## 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
- & MATE 435 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
- & MATE 435 and Microfabrication Laboratory
- MATE 440 Welding Metallurgy and Joining of Advanced Materials
- & MATE 445 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. If not taken as part of the emphasis area. Courses cannot be double counted.

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