Candidates for the degree of Master of Science in Mechanical Engineering must satisfy the following requirements:

1. Develop, and submit a program of study\(^1\)
2. Pass the Graduation Writing Test
3. Complete a minimum of 45 units of coursework with a grade point of average of 3.00 or higher, of which
   (a) At least 12 units must be in the Breadth area, and 16 units must be in a Technical Emphasis area (Thermal-Fluids or Solid Mechanics)
   (b) At least 36 units must be in 500 and 600 level courses, and
   (c) 8 units of Thesis (EGR 696) or 2 units of Directed Study (EGR 691) plus 2 units of Master’s Degree Project (EGR 692)\(^2\)

<table>
<thead>
<tr>
<th>Breadth (Math Courses)</th>
<th>Units</th>
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<tbody>
<tr>
<td>Adv. Differential Equations EGR 509</td>
<td>4</td>
</tr>
<tr>
<td>Eng. Prob. and Statistics EGR 510</td>
<td>4</td>
</tr>
<tr>
<td>Numerical Modeling EGR 511</td>
<td>4</td>
</tr>
<tr>
<td>Vector Ana. and Complex Var. EGR 512</td>
<td>4</td>
</tr>
<tr>
<td>Eng. Tensor Analysis EGR 513</td>
<td>4</td>
</tr>
<tr>
<td>Variational Methods in Eng. EGR 514</td>
<td>4</td>
</tr>
<tr>
<td>Matrix Methods in Eng. EGR 515</td>
<td>4</td>
</tr>
<tr>
<td>Special Topics for Grad. Students EGR 599</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total Units Required (Minimum)</strong></td>
<td>12</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Technical Emphasis (Thermal-Fluids Concentration)</th>
<th>Units</th>
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<tbody>
<tr>
<td>Conduction Heat Transfer ME 532</td>
<td>4</td>
</tr>
<tr>
<td>Adv. Fluid Dynamics ME 535</td>
<td>4</td>
</tr>
<tr>
<td>Adv. Eng. Thermodynamics ME 545</td>
<td>4</td>
</tr>
<tr>
<td>Adv. Transport Phenomena ME 550</td>
<td>4</td>
</tr>
<tr>
<td>Radiation Heat Transfer ME 564</td>
<td>4</td>
</tr>
<tr>
<td>Convective Heat Transfer ME 584</td>
<td>4</td>
</tr>
<tr>
<td>Computational Fluid Dynamics ME 632</td>
<td>4</td>
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<tr>
<td><strong>Total Units Required (Minimum)</strong></td>
<td>16</td>
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<table>
<thead>
<tr>
<th>Technical Electives</th>
<th>Units</th>
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<tbody>
<tr>
<td>Polymer Fluid Dynamics EGR 537</td>
<td>4</td>
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<tr>
<td>System Theory EGR 540</td>
<td>4</td>
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<tr>
<td>Comp. Simulation of Eng. System EGR 553</td>
<td>4</td>
</tr>
<tr>
<td>Nonlinear Dynamics ME 570</td>
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<tr>
<td>Combustion Theory ME 576</td>
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<tr>
<td>Vibration and Flutter EGR 579</td>
<td>4</td>
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<tr>
<td>Materials for Electronics EGR 580</td>
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</tr>
<tr>
<td>Solar Energy Systems ME 590</td>
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<tr>
<td>Direct Energy Conversion ME 591</td>
<td>4</td>
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<td>Boundary Layer Concepts EGR 595</td>
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<tr>
<td>Research Methods EGR 596</td>
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<tr>
<td>Special Topics for Grad. Students EGR 599</td>
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<tr>
<td>System Theory ECE 640</td>
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<tr>
<td>Digital Control Systems ECE 642</td>
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<tr>
<td>Optimal Control Systems ECE 643</td>
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<tr>
<td>Adv. Communication Systems ECE 644</td>
<td>4</td>
</tr>
<tr>
<td>Adv. Signal Processing ECE 651</td>
<td>4</td>
</tr>
<tr>
<td>Nonlinear Control Systems ECE 652</td>
<td>4</td>
</tr>
<tr>
<td>400 Level Engineering Courses xx 4xx(^3)</td>
<td>~8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical Emphasis (Solid Mechanics Concentration)</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elasticity ME 520</td>
<td>4</td>
</tr>
<tr>
<td>Fracture of Solids ME 534</td>
<td>4</td>
</tr>
<tr>
<td>Adv. Classical Dynamics ME 536</td>
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</tr>
<tr>
<td>Adv. Mechanics of Materials ME 556</td>
<td>4</td>
</tr>
<tr>
<td>Analysis of Mechanical Design ME 557</td>
<td>4</td>
</tr>
<tr>
<td>Special Topics ME 599</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total Units Required (Minimum)</strong></td>
<td>16</td>
</tr>
</tbody>
</table>

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\(^1\) Program of study should be filed before the completion of 12 units. The MSME program should be completed within 7 years.

\(^2\) 2 units of Directed study (EGR 691) are part of the Master’s Degree Project.

\(^3\) Up to 8 units of approval 400 level engineering course may be taken and counted toward the MSME program. These courses must be approved by the MSME Coordinator.