Multidisciplinary Engineering Technology - BS

Multidisciplinary Engineering Technology (MXET) prepares students for careers requiring an understanding of complex mechanical, electronic, embedded, and control systems. Emphasis areas of study allow students to apply these general concepts to specific focus areas such as mechatronics. While graduates of the program receive a rigorous technical education and typically take engineering and technology positions within industry, they are also well prepared for positions in technical sales and project management. 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 with a focus on embedded systems and control of industrial robotic, automation and manufacturing systems. 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 packages. The technical curriculum is augmented with courses in the particular emphasis areas, written and 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.

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 technology, nuclear engineering, ocean engineering, and petroleum engineering. The freshman year is slightly different for chemical engineering in that students take CHEM 101/CHEM 111 or CHEM 107/CHEM 117 and CHEM 102/CHEM 112. Biomedical Engineering also requires a two semester sequence of chemistry courses consisting of CHEM 101/CHEM 111 or CHEM 107/CHEM 117 and CHEM 102/CHEM 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>Term</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td></td>
</tr>
<tr>
<td>ENGL 104</td>
<td>Composition and Rhetoric 1</td>
</tr>
<tr>
<td>ENGR 111</td>
<td>Foundations of Engineering I 1</td>
</tr>
<tr>
<td>MATH 151</td>
<td>Engineering Mathematics I 1,2</td>
</tr>
<tr>
<td>PHYS 218</td>
<td>Mechanics 1</td>
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<tr>
<td>Total Semester Credit Hours:</td>
<td>16</td>
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<table>
<thead>
<tr>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>CHEM 107</td>
</tr>
<tr>
<td>CHEM 117</td>
</tr>
<tr>
<td>ENGR 112</td>
</tr>
<tr>
<td>MATH 152</td>
</tr>
<tr>
<td>PHYS 208</td>
</tr>
<tr>
<td>University Core Curriculum 3</td>
</tr>
<tr>
<td>Total Semester Credit Hours:</td>
</tr>
</tbody>
</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 higher or lower level.
3 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**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESET 210</td>
<td>Circuit Analysis</td>
<td>1</td>
</tr>
<tr>
<td>ESET 219</td>
<td>Digital Electronics</td>
<td>1</td>
</tr>
<tr>
<td>MMET 207</td>
<td>Metallic Materials</td>
<td>1</td>
</tr>
<tr>
<td>MMET 275</td>
<td>Mechanics for Technologists</td>
<td>1</td>
</tr>
<tr>
<td>Mathematics Elective $^{1,5}$</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Term Semester Credit Hours</td>
<td></td>
<td>17</td>
</tr>
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**Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESET 269</td>
<td>Embedded Systems Development in C</td>
<td>1</td>
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<tr>
<td>ESET 350</td>
<td>Analog Electronics</td>
<td>1</td>
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<tr>
<td>MMET 303</td>
<td>Fluid Mechanics and Power</td>
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<tr>
<td>MMET 376</td>
<td>Strength of Materials</td>
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</tr>
<tr>
<td>University Core Curriculum $^3$</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Term Semester Credit Hours</td>
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**Third Year**

**Fall**

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<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Credit Hours</th>
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<tbody>
<tr>
<td>ESET 349</td>
<td>Microcontroller Architecture</td>
<td>1</td>
</tr>
<tr>
<td>MMET 361</td>
<td>Product Design and Solid Modeling</td>
<td>1</td>
</tr>
<tr>
<td>MMET 370</td>
<td>Thermodynamics for Technologists</td>
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<tr>
<td>Dynamics $^{1,6}$</td>
<td></td>
<td>3</td>
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<tr>
<td>Select one:</td>
<td>technical and business writing</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 210</td>
<td>Technical and Business Writing</td>
<td>1</td>
</tr>
<tr>
<td>COMM 203</td>
<td>Public Speaking</td>
<td>1</td>
</tr>
<tr>
<td>COMM 205</td>
<td>Communication for Technical Professions</td>
<td>1</td>
</tr>
<tr>
<td>Term Semester Credit Hours</td>
<td></td>
<td>17</td>
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**Spring**

<table>
<thead>
<tr>
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<th>Title</th>
<th>Semester Credit Hours</th>
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<tbody>
<tr>
<td>ESET 359</td>
<td>Electronic Instrumentation</td>
<td>1</td>
</tr>
<tr>
<td>ESET 369</td>
<td>Embedded Systems Software</td>
<td>1</td>
</tr>
<tr>
<td>MMET 363</td>
<td>Mechanical Design Applications I</td>
<td>1</td>
</tr>
<tr>
<td>Mechatronics I $^{1,6}$</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>University Core Curriculum $^3$</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Term Semester Credit Hours</td>
<td></td>
<td>17</td>
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</tbody>
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**Fourth Year**

**Fall**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Credit Hours</th>
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<tbody>
<tr>
<td>ESET 419 or</td>
<td>Engineering Technology Capstone I</td>
<td>3</td>
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<tr>
<td>MMET 429</td>
<td>or Managing People and Projects in a</td>
<td>1</td>
</tr>
<tr>
<td>ESET 462</td>
<td>Control Systems</td>
<td>1</td>
</tr>
<tr>
<td>Mechatronics II $^{1,6}$</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Technical Elective $^{1,5}$</td>
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<td>2</td>
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<tr>
<td>Term Semester Credit Hours</td>
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**Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ESET 420 or</td>
<td>Engineering Technology Capstone II or</td>
<td>2</td>
</tr>
<tr>
<td>MMET 422</td>
<td>Manufacturing Technology Projects $^1$</td>
<td>2</td>
</tr>
<tr>
<td>Technical Elective $^{1,5}$</td>
<td></td>
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</tr>
<tr>
<td>ENGR 482/PHIL 482</td>
<td>Ethics and Engineering</td>
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<tr>
<td>University Core Curriculum $^3$</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Term Semester Credit Hours</td>
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<td>13</td>
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</table>

Total Semester Credit Hours: 94

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

6 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**