in Civil Engineering Design</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ENGR 217/PHYS 217</td>
<td>Experimental Physics and Engineering Lab III - Electricity and Magnetism</td>
<td>2</td>
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<tr>
<td></td>
<td>MATH 251</td>
<td>Engineering Mathematics III</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PHYS 207</td>
<td>Electricity and Magnetism for Engineering and Science</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>STAT 211</td>
<td>Principles of Statistics I</td>
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<td>Semester Credit Hours</td>
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<table>
<thead>
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<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Spring</td>
<td>CVEN 302</td>
<td>Computer Applications in Engineering and Construction</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CVEN 303</td>
<td>Civil Engineering Measurement</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CVEN 305</td>
<td>Mechanics of Materials</td>
<td>3</td>
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</table>
Civil Engineering - BS, Environmental Engineering Track

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CVEN 311/</td>
<td>Fluid Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>EVEN 311</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL 210</td>
<td>Technical and Professional Writing</td>
<td>3</td>
</tr>
<tr>
<td>or COMM 205</td>
<td>or Communication for Technical Professions</td>
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</tr>
<tr>
<td>MATH 308</td>
<td>Differential Equations</td>
<td>3</td>
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| Semester Credit Hours | 3 |

### Third Year

#### Fall

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CVEN 306</td>
<td>Materials Engineering for Civil Engineers</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 322</td>
<td>Civil Engineering Systems</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 345</td>
<td>Theory of Structures</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 363</td>
<td>Engineering Mechanics: Dynamics</td>
<td>3</td>
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<tr>
<td>Technical coursework</td>
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<td>3</td>
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#### Spring

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
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<tbody>
<tr>
<td>CVEN 399</td>
<td>Mid-Curriculum Professional Development</td>
<td>0</td>
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<tr>
<td>Technical coursework</td>
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<tr>
<td>University Core Curriculum [link]</td>
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| Semester Credit Hours | 15 |

### Fourth Year

#### Fall

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 424</td>
<td>Civil Engineering Professional Practice</td>
<td>2</td>
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<tr>
<td>Technical coursework</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>University Core Curriculum [link]</td>
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<td>3</td>
</tr>
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</table>

| Semester Credit Hours | 11 |

#### Spring

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>PHIL 482/</td>
<td>Ethics and Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 482</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical coursework</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>University Core Curriculum [link]</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

| Semester Credit Hours | 9 |

Total Semester Credit Hours | 97 |

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6. 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.

7. 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.

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

### Total Program Hours 128

#### Environmental Engineering Track - Technical Coursework

Technical coursework for the BS in Civil Engineering, Environmental 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 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>
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<td></td>
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#### Spring

Select from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 304/</td>
<td>Environmental Engineering Lab</td>
<td>3</td>
</tr>
<tr>
<td>EVEN 304</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVEN 336</td>
<td>Fluid Dynamics Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 342</td>
<td>Materials of Construction</td>
<td>3</td>
</tr>
<tr>
<td>or CVEN 348</td>
<td>Portland Cement Concrete Materials for Civil Engineers</td>
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</tr>
<tr>
<td>CVEN 365</td>
<td>Introduction to Geotechnical Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EVEN 404</td>
<td>Environmental Unit Operations Laboratory</td>
<td>3</td>
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</table>

#### Design

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CVEN 402/</td>
<td>Engineered Environmental Systems</td>
<td>3</td>
</tr>
<tr>
<td>EVEN 402</td>
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Select from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CVEN 455</td>
<td>Urban Stormwater Management</td>
<td>3-12</td>
</tr>
<tr>
<td>CVEN 458/</td>
<td>Hydraulic Engineering of Water</td>
<td></td>
</tr>
<tr>
<td>EVEN 458</td>
<td>Distribution Systems</td>
<td></td>
</tr>
<tr>
<td>CVEN 462/</td>
<td>Engineering Hydrogeology</td>
<td></td>
</tr>
<tr>
<td>EVEN 462</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVEN 465</td>
<td>Coastal Resilience</td>
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#### Focus

Select from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 311/</td>
<td>Sensor Technology in Civil Engineering</td>
<td>2</td>
</tr>
<tr>
<td>EVEN 311</td>
<td>or Sensor Technology for the Built Environment</td>
<td></td>
</tr>
<tr>
<td>CVEN 406/</td>
<td>Environmental Protection and</td>
<td></td>
</tr>
<tr>
<td>EVEN 406</td>
<td>Public Health</td>
<td></td>
</tr>
<tr>
<td>CVEN 413/</td>
<td>Natural Environmental Systems</td>
<td></td>
</tr>
<tr>
<td>EVEN 413</td>
<td></td>
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</tr>
<tr>
<td>CVEN 423</td>
<td>Geomatics for Civil Engineering</td>
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[link] [undergraduate/general-information/university-core-curriculum/]

Total Program Hours 128
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<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>
<tr>
<td>BAEN 320</td>
<td>Engineering Thermodynamics</td>
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<tr>
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<td>or MEEN 315 Principles of Thermodynamics</td>
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**SCIENCE**

Select from the following: 3

<table>
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<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>
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<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>GEOG 203</td>
<td>Planet Earth</td>
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<tr>
<td>GEOL 104</td>
<td>Physical Geology</td>
</tr>
<tr>
<td>GEOL 320</td>
<td>Geology for Civil Engineers</td>
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<tr>
<td>GEOS 105</td>
<td>Introduction to Environmental Geoscience</td>
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<tr>
<td>OCNG 310</td>
<td>Physical Oceanography</td>
</tr>
<tr>
<td>RENR 205</td>
<td>Fundamentals of Ecology</td>
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<td>RENR 375</td>
<td>Conservation of Natural Resources</td>
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**CAPSTONE DESIGN**

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