

ELECTRICAL ENGINEERING - BS

Program Requirements

The freshman year is identical for degrees in aerospace engineering, architectural engineering, civil engineering, computer engineering, computer science, data engineering, 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		Semester 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 DAEN and 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 120	Program Design and Concepts ¹	3
ECEN 248	Introduction to Digital Systems Design ¹	4
MATH 251	Engineering Mathematics III ¹	3
PHYS 207	Electricity and Magnetism for Engineering and Science ¹	3
PHYS 217/ENGR 217	Experimental Physics and Engineering Lab III - Electricity and Magnetism ¹	2
Semester Credit Hours		15

Spring

ECEN 214	Electrical Circuit Theory ¹	4
ECEN 250	Machine Learning for Electrical Engineering ¹	3
MATH 308	Differential Equations ¹	3
MATH 311	Topics in Applied Mathematics I ¹	3
PHYS 222	Modern Physics for Engineers ¹	3
Semester Credit Hours		16

Third Year

Fall		
ECEN 314	Signals and Systems ¹	3
ECEN 322	Electric and Magnetic Fields ¹	3
ECEN 325	Electronics ¹	4
ECEN 340	Electric Energy Conversion ¹	3
Select one of the following: ¹		3
ENGL 210	Technical and Professional Writing	

COMM 205	Communication for Technical Professions	
COMM 243	Argumentation and Debate	
Semester Credit Hours		16
Spring		
ECEN 303	Random Signals and Systems ¹	3
ECEN 350/ CSCE 350	Computer Architecture and Design ¹	4
ECEN 370	Electronic Properties of Materials ¹	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ³		3
Technical elective ^{1,6}		3
Semester Credit Hours		16
Fourth Year		
Fall		
ECEN 403	Electrical Design Laboratory I ¹	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ³		6
ECEN elective ^{1,7}		9
High Impact Experience ⁸		0
ECEN 399	High Impact Professional Development	
Semester Credit Hours		18
Spring		
ECEN 404	Electrical Design Laboratory II ¹	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ³		3
ECEN elective ^{1,7}		10
Semester Credit Hours		16
Total Semester Credit Hours		97

⁶ Select from ASTR 314, CSCE 313, CSCE 314, ESET 352, MATH 407, MATH 412, MATH 414, MATH 417, MATH 470, MATH 471, MEEN 221, MEEN 222/MSEN 222, MEEN 315, MSEN 325, PHYS 221.

⁷ Select from ECEN 326, ECEN 333, ECEN 338, ECEN 360, ECEN 410-480 (<http://catalog.tamu.edu/undergraduate/course-descriptions/ecen/>), ECEN 489.

⁸ 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 ECEN advising office.

Total Program Hours 128