

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/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		Semester
Fall		Credit Hours
CHEM 107	General Chemistry for Engineering Students ^{1,4}	3
CHEM 117	General Chemistry for Engineering Students Laboratory ^{1,4}	1
ENGL 103 or ENGL 104	Introduction to Rhetoric and Composition ¹ or Composition and Rhetoric	3
ENGR 102	Engineering Lab I - Computation ¹	2
MATH 151	Engineering Mathematics I ^{1,2}	4
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ³		3
Semester Credit Hours		16
Spring		
ENGR 216/ PHYS 216	Experimental Physics and Engineering Lab II - Mechanics ¹	2
MATH 152	Engineering Mathematics II ¹	4
PHYS 206	Newtonian Mechanics for Engineering and Science ¹	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ³		3
Select one of the following:		3-4
CHEM 120	Fundamentals of Chemistry II ^{1,4}	
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ^{3,5}		
Semester Credit Hours		15-16
Total 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/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

Fall		Semester Credit Hours
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 ⁶		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:		3
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		Semester Credit Hours
CSCE 313	Introduction to Computer Systems ¹	4
CSCE 331	Foundations of Software Engineering ¹	4
STAT 211	Principles of Statistics I 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		3
MATH 251	Engineering Mathematics III	
MATH 308	Differential Equations	
STAT 212	Principles of Statistics II	
Computer science elective (http://catalog.tamu.edu/undergraduate/course-descriptions/csce/) ^{1,9}		6
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

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 emphasis 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 Of the 18 hours shown as Computer science electives, 3 must be from systems directed electives, 3 must be from software directed electives, 3 must be from info/intel systems directed electives, 6 must be from upper level CSCE electives, and 3 must be from CSCE electives. 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.

Total Program Hours 126