MULTIDISCIPLINARY ENGINEERING TECHNOLOGY - BS, ELECTRO MARINE ENGINEERING TECHNOLOGY 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 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 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 academic partners, the Multidisciplinary Engineering Technology program offers a state-of-the-art curriculum that produces successful graduates.

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.

Electro Marine Engineering Technology Track

The Electro Marine Engineering Technology track has an emphasis in marine mechatronics, a multidisciplinary field that includes a combination of electrical, mechanical, communications, control, and marine engineering technology topics. Students interested in wireless communications, automation, instrumentation and/or robotics will gain hands-on experience with a focus on marine electronic systems. Additionally, students graduating with this degree and possessing a license will be well prepared to become an electronic technology officer (ETO). In the near future, at least one ETO will be required on each sailing vessel.

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

<table>
<thead>
<tr>
<th>Fall</th>
<th>Semester Credit Hours</th>
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<tbody>
<tr>
<td>CHEM 107 General Chemistry for Engineering Students 1,4</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 117 General Chemistry for Engineering Students Laboratory 1,4</td>
<td>1</td>
</tr>
<tr>
<td>ENGL 103 or ENGR 104 Introduction to Rhetoric and Composition 1</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 102 Engineering Lab I - Computation 1</td>
<td>2</td>
</tr>
<tr>
<td>MATH 151 Engineering Mathematics 1,2</td>
<td>4</td>
</tr>
</tbody>
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Multidisciplinary Engineering Technology - BS, Electro Marine Engineering Technology Track

University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) 3

<table>
<thead>
<tr>
<th>Semester Credit Hours</th>
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<tbody>
<tr>
<td>31-32</td>
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</table>

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 lower or higher 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, or COMM 205) 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

<table>
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<tr>
<th>Semester Credit Hours</th>
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<td>15-16</td>
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Fall

ENGR 216/PHYS 216 MATH 152
Experimental Physics and Engineering Lab II - Mechanics 1 Engineering Mathematics II 1

University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)

Select one of the following:

CHEM 120 Fundamentals of Chemistry II 1,4

Semester Credit Hours

3-4

Third Year

Fall

ESET 210
Circuit Analysis 1 or MARE 217
ESET 219
Digital Electronics 1
PHYS 207
Electricity and Magnetism for Engineering and Science 1
Math elective 1,6
Semester Credit Hours

16

Spring

ESET 269
Embedded Systems Development in C 1
ESET 350
Analog Electronics 1 or MARE 317
or Marine Analog Electronics
MMET 207
Metallic Materials 1 or MARE 210
or Metallurgy for Marine Engineers
MMET 275
Mechanics for Technologists 1
MMET 370 or MARE 315
Thermodynamics for Technologists 1 or Thermodynamics for Technologists
Semester Credit Hours

17

Fourth Year

Fall

ESET 315
Local-and-Metropolitan-Area Networks 1,7
ESET 359
Electronic Instrumentation 1
ESET 369
Embedded Systems Software 1,7
MMET 363
Mechanical Design Applications 1
High Impact Experience 8
ENTC 399
High Impact Experience
Semester Credit Hours

15

Spring

ESET 355
Electromagnetics and High Frequency Systems 1,7
ESET 419
Engineering Technology Capstone I 1
MXET 300
Mechatronics I – Mobile Robotic Systems 1,7
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)
Semester Credit Hours

16

Spring

ESET 420
Engineering Technology Capstone II 1
ESET 455
Wireless Transmission Systems 1,7
MARE 402
Shipboard Automation and Control 1,7
Multidisciplinary Engineering Technology - BS, Electro Marine Engineering Technology Track

University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) 6

<table>
<thead>
<tr>
<th>Semester Credit Hours</th>
<th>15</th>
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<tbody>
<tr>
<td>Total Semester Credit Hours</td>
<td>96</td>
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</table>

6 See a departmental advisor for a list of approved electives.
7 Meets the 29 hr Electro Marine Engineering Technology focus area requirements.
8 All students are required to complete a high-impact experience in order to graduate. The list of possible high-impact experiences is available from a departmental advisor.

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

**Total Program Hours 127**