ELECTRONIC SYSTEMS ENGINEERING TECHNOLOGY - BS

Electronic Systems Engineering Technology (ESET) prepares graduates for careers in electronic product and system development across a diverse range of industries that include the medical, computer, power, automotive, oil and gas, information/communication technologies, and quality of life sectors. While graduates of the program receive a rigorous technical education and take engineering and technology positions within industry, they are also well prepared for positions in technical sales and project management. The ESET curriculum is based on a strong underpinning of engineering math and science courses followed by a core technical sequence. This core includes analog and digital electronics, embedded systems design, software development using C and assembly language, wired/wireless communications, electronics test, statistical tools for engineers, instrumentation and control systems. Throughout their curriculum, students work on multiple open-ended projects to design, implement, test, and evaluate hardware and software systems. One of the most unique aspects of the Electronic Systems Engineering Technology program is that almost every technical course provides a hands-on laboratory experience using facilities equipped with state-of-the-art computer systems, test equipment, and industry-standard computer-aided design and analysis packages. The technical curriculum is augmented with coursework in written and oral communications, product/system development, device/system testing and technical project management. A team-based industry-sponsored capstone design sequence provides a challenging opportunity to apply technical, managerial, and communications skills to solving a real-world problem.

The Electronic Systems Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org/.

ESET Program Mission

The Electronic Systems Engineering Technology Program at Texas A&M University prepares graduates for immediate impact and long-term career success by providing a real-world experiential education coupled with personalized undergraduate experiences in electronics product development, test, system integration, and engineering research.

ESET Program Educational Objectives

The Electronic Systems Engineering Technology Program at Texas A&M has as its primary educational objectives to produce graduates who, after three to five years:

- possess the technical skills to be productive, innovative, and have successful careers in regional, state, national and/or global electronic product and system development industries.
- demonstrate increasing levels of leadership, teamwork, and ability to communicate technical information to technical and non-technical stakeholders during their careers.
- exhibit a commitment to professional ethics in their careers.
- display a desire for a life time of further challenges and learning, and flexibility to adapt to a fast-changing environment in engineering industries.

A continuous cycle of assessment and program improvement is used to ensure that these objectives are being met. Through interactions with industry and academic partners, the Electronic Systems Engineering Technology program continues to offer a state-of-the-art curriculum that produces successful graduates.

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		**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 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**
ENGR 217/ PHYS 217	Experimental Physics and Engineering Lab III - Electricity and Magnetism [1]	2
ESET 210	Circuit Analysis [1]	4
ESET 219	Digital Electronics [1]	4
ESET 269	Embedded Systems Development in C [1]	3
PHYS 207	Electricity and Magnetism for Engineering and Science [1]	3
	Semester Credit Hours	**16**
Spring		
ESET 211	Power Systems and Circuit Applications [1]	3
ESET 315	Local-and-Metropolitan-Area Networks [1]	4
ESET 329	Six Sigma and Applied Statistics [1]	3
ESET 349	Microcontroller Architecture [1]	4
Mathematics (http://catalog.tamu.edu/undergraduate/course-descriptions/math/) [1,6]		3
	Semester Credit Hours	**17**
Third Year		
Fall		
ESET 319	Engineering Leadership [1]	3
ESET 333	Product Development [1]	3
ESET 350	Analog Electronics [1]	4
ESET 355	Electromagnetics and High Frequency Systems [1]	4
ESET 369	Embedded Systems Software [1]	4
	Semester Credit Hours	**18**
Spring		
ENTC 399	High Impact Experience [7]	0
ESET 352	Electronics Testing I [1]	4
ESET 359	Electronic Instrumentation [1]	4
ESET 415	Advanced Network Systems and Security [1]	3
ESET 455	Wireless Transmission Systems [1]	4
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [3]		3
	Semester Credit Hours	**18**
Fourth Year		
Fall		
ESET 419	Engineering Technology Capstone I [1]	3
ESET 462	Control Systems [1]	4
Technical elective [1,6]		3
Select one of the following:		3
ENGL 210	Technical and Professional Writing	
COMM 203	Public Speaking	
COMM 205	Communication for Technical Professions	
	Semester Credit Hours	**13**
Spring		
ESET 420	Engineering Technology Capstone II [1]	2
Technical elective [1,6]		3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [3]		3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [3]		3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [3]		3
	Semester Credit Hours	**14**
	Total Semester Credit Hours	**96**

[6] See departmental advisor for a list of approved electives. ENTC 485 is not for general use as a technical elective.
[7] 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 ETID advising office.

This curriculum lists the minimum number of classes required for graduation. Additional courses may be taken.

Total Program Hours 127