COMPUTER SCIENCE - BS

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

<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>
</tr>
<tr>
<td></td>
<td>ENGL 103 or ENGL 104</td>
<td>Introduction to Rhetoric and Composition or Composition and Rhetoric</td>
<td>3</td>
</tr>
<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</td>
<td>1,2 4</td>
</tr>
<tr>
<td></td>
<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></td>
<td></td>
<td>Semester Credit Hours</td>
<td>16</td>
</tr>
<tr>
<td>Spring</td>
<td>ENGR 216/PHY 216</td>
<td>Experimental Physics and Engineering Lab II - Mechanics</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>MATH 152</td>
<td>Engineering Mathematics II</td>
<td>1,4 4</td>
</tr>
<tr>
<td></td>
<td>PHYS 206</td>
<td>Newtonian Mechanics for Engineering and Science</td>
<td>3</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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<tr>
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<td></td>
<td>Select one of the following:</td>
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<tr>
<td></td>
<td>CHEM 120</td>
<td>Fundamentals of Chemistry II</td>
<td>1,4 4</td>
</tr>
<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></td>
<td></td>
<td>Semester Credit Hours</td>
<td>15-16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Semester Credit Hours</td>
<td>31-32</td>
</tr>
</tbody>
</table>

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/) 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.

Second 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>CSCE 181</td>
<td>Introduction to Computing</td>
<td>1</td>
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<tr>
<td></td>
<td>CSCE 120</td>
<td>Program Design and Concepts</td>
<td>1,4 3</td>
</tr>
<tr>
<td></td>
<td>CSCE 222/ECEN 222</td>
<td>Discrete Structures for Computing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MATH 304</td>
<td>Linear Algebra</td>
<td>1,4 3</td>
</tr>
<tr>
<td></td>
<td>Science elective</td>
<td>6,7 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General elective</td>
<td>6 1</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>Semester Credit Hours</td>
<td>15</td>
</tr>
<tr>
<td>Spring</td>
<td>CSCE 221</td>
<td>Data Structures and Algorithms</td>
<td>1,4 4</td>
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<td></td>
<td>CSCE 312</td>
<td>Computer Organization</td>
<td>1,4 4</td>
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<tr>
<td></td>
<td>CSCE 314</td>
<td>Programming Languages</td>
<td>1,4 3</td>
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<td>Select one of the following:</td>
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<tr>
<td></td>
<td>COMM 203</td>
<td>Public Speaking</td>
<td>3</td>
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<tr>
<td></td>
<td>COMM 205</td>
<td>Communication for Technical Professions</td>
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<tr>
<td></td>
<td>ENGL 210</td>
<td>Technical and Professional Writing</td>
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<td></td>
<td>Concentration area elective</td>
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<td>Semester Credit Hours</td>
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Third Year

<table>
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<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>CSCE 313</td>
<td>Introduction to Computer Systems</td>
<td>1,4 4</td>
</tr>
<tr>
<td></td>
<td>CSCE 331</td>
<td>Foundations of Software Engineering</td>
<td>1,4 4</td>
</tr>
<tr>
<td></td>
<td>STAT 211</td>
<td>Principles of Statistics</td>
<td>1,4 3</td>
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1,4
Computer Science - BS

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Description</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>Spring</td>
<td>University Core Curriculum</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Concentration area elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester Credit Hours</strong></td>
<td><strong>17</strong></td>
</tr>
<tr>
<td>Spring</td>
<td>CSCE 411 Design and Analysis of Algorithms</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CSCE 481 Seminar</td>
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<td>Select one of the following:</td>
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<tr>
<td></td>
<td>MATH 251 Engineering Mathematics III</td>
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<tr>
<td></td>
<td>MATH 308 Differential Equations</td>
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<tr>
<td></td>
<td>STAT 212 Principles of Statistics II</td>
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<td>Computer science elective</td>
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<td>Science elective</td>
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<tr>
<td></td>
<td>High Impact Experience</td>
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<td></td>
<td>CSCE 399 High-Impact Experience</td>
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<tr>
<td>Fourth Year</td>
<td>University Core Curriculum</td>
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<tr>
<td>Fall</td>
<td>Computer science elective</td>
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<tr>
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<td>Concentration area elective</td>
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<tr>
<td></td>
<td><strong>Semester Credit Hours</strong></td>
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</tr>
<tr>
<td>Spring</td>
<td>CSCE 482 Senior Capstone Design</td>
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<tr>
<td></td>
<td>University Core Curriculum</td>
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</tr>
<tr>
<td></td>
<td>Computer science elective</td>
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<tr>
<td></td>
<td>Concentration area elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester Credit Hours</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

Total Program Hours 126

6 If the student takes ENGR 217/PHYS 217 and PHYS 207, the 3 hours of PHYS 207 go towards the science requirement along with 1 hour of ENGR 217/PHYS 217. The other hour of ENGR 217/PHYS 217 can be used as general elective.
7 See advisor for list of acceptable science courses.
8 The concentration area should be chosen only after consultation with a departmental advisor who will help the student arrange a program appropriate to his or her plans following graduation. Students should file a degree plan before taking minor courses to ensure their use in the degree plan.
9 Computer science electives are to be selected from tracks. See advisor for list of acceptable course choices.
10 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 CSCE advising office.