## MANUFACTURING CONCENTRATION

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>IME 327</td>
<td>Test Design and Analysis in Manufacturing Engineering</td>
<td>4</td>
</tr>
<tr>
<td>ME 418</td>
<td>Implementation of Mechanical Controls</td>
<td>4</td>
</tr>
<tr>
<td>or ME 419</td>
<td>Advanced Control Systems</td>
<td></td>
</tr>
<tr>
<td>ME 428</td>
<td>Senior Design Project I</td>
<td>2</td>
</tr>
<tr>
<td>ME 429</td>
<td>Senior Design Project II</td>
<td>2</td>
</tr>
<tr>
<td>ME 430</td>
<td>Senior Design Project III</td>
<td>2</td>
</tr>
</tbody>
</table>

Take all of the courses in one of the following emphasis areas: 8

### Mechanical Manufacturing Emphasis Area
- IME 330 Fundamentals of Manufacturing Engineering
- IME 450 Manufacturing Process and Tool Engineering

### Electronics Manufacturing Emphasis Area
- IME/MATE 458 Microelectronics and Electronics Packaging
- MATE 430 Micro/Nano Fabrication and Microfabrication Laboratory

### Design and Manufacturing Elective
Select from the following: 3-5
- IME 330 Fundamentals of Manufacturing Engineering
- IME 335 Computer-Aided Manufacturing I
- IME 356 Manufacturing Automation
- IME 416 Automation of Industrial Systems
- IME 418 Product-Process Design
- IME 428 Engineering Metrology
- IME 430 Quality Engineering
- IME 432 Additive Manufacturing
- IME 457 Advanced Electronic Manufacturing
- IME/MATE 458 Microelectronics and Electronics Packaging
- IME 527 Design of Experiments
- IME 543 Applied Human Factors
- MATE 430 Micro/Nano Fabrication and Microfabrication Laboratory
- MATE 440 Welding Metallurgy and Joining of Advanced Materials Laboratory
- ME 305 Introduction to Mechatronics
- ME 412 Composite Materials Analysis and Design

**Total units**: 25-27

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1 ENGR 459, ENGR 460 and ENGR 461 (6) may substitute for ME 428, ME 429 and ME 430 (6).

2 If a course is taken to meet a Emphasis Area requirement, it cannot be double-counted as a Design and Manufacturing Elective.