# Mechanical Engineering

[http://www.coe.miami.edu/dept-mac/](http://www.coe.miami.edu/dept-mac/)

## Curriculum Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Engineering Courses</strong></td>
<td></td>
</tr>
<tr>
<td>CAE 210</td>
<td>Mechanics of Solids I</td>
<td>3</td>
</tr>
<tr>
<td>ECE 205</td>
<td>Principles of Electrical Engineering--I</td>
<td>3</td>
</tr>
<tr>
<td>IEN 311</td>
<td>Applied Probability And Statistics</td>
<td>3</td>
</tr>
<tr>
<td>MAE 111</td>
<td>Introduction to Engineering I</td>
<td>3</td>
</tr>
<tr>
<td>MAE 112</td>
<td>Introduction to Engineering II</td>
<td>2</td>
</tr>
<tr>
<td>MAE 202</td>
<td>Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>MAE 207</td>
<td>Mechanics of Solids II</td>
<td>3</td>
</tr>
<tr>
<td>MAE 241</td>
<td>Measurements Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>MAE 301</td>
<td>Engineering Materials Science</td>
<td>3</td>
</tr>
<tr>
<td>MAE 302</td>
<td>Mechanical Behavior Of Materials</td>
<td>3</td>
</tr>
<tr>
<td>MAE 303</td>
<td>Thermodynamics I</td>
<td>3</td>
</tr>
<tr>
<td>MAE 309</td>
<td>Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>MAE 310</td>
<td>Heat Transfer</td>
<td>3</td>
</tr>
<tr>
<td>MAE 341</td>
<td>Mechanical Design I</td>
<td>3</td>
</tr>
<tr>
<td>MAE 342</td>
<td>Mechanical Design II</td>
<td>3</td>
</tr>
<tr>
<td>MAE 351</td>
<td>Mechanics Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>MAE 362</td>
<td>Computer Analysis of Mechanical and Aerospace Engineering Problems</td>
<td>3</td>
</tr>
<tr>
<td>MAE 404</td>
<td>Experimental Engineering Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>MAE 412</td>
<td>System Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>MAE 415</td>
<td>Automatic Control</td>
<td>3</td>
</tr>
<tr>
<td>MAE 441</td>
<td>Design of Fluid and Thermal Systems</td>
<td>3</td>
</tr>
<tr>
<td>MAE 442</td>
<td>Capstone Design Project-I</td>
<td>1</td>
</tr>
<tr>
<td>MAE 443</td>
<td>Capstone Design Project-II</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Math and Science Courses</strong></td>
<td></td>
</tr>
<tr>
<td>MTH 151</td>
<td>Calculus I for Engineers</td>
<td>5</td>
</tr>
<tr>
<td>MTH 162</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MTH 211</td>
<td>Calculus III</td>
<td>3</td>
</tr>
<tr>
<td>MTH 311</td>
<td>Introduction to Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>CHM 151</td>
<td>Chemistry for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>CHM 153</td>
<td>Chemistry Laboratory for Engineers</td>
<td>1</td>
</tr>
<tr>
<td>PHY 205</td>
<td>University Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHY 206</td>
<td>University Physics II</td>
<td>3</td>
</tr>
<tr>
<td>PHY 207</td>
<td>University Physics III</td>
<td>3</td>
</tr>
<tr>
<td>PHY 208</td>
<td>University Physics II Lab</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Math and Science Electives</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Technical Electives</strong></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
<td>126</td>
</tr>
</tbody>
</table>

## Plan of Study

### Freshman Year

**Fall**
- MAE 111: Introduction to Engineering I 3
- ENG 105: English Composition I 3
- MTH 151: Calculus I for Engineers 5
- PHY 205: University Physics I 3

**Credit Hours**: 14

**Spring**
- MAE 112: Introduction to Engineering II 2
- CAE 210: Mechanics of Solids I 3
- ENG 107: English Composition II: Science and Technology 3
- MTH 162: Calculus II 4
- PHY 206: University Physics II 3
- PHY 208: University Physics II Lab 1

**Credit Hours**: 16

### Sophomore Year

**Fall**
- MAE 207: Mechanics of Solids II 3
- IEN 311: Applied Probability And Statistics 3
- MTH 211: Calculus III 3
- PHY 207: University Physics III 3
- PHY 209: University Physics III Lab 1
- PS Cognate (PS Elective) 1 3

**Credit Hours**: 16

**Spring**
- MAE 202: Dynamics 3
- MAE 241: Measurements Laboratory 3
- ECE 205: Principles of Electrical Engineering--I 3
- CHM 151: Chemistry for Engineers 3
- CHM 153: Chemistry Laboratory for Engineers 1
- HA Cognate (HA Elective) 1 3

**Credit Hours**: 16

### Junior Year

**Fall**
- MAE 302: Mechanical Behavior Of Materials 3
- MAE 303: Thermodynamics I 3
- MAE 309: Fluid Mechanics 3
- MAE 341: Mechanical Design I 3

**Credit Hours**: 16
**Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH 311</td>
<td>Introduction to Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MAE 301</td>
<td>Engineering Materials Science</td>
<td>3</td>
</tr>
<tr>
<td>MAE 310</td>
<td>Heat Transfer</td>
<td>3</td>
</tr>
<tr>
<td>MAE 342</td>
<td>Mechanical Design II</td>
<td>3</td>
</tr>
<tr>
<td>MAE 351</td>
<td>Mechanics Laboratory</td>
<td>2.00</td>
</tr>
<tr>
<td>MAE 362</td>
<td>Computer Analysis of Mechanical and Aerospace Engineering Problems</td>
<td>3</td>
</tr>
<tr>
<td>MAE Technical Elective</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Credit Hours**

- **Total Credit Hours:** 15

**Senior Year**

**Fall**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAE 404</td>
<td>Experimental Engineering Laboratory</td>
<td>2.00</td>
</tr>
<tr>
<td>MAE 412</td>
<td>System Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>MAE 441</td>
<td>Design of Fluid and Thermal Systems</td>
<td>3</td>
</tr>
<tr>
<td>MAE 442</td>
<td>Capstone Design Project-I</td>
<td>1</td>
</tr>
<tr>
<td>Technical Elective</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>PS Cognate</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HA Cognate</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Credit Hours**

- **Total Credit Hours:** 17

**Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAE 443</td>
<td>Capstone Design Project-II</td>
<td>2</td>
</tr>
<tr>
<td>MAE 415</td>
<td>Automatic Control</td>
<td>3</td>
</tr>
<tr>
<td>MAE Technical Elective</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>HA Cognate (Adv. HA Elective)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>PS Cognate (Adv. PS Elective)</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

**Credit Hours**

- **Total Credit Hours:** 14

**Total Credit Hours:** 126

---

1. You must complete a minimum of 1 PS cognate and 1 HA cognate to be selected from the list of available cognates. Each cognate should be a minimum of 3 courses (9 credits).

2. Technical electives are advanced courses in mathematics, science or engineering, approved by the Faculty Advisor, as appropriate for individual objectives.