MULTIDISCIPLINARY ENGINEERING TECHNOLOGY - BS

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 both mechanical and electronic 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 almost every technical course provides a hands-on laboratory experience using facilities equipped with 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 and computer 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 career.

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 above, 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 a focus in Mechatronics preparing students to design, develop and support products and systems that combine mechanical, electronic, communication, control, and embedded computing principles.

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

Program Requirements

The freshman year is identical for degrees in aerospace engineering, biomedical engineering, civil engineering, computer engineering, computer science, electrical engineering, electronic systems engineering technology, industrial distribution, industrial engineering, manufacturing and mechanical engineering technology, mechanical engineering, multidisciplinary engineering technology, nuclear engineering, ocean engineering, and petroleum engineering. The freshman year is slightly different for chemical engineering in that students take CHEM 101/111 or CHEM 107/117 and CHEM 102/112. Biomedical Engineering also requires a two semester sequence of chemistry courses consisting of CHEM 101/111 or CHEM 107/117 and CHEM 102/112.

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>Semester Credit Hours</th>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>ENGL 104 Composition and Rhetoric</td>
<td>CHEM 107 General Chemistry for Engineering Students</td>
</tr>
<tr>
<td>2</td>
<td>ENGR 111 Foundations of Engineering</td>
<td>CHEM 117 General Chemistry for Engineering Students Laboratory</td>
</tr>
<tr>
<td>4</td>
<td>MATH 151 Engineering Mathematics</td>
<td>ENGR 112 Foundations of Engineering</td>
</tr>
<tr>
<td>4</td>
<td>PHYS 218 Mechanics</td>
<td>MATH 152 Engineering Mathematics</td>
</tr>
<tr>
<td>3</td>
<td>University Core Curriculum</td>
<td>PHYS 208 Electricity and Optics</td>
</tr>
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<td>(<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum</a>)</td>
<td>University Core Curriculum</td>
</tr>
</tbody>
</table>

1 A grade of C or better is required.
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.

Of the 18 hours shown as University Core Curriculum electives, 3 must be from creative arts (for Industrial Distribution this is 3 hours from language, philosophy and culture, see IDIS curriculum for more information), 3 from social and behavioral sciences, 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 (for Industrial Distribution this is language, philosophy and culture), and American history requirements if they are also on the approved list of international and cultural diversity courses.

BMEN and CHEN 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.

### Second Year

#### Fall

- **ESET 210** Circuit Analysis 1 4
- **ESET 219** Digital Electronics 1 4
- **MMET 207** Metallic Materials 1 3
- **MMET 275** Mechanics for Technologists 1 3
- **Mathematics Elective** 1,5 3
- **Semester Credit Hours** 17

#### Spring

- **ESET 269** Embedded Systems Development in C 1 3
- **ESET 350** Analog Electronics 1 4
- **MMET 303** Fluid Mechanics and Power 1,6 4
- **MMET 376** Strength of Materials 1,6 4
- **University Core Curriculum** (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum) 3
- **Semester Credit Hours** 18

### Third Year

#### Fall

- **ESET 349** Microcontroller Architecture 1,6 4
- **MMET 361** Product Design and Solid Modeling 1,6 3
- **MMET 370** Thermodynamics for Technologists 1 4
- **MMET 375** Applied Dynamic Systems 1 3
- Select one:
  - **ENGL 210** Technical and Business Writing
  - **COMM 203** Public Speaking
  - **COMM 205** Communication for Technical Professions
  - **Semester Credit Hours** 17

#### Spring

- **ESET 359** Electronic Instrumentation 1 4
- **ESET 369** Embedded Systems Software 1,6 4
- **MMET 363** Mechanical Design Applications 1 3
- **MXET 300** Mechatronics I – Mobile Robotic Systems 1,6

### Fourth Year

#### Fall

- **ESET 419** or MMET 429 Engineering Technology Capstone I 1 3
- **ESET 462** Control Systems 1,6 4
- **Mechatronics II** 1,6,8 3
- **Technical Elective** 1,5 2
- **Semester Credit Hours** 12

#### Spring

- **ENGR 482/PHIL 482** Ethics and Engineering 3
- **ESET 420** or MMET 422 Engineering Technology Capstone II 1 2
- **University Core Curriculum** (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum) 6
- **Technical Elective** 1,5 2
- **Semester Credit Hours** 13

**Total Semester Credit Hours** 94

5. See a departmental advisor for a list of approved electives.
6. Meets the 29 hr Mechatronics focus area requirements.
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.
8. This is a new course, see a departmental advisor for the correct course number.

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

**Total Program Hours 127**