COMPUTER SCIENCE - BS

The four-year undergraduate curriculum in Computer Science at Texas A&M provides a sound preparation in computing, as well as in science, mathematics, English, and statistics. Students take a broad set of core computer science courses in the early semesters, which exposes them to the main concepts in computing. During the later semesters, students take elective computer science courses drawn from four tracks (algorithms and theory, computer systems, software, and information and intelligent systems) to provide both breadth and depth. The electives can be used to tailor the curriculum to match the student's interests. Graduate courses may be taken by qualified students for some of the electives.

A major in Computer Science includes an area of concentration that allows students to design a course of study that complements their computer science coursework and takes advantage of opportunities offered by other departments across the university.

Program Mission
The mission of the computer science program is to prepare intellectual, professional and ethical graduates, capable of meeting challenges in the field of computer science.

Program Educational Objectives
The Program Educational Objectives of the BS in Computer Science program describe what the program’s graduates are expected to attain within a few years of graduation:

1. Graduates will use computer science principles to identify and solve emerging technological and societal problems.
2. Graduates who choose to enter the workforce will become technological leaders and innovators in their fields.
3. Graduates who choose to pursue advanced degrees will gain admission to and succeed in prestigious graduate programs.
4. Graduates will engage in life-long learning to adapt to new technologies, tools, and methodologies needed to respond to a changing world.

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, 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/CHM 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.

<table>
<thead>
<tr>
<th>First Year Fall</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 107</td>
<td>General Chemistry for Engineering Students 1,4</td>
</tr>
<tr>
<td>CHEM 117</td>
<td>General Chemistry for Engineering Students Laboratory 1,4</td>
</tr>
<tr>
<td>ENGL 103 or ENGL 104</td>
<td>Introduction to Rhetoric and Composition 1</td>
</tr>
<tr>
<td>ENGR 102</td>
<td>Engineering Lab I - Computation 1</td>
</tr>
<tr>
<td>MATH 151</td>
<td>Engineering Mathematics I 1,2</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>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 216/PHYS 216</td>
<td>Experimental Physics and Engineering Lab II - Mechanics 1</td>
</tr>
<tr>
<td>MATH 152</td>
<td>Engineering Mathematics II 1</td>
</tr>
<tr>
<td>PHYS 206</td>
<td>Newtonian Mechanics for Engineering and Science 1</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>
</tr>
<tr>
<td>Select one of the following:</td>
<td>3-4</td>
</tr>
<tr>
<td>CHEM 120</td>
<td>Fundamentals of Chemistry II 1,4</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>3,5</td>
</tr>
</tbody>
</table>

| Total Semester Credit Hours | 15-16 |

| Semester Credit Hours | 31-32 |

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/CHM 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/CHM 117.
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

#### Fall
- CSCE 181 Introduction to Computing $^1$ 1
- CSCE 120 Program Design and Concepts $^1$ 3
- CSCE 222/ECEN 222 Discrete Structures for Computing $^1$ 3
- MATH 304 Linear Algebra $^1$ 3
- Science elective $^6,7$ 4
- General elective $^8$ 1

#### Semester Credit Hours
15

### Spring
- CSCE 221 Data Structures and Algorithms $^1$ 4
- CSCE 312 Computer Organization $^1$ 4
- CSCE 314 Programming Languages $^1$ 3
- Select one of the following:
  - COMM 203 Public Speaking
  - COMM 205 Communication for Technical Professions
  - ENGL 210 Technical and Professional Writing
- Emphasis area elective $^1,8$ 3

#### Semester Credit Hours
17

### Third Year

#### Fall
- CSCE 313 Introduction to Computer Systems $^1$ 4
- CSCE 331 Foundations of Software Engineering $^1$ 4
- STAT 211 Principles of Statistics $^1$ 3
- University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) $^3$ 3
- Emphasis area elective $^1,8$ 3

#### Semester Credit Hours
17

#### Spring
- CSCE 411 Design and Analysis of Algorithms $^1$ 3
- CSCE 481 Seminar $^1$ 1
- Select one of the following: 1
  - MATH 251 Engineering Mathematics III
  - MATH 308 Differential Equations
  - STAT 212 Principles of Statistics II
- University Core Curriculum (http://catalog.tamu.edu/undergraduate/course-descriptions/csce/) $^1,9$ 3
- Science elective $^7$ 3
- High Impact Experience $^{10}$ 0
- CSCE 399 High-Impact Experience

#### Semester Credit Hours
16

### Fourth Year

#### Fall
- University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) $^3$ 3
- Computer science elective (http://catalog.tamu.edu/undergraduate/course-descriptions/csce/) $^1,9$ 9
- Emphasis area elective $^1,8$ 3

#### Semester Credit Hours
15

#### Spring
- CSCE 482 Senior Capstone Design $^1$ 3
- University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) $^3$ 6
- Computer science elective (http://catalog.tamu.edu/undergraduate/course-descriptions/csce/) $^1,9$ 3
- Emphasis area elective $^1,8$ 3

#### Semester Credit Hours
15

#### Total Semester Credit Hours
95

### Total Program Hours 126