Mechanical Engineering

Accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone (410) 347-7700.

University Requirements (23-24)
Writing, Rhetoric and American Cultures (WRA)
Integrative Studies in Humanities (IAH)
Integrative Studies in Social Sciences (ISS)
Bioscience (one of the following):
BS 110, BS 111, ENT 205, MMG 201
MMG 301, PLB 105, PSL 250, ZOL 141

College Requirements (29)
CEM 141 General Chemistry I
CSE 131 Technical Computing and Problem Solving
MTH 132 Calculus I
MTH 133 Calculus II
MTH 234 Multivariable Calculus
MTH 235 Differential Equations
"PHY 183 Physics for Scientists and Engineers I
"PHY 184 Physics for Scientists and Engineers II

Bachelor of Science Major Requirements (55)
CE 221 Statics
CEM 161 Chemistry Laboratory I
ECE 345 Electronic Instrumentation and Systems
ME 180 Engineering Graphics Communications
ME 201 Thermodynamics
ME 222 Mechanics of Deformable Solids
ME 332 Fluid Mechanics
ME 361 Dynamics
ME 371 Mechanical Design I
ME 391 Mechanical Engineering Analysis
ME 410 Heat Transfer
ME 412 Heat Transfer Laboratory
ME 451 Control Systems
ME 461 Mechanical Vibrations
ME 471 Mechanical Design II
ME 481 Mechanical Engineering Design Projects
MSE 250 Materials Science and Engineering
STT 351 Probability and Statistics for Engineering

A. Senior Electives (12)
A minimum of 12 credits must be taken from the list below, including at least one Design-Intensive Course:
ME 422 Introduction to Combustion
ME 423 Intermediate Mechanics of Deformable Solids
ME 425 Experimental Mechanics
ME 426 Introduction to Composite Materials
ME 432 Intermediate Fluid Mechanics
ME 440 Aerospace Engineering Fundamentals
ME 444 Automotive Engines
ME 457 Mechatronic System Modeling and Simulation
ME 464 Intermediate Dynamics
ME 465 Computer Aided Optimal Design
ME 477 Manufacturing Processes
ME 478 Product Development
ME 490 Independent Study in Mechanical Engineering
ME 491 Selected Topics in Mechanical Engineering
ME 495 Tissue Mechanics
ME 497 Biomechanical Design

B. Design-Intensive courses (a minimum of 3 credits):
ME 416 Computer Assisted Design of Thermal Systems
ME 442 Turbomachinery
ME 445 Automotive Powertrain Design
ME 456 Mechatronic System Design
ME 475 Computer Aided Design of Structures

Options:
The Department offers options in engineering mechanics, and manufacturing engineering to students wishing an area of specialization in their degree. The options are available to, but not required of, any student enrolled in the Bachelor of Science degree program in mechanical engineering. NOTE: Completing the Bachelor of Science degree in mechanical engineering with an option may require more than 128 credits. Upon completion of the required courses for one of these options, certification will appear on the student’s official transcript.

Manufacturing Engineering Option (13)
EC 210 Economics Principles Using Calculus
ME 372 Machine Tool Laboratory
ME 477 Manufacturing Processes
ME 478 Product Development

Select one of the following courses (3 credits):
CHE 472 Composite Materials Processing
ECE 415 Computer Aided Manufacturing
MSE 426 Introduction to Composite Materials

Engineering Mechanics Option (12)
ME 423 Intermediate Mechanics of Deformable Solids

Select three of the following courses (9 credits):
ME 425 Experimental Mechanics
ME 432 Intermediate Fluid Mechanics
ME 464 Intermediate Dynamics
ME 475 Computer Aided Design of Structures

A. Senior Electives (12)
A minimum of 12 credits must be taken from the list below, including at least one Design-Intensive Course:
ME 422 Introduction to Combustion
ME 423 Intermediate Mechanics of Deformable Solids
ME 425 Experimental Mechanics
ME 426 Introduction to Composite Materials
ME 432 Intermediate Fluid Mechanics
ME 440 Aerospace Engineering Fundamentals
ME 444 Automotive Engines
ME 457 Mechatronic System Modeling and Simulation
ME 464 Intermediate Dynamics
ME 465 Computer Aided Optimal Design
ME 477 Manufacturing Processes
ME 478 Product Development
ME 490 Independent Study in Mechanical Engineering
ME 491 Selected Topics in Mechanical Engineering
ME 495 Tissue Mechanics
ME 497 Biomechanical Design

1If PHY 231 is taken in place of PHY 183, PHY 233B must also be completed. If PHY 232 is taken in place of PHY 184, PHY 234B must also be completed.
Mechanical Engineering
Sample Program

**Archived Curriculum**
Fall, 2006 - Summer, 2007

### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioscience</td>
<td>3/4</td>
<td>ME 180</td>
<td>3</td>
</tr>
<tr>
<td>CEM 141</td>
<td>4</td>
<td>MTH 133</td>
<td>4</td>
</tr>
<tr>
<td>CEM 161</td>
<td>1</td>
<td>PHY 183</td>
<td>4</td>
</tr>
<tr>
<td>ISS 2XX</td>
<td>4</td>
<td>WRA 1XX</td>
<td>4</td>
</tr>
<tr>
<td>MTH 132</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15/16</strong></td>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

### Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 221</td>
<td>3</td>
<td>IAH 20X</td>
<td>4</td>
</tr>
<tr>
<td>CSE 131</td>
<td>3</td>
<td>ME 201</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td>ME 222</td>
<td>4</td>
</tr>
<tr>
<td>MTH 234</td>
<td>4</td>
<td>MSE 250</td>
<td>3</td>
</tr>
<tr>
<td>PHY 184</td>
<td>4</td>
<td>MTH 23S</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

### Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective</td>
<td>3</td>
<td>ECE 345</td>
<td>3</td>
</tr>
<tr>
<td>ISS 3XX</td>
<td>4</td>
<td>Elective</td>
<td>2</td>
</tr>
<tr>
<td>ME 361</td>
<td>3</td>
<td>IAH 2XX</td>
<td>4</td>
</tr>
<tr>
<td>ME 391</td>
<td>3</td>
<td>ME 332</td>
<td>4</td>
</tr>
<tr>
<td>STT 351</td>
<td>3</td>
<td>ME 371</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

### Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 410</td>
<td>3</td>
<td>ME 412</td>
<td>2</td>
</tr>
<tr>
<td>ME 451</td>
<td>4</td>
<td>ME 461</td>
<td>4</td>
</tr>
<tr>
<td>ME 471</td>
<td>3</td>
<td>ME 481</td>
<td>3</td>
</tr>
<tr>
<td>Senior Elective</td>
<td>3</td>
<td>Senior Elective</td>
<td>3</td>
</tr>
<tr>
<td>Senior Elective</td>
<td>3</td>
<td>Senior Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

Program Educational Objectives for the Undergraduate Program in Mechanical Engineering
Department of Mechanical Engineering
Michigan State University
(Approved by the Department Faculty February 17, 2005)

**Objective 1:** Our graduates will be competent engineers practicing in a diverse range of activities.

**Objective 2:** Our graduates will use their mechanical engineering education as an impetus for personal & professional growth.

**Objective 3:** Our graduates will have achieved a noteworthy level of workplace responsibility through understanding their environment and capabilities, including the importance of knowledge management.

**Objective 4:** Our graduates will be independent thinkers who take ownership in identifying problems and determining effective solution strategies in a timely manner.