

MULTIDISCIPLINARY ENGINEERING TECHNOLOGY - BS, STEM EDUCATION TRACK

Multidisciplinary Engineering Technology (MXET) prepares students for careers requiring an understanding of technical problems and systems that combine principles from two or more engineering technology disciplines. The degree is designed to be flexible, giving the student a strong background in electronic and mechanical systems, which is then augmented with a focus area. Graduates of the program receive a rigorous technical education and typically take engineering and technology positions appropriate to their focus area of study. The MXET curriculum is based on a strong underpinning of engineering math and science courses followed by a core technical sequence. This core includes mechanical, electronic and embedded systems/software fundamentals, principles and design concepts. Throughout their curriculum, students work on multiple open-ended projects to design, implement, test, and evaluate mechanical and electronic hardware and software systems. One of the most unique aspects of the Multidisciplinary Engineering Technology program is that most technical courses provide a hands-on laboratory experience using state-of-the-art equipment and industry-standard design and analysis software. The technical curriculum is augmented with courses in written/oral communications and technical project management. A team-based industry-sponsored capstone design sequence provides a challenging opportunity to apply technical, managerial, and communications skills to solve a real-world problem.

MXET Program Mission

The Multidisciplinary 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 mechanical, electronic, control, computer and communication systems, as well as engineering design and development.

MXET Program Educational Objectives

The program educational objectives of the BS MXET degree program are to produce graduates who, within two to five years after graduation, will:

- Possess and demonstrate technical knowledge of the design, manufacture, sales, and service of complex systems that span multiple engineering technology disciplines.
- Demonstrate an increasing level of leadership and responsibility.
- Exhibit productivity in a dynamic work environment through a commitment to lifelong learning.
- Exhibit a commitment to professional ethics in their professional careers.

A continuous cycle of assessment and program improvement is used to ensure that these objectives are being met. Through interactions with industry and

MXET Tracks

The MXET program has a common core of courses and 29 additional credit hours that allow students to gain further experience with the focus

area of choice. Currently, there are three focus areas, each represents a track of the MXET program. These tracks are mechatronics, STEM education, and electro marine engineering technology. The MXET program is offered at three distinct locations: College Station, Galveston, and McAllen.

STEM Education Track

The STEM education track has been established through a partnership with the College of Education and Human Development and includes twenty-nine credit hours of coursework in education. These courses, including a semester-long practicum, specifically prepare graduates to teach at the secondary education level. Graduates from this program will be qualified to take the State of Texas math, physical science, and engineering teaching certification exam.

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/	Experimental Physics and Engineering Lab	2
PHYS 217	III - Electricity and Magnetism ¹	
ESET 210	Circuit Analysis ¹	4
ESET 219	Digital Electronics ¹	4
MMET 207	Metallic Materials ¹	3
PHYS 207	Electricity and Magnetism for Engineering and Science ¹	3
Semester Credit Hours		16
Spring		
ESET 269	Embedded Systems Development in C ¹	3
ESET 350	Analog Electronics ¹	4
INST 210	Understanding Special Populations ¹	3
MMET 275	Mechanics for Technologists ¹	3

MMET 370	Thermodynamics for Technologists ¹	4
Semester Credit Hours		17
Summer		
Math elective ^{1,7}		3
Semester Credit Hours		3
Third Year		
Fall		
ESET 349	Microcontroller Architecture ^{1,6}	4
MXET 375	Applied Dynamic Systems ¹	3
MMET 376	Strength of Materials ^{1,6}	4
TEFB 322	Teaching and Schooling in Modern Society ^{1,6}	3
Technical elective ^{1,7}		4
Semester Credit Hours		18
Spring		
ENTC 399	High Impact Experience ⁸	0
ESET 359	Electronic Instrumentation ¹	4
ESET 419	Engineering Technology Capstone I ¹	3
or MMET 429	or Managing People and Projects in a Technological Society	
MMET 363	Mechanical Design Applications I ¹	3
RDNG 465	Reading in the Middle and Secondary Grades ^{1,6}	3
TEFB 324	Teaching Skills II ^{1,6}	3
Semester Credit Hours		16
Summer		
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ³		6
Semester Credit Hours		6
Fourth Year		
Fall		
EDCI 358	Instructional Methods in Engineering and Technology Education ^{1,6}	3
ESET 420	Engineering Technology Capstone II ¹	2
or MMET 422	or Manufacturing Technology Projects	
TEFB 406	Science in the Middle and Secondary School ^{1,6}	3
or TEFB 407	or Mathematics in the Middle and Senior School	
Select one of the following:		3
COMM 203	Public Speaking	
COMM 205	Communication for Technical Professions	
ENGL 210	Technical and Professional Writing	
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ³		3
Semester Credit Hours		14
Spring		
MEFB 497	Supervised Clinical Teaching ^{1,6}	6
Semester Credit Hours		6
Total Semester Credit Hours		96

⁶ Meets the 29 hour STEM Education focus area requirements.

⁷ See a departmental advisor for a list of approved electives.

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 ETID advising office.

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

Total Program Hours 127