MULTIDISCIPLINARY ENGINEERING TECHNOLOGY - BS, STEM EDUCATION TRACK

Overview
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 and then augmented with a 29-hour 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 solving 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 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 academic partners, the Multidisciplinary Engineering Technology program offers a state-of-the-art curriculum that produces successful graduates.

MXET Focus Areas
As discussed, the MXET degree supports a 29-hour focus area allowing the student to apply their technical knowledge to specific areas of interest. Currently, the degree supports two focus areas. The Mechatronics focus area prepares students to design, develop and support products and systems that combine mechanical, electronic, communication, control, and embedded computing principles. The STEM education focus area has been established through a partnership with the College of Education and includes twenty-nine hours that prepares graduates to teach at the secondary education level. Graduates from this program will be qualified to sit for the State of Texas math, physical science and engineering teaching certificate.

Additional MXET focus areas are currently being identified and will be available in the future.

Program Requirements

**First Year**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Fall</td>
<td></td>
</tr>
<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</td>
<td>Introduction to Rhetoric and Composition $^{1}$</td>
</tr>
<tr>
<td>or ENGL 104</td>
<td>or Composition and Rhetoric</td>
</tr>
<tr>
<td>ENGR 102</td>
<td>Engineering Lab I - Computation $^{1}$</td>
</tr>
<tr>
<td>MATH 151</td>
<td>Engineering Mathematics $^{1,2}$</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>) $^{3}$</td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Spring</th>
<th>Semester Credit Hours</th>
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<tbody>
<tr>
<td>CHEM 102 &amp; CHEM 112</td>
<td>Fundamentals of Chemistry II and Fundamentals of Chemistry Laboratory II $^{1,4}$</td>
</tr>
<tr>
<td>ENGR 216/PHYS 216</td>
<td>Experimental Physics and Engineering Lab II: Mechanics $^{1}$</td>
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<tr>
<td>MATH 152</td>
<td>Engineering Mathematics II $^{1}$</td>
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PHYS 206  Newtonian Mechanics for Engineering and Science 1  
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curruculum) 3,5  
Semester Credit Hours  3-6  

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 18 hours shown as University Core Curriculum electives, 3 must be from creative arts, 3 from social and behavioral sciences (see IDIS curriculum for more information), 6 from American history and 6 from government/political science. The required 6 hours from international and cultural diversity may be met by courses satisfying the creative arts, social and behavioral sciences and American history requirements if they are also on the approved list of international and cultural diversity courses.  
4 BMEN, CHEN and MSEN require 8 hours of freshman chemistry, which may be satisfied by CHEM 101/CHEM 111 or CHEM 107/CHEM 117 and CHEM 102/CHEM 112; Credit by Examination (CBE) for CHEM 101/CHEM 111 or CHEM 107/CHEM 117 plus CHEM 102/CHEM 112; or 8 hours of CBE for CHEM 101/CHEM 111 or CHEM 107/CHEM 117 and CHEM 102/CHEM 112. BMEN, CHEN and MSEN should take CHEM 102/CHEM 112 second semester freshman year. CPSC students may take CHEM 101/CHEM 111 or CHEM 107. CHEM 102/CHEM 112 will substitute for CHEM 107.  
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  
ENGR 217/PHYS 217  Experimental Physics and Engineering Lab III  -  Electricity and Magnetism 1  
ESET 210  Circuit Analysis 1  
ESET 219  Digital Electronics 1  
MMET 207  Metallic Materials 1  
PHYS 207  Electricity and Magnetism for Engineering and Science 1  
Semester Credit Hours  16  

Spring  
ESET 269  Embedded Systems Development in C  
ESET 319  Engineering Leadership 1,6  
ESET 350  Analog Electronics  
INST 210  Understanding Special Populations  
MMET 275  Mechanics for Technologists  
Semester Credit Hours  16  

Summer  
Math Elective 1,7  
Semester Credit Hours  3  

Third Year  

Fall  
MMET 370  Thermodynamics for Technologists 1  
MXET 375  Applied Dynamic Systems 1  
TEFB 322  Teaching and Schooling in Modern Society 1,6  
TEFB 324  Teaching Skills II 1,6  
Technical elective 1,6  
Technical elective 1,6  
Semester Credit Hours  17  

Spring  
ESET 359  Electronic Instrumentation 1  
ESET 419 or MSET 429  Engineering Technology Capstone I 1  
TEFB 406  Science in the Middle and Secondary School 1,6  
High Impact Experience 9  
ENTC 399  High Impact Experience  
Technical elective 1,6,8  
Semester Credit Hours  15  

Fourth Year  

Fall  
EDCI 358  Instructional Methods in Engineering and Technology Education 1,6  
ENGR 482/PHIL 482  Ethics and Engineering  
ESET 420 or MSET 422  Engineering Technology Capstone II 1  
RDNG 465  Reading in the Middle and Secondary Grades 1,6  
TEFB 407  Mathematics in the Middle and Senior School 1,6  
Select one of the following:  
COMM 203  Public Speaking  
COMM 205  Communication for Technical Professions  
ENGL 210  Technical and Business Writing  
Semester Credit Hours  17  

Spring  
MEFB 497  Supervised Clinical Teaching 1,6  
Semester Credit Hours  6  
Total Semester Credit Hours  96  

6 Meets the 29 hr STEM Education focus area requirements.  
7 See a departmental advisor for a list of approved electives.
The 6 hours of technical electives will be satisfied by taking ESET 329 and ESET 333. All other options must be approved in advance by the MXET program coordinator.

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**