**MULTIDISCIPLINARY ENGINEERING TECHNOLOGY - BS, MECHATRONICS 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**
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 (Note: not all programs listed are offered in Qatar). The freshman year is slightly different for chemical engineering in that students take CHEM 119 or CHEM 107/CHEM 117 and CHEM 120. Biomedical Engineering also requires a two semester sequence of chemistry courses consisting of CHEM 109 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>Semester Credit Hours</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 107 General Chemistry for Engineering Students ¹, 4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CHEM 117 General Chemistry for Engineering Students Laboratory ¹, 4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ENGL 103 or ENGL 104 Introduction to Rhetoric and Composition ¹</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ENGR 102 Engineering Lab I - Computation ¹</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MATH 151 Engineering Mathematics ¹, ²</td>
<td>4</td>
<td></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>
<td></td>
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<tr>
<td>Semester Credit Hours</td>
<td>16</td>
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**Second Year**

<table>
<thead>
<tr>
<th>Semester Credit Hours</th>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>CHEM 120 Fundamentals of Chemistry II ¹, 4</td>
<td>4</td>
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</tr>
<tr>
<td>ENGR 216/PHYS 216 Experimental Physics and Engineering Lab II · Mechanics ¹</td>
<td>2</td>
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</tr>
<tr>
<td>MATH 152 Engineering Mathematics II ¹</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>PHYS 206 Newtonian Mechanics for Engineering and Science ¹</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

¹ The 29-hour focus area is completed in subsequent years.
² MATH 151 is a prerequisite for ENG 102 in Fall of the second semester.
³ Students must complete this course before taking ENG 102 in Fall of the second semester.
⁴ Courses and credit hours may vary depending on the focus area.

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

### Fall

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 217</td>
<td>Electrical Circuits I</td>
<td>2</td>
</tr>
<tr>
<td>PHYS 217</td>
<td>Experimental Physics and Engineering Lab</td>
<td>2</td>
</tr>
<tr>
<td>ESET 210</td>
<td>Circuit Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ESET 219</td>
<td>Digital Electronics</td>
<td>3</td>
</tr>
<tr>
<td>MMET 207</td>
<td>Metallic Materials</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 207</td>
<td>Electricity and Magnetism</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total Semester Credit Hours</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

### Spring

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ESET 269</td>
<td>Embedded Systems Development in C</td>
<td>3</td>
</tr>
<tr>
<td>ESET 350</td>
<td>Analog Electronics</td>
<td>3</td>
</tr>
<tr>
<td>MMET 275</td>
<td>Mechanics for Technologists</td>
<td>3</td>
</tr>
<tr>
<td>MMET 376</td>
<td>Strength of Materials</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total Semester Credit Hours</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

### Notes:

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 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 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 freshman chemistry, which may be satisfied by CHEM 119 or CHEM 107/1117 and CHEM 120; Credit by Examination (CBE) for CHEM 119 or CHEM 107/1117 plus CHEM 120; or 8 hours of CBE for CHEM 119 or CHEM 107/1117 and CHEM 120. BMEN, CHEN and MSEN should take CHEM 120 second semester freshman year. CPSC students may take CHEM 119 or CHEM 107. CHEM 120 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.
This curriculum lists the minimum number of classes required for graduation. Additional courses may be taken.

**Total Program Hours 127**