CIVIL ENGINEERING - BS, CONSTRUCTION ENGINEERING AND MANAGEMENT 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</td>
<td>1</td>
</tr>
<tr>
<td>ENGL 103</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 (<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a>)</td>
<td>3</td>
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**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>2</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 (<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a>)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Select one of the following:</td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td>CHEM 120</td>
<td>Fundamentals of Chemistry II</td>
<td></td>
</tr>
</tbody>
</table>

**Total Semester Credit Hours** 16

**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</td>
<td>2</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></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</td>
<td>3</td>
</tr>
<tr>
<td>STAT 211</td>
<td>Principles of Statistics I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Semester Credit Hours** 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</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>

**University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)**

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.
A grade of C or better is required in all science, mathematics and engineering courses taken to satisfy degree requirements, and all courses in those areas must be taken for a letter grade.

**Total Program Hours 128**

Construction Engineering and Management Track - Technical Coursework

Technical coursework for the BS in Civil Engineering, Construction Engineering and Management Track is composed of breadth courses (12 semester credit hours), design courses (9 semester credit hours), focus courses (8 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 307</td>
<td>Transportation Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 342</td>
<td>Materials of Construction</td>
<td>3</td>
</tr>
<tr>
<td>or CVEN 343</td>
<td>Portland Cement Concrete Materials for Civil Engineers</td>
<td></td>
</tr>
<tr>
<td>CVEN 349</td>
<td>Civil Engineering Project Management</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 365</td>
<td>Introduction to Geotechnical Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 405</td>
<td>Construction Management of Field Operations</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 444</td>
<td>Structural Concrete Design</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 446</td>
<td>Structural Steel Design</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 473</td>
<td>Engineering Project Estimating and Planning</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 403</td>
<td>AutoCAD in Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 485</td>
<td>Directed Studies</td>
<td>2</td>
</tr>
<tr>
<td>CVEN 491</td>
<td>Research</td>
<td>2</td>
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</table>

**BREADTH**

**DESIGN**

**FOCUS**

**SCIENCE**

Select 3 hours from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>BAEN 320</td>
<td>Engineering Thermodynamics</td>
<td>5</td>
</tr>
<tr>
<td>CVEN 314</td>
<td>Sensor Technology in Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>or CVEN 315</td>
<td>Sensor Technology for the Built Environment</td>
<td></td>
</tr>
<tr>
<td>CVEN 336</td>
<td>Fluid Dynamics Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 403</td>
<td>Applied Civil Engineering Surveying</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 450</td>
<td>AutoCAD in Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 485</td>
<td>Directed Studies</td>
<td>2</td>
</tr>
<tr>
<td>CVEN 491</td>
<td>Research</td>
<td>2</td>
</tr>
<tr>
<td>ECEN 215</td>
<td>Principles of Electrical Engineering</td>
<td>3</td>
</tr>
<tr>
<td>MEEN 315</td>
<td>Principles of Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 309</td>
<td>Survey of Management</td>
<td>3</td>
</tr>
<tr>
<td>STAT 212</td>
<td>Principles of Statistics II</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 5 hours from the following:

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<th>Title</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>
</tr>
<tr>
<td>Technical coursework</td>
<td></td>
<td>3</td>
</tr>
</tbody>
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<td>CVEN 491</td>
<td>Research</td>
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</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
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<td></td>
</tr>
<tr>
<td>ATMO 201</td>
<td>Weather and Climate</td>
<td></td>
</tr>
<tr>
<td>ATMO 363</td>
<td>Introduction to Atmospheric Chemistry and Air Pollution</td>
<td></td>
</tr>
<tr>
<td>BESC 201</td>
<td>Introduction to Bioenvironmental Sciences</td>
<td></td>
</tr>
<tr>
<td>BIOL 113</td>
<td>Essentials in Biology</td>
<td></td>
</tr>
<tr>
<td>ECCB 205</td>
<td>Fundamentals of Ecology</td>
<td></td>
</tr>
<tr>
<td>GEOG 203</td>
<td>Planet Earth</td>
<td></td>
</tr>
<tr>
<td>GEOL 104</td>
<td>Physical Geology</td>
<td></td>
</tr>
<tr>
<td>GEOL 320</td>
<td>Geology for Civil Engineers</td>
<td></td>
</tr>
<tr>
<td>GEOS 105</td>
<td>Introduction to Environmental Geoscience</td>
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</tr>
<tr>
<td>OCNG 310</td>
<td>Physical Oceanography</td>
<td></td>
</tr>
<tr>
<td>RWFM 375</td>
<td>Conservation of Natural Resources</td>
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</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**

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

1 The following courses satisfy the laboratory course requirement, CVEN 342 or CVEN 343, CVEN 365.
2 Up to 2 hours of CVEN 485 or CVEN 491 may be used.