# AEROSPACE ENGINEERING, B.S.E.

## Degree Requirements (126-138 hours)

See College of Engineering and Computing (https://academicbulletins.sc.edu/undergraduate/engineering-computing/) for progression requirements and special academic opportunities.

### Program of Study

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Carolina Core</td>
<td>34-46</td>
</tr>
<tr>
<td>2. College Requirements</td>
<td>0</td>
</tr>
<tr>
<td>3. Program Requirements</td>
<td>53</td>
</tr>
<tr>
<td>4. Major Requirements</td>
<td>39</td>
</tr>
</tbody>
</table>

### 1. Carolina Core Requirements (34-46 hours)

**CMW – Effective, Engaged, and Persuasive Communication: Written (6 hours)**
- ENGL 101 - must be passed with a grade of C or higher
- ENGL 102

**ARP – Analytical Reasoning and Problem Solving (8 hours)**
- MATH 141
- MATH 142

**SCI – Scientific Literacy (8 hours)**
- CHEM 111 & CHEM 111L
- PHYS 211 & PHYS 211L

**GFL – Global Citizenship and Multicultural Understanding: Foreign Language (0-6 hours)**
Score two or better on foreign language placement test; or complete the 109 and 110 courses in FREN, GERM, LATN or SPAN; or complete the 121 course in another foreign language.
- CC-GFL courses (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

**GHS – Global Citizenship and Multicultural Understanding: Historical Thinking (3 hours)**
- any CC-GHS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

**GSS – Global Citizenship and Multicultural Understanding: Social Sciences (3 hours)**
- any CC-GSS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

**AIU – Aesthetic and Interpretive Understanding (3 hours)**
- any CC-AIU course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

**CMS – Effective, Engaged, and Persuasive Communication: Spoken Component 1 (0-3 hours)**
- PHIL 325 (CMS/VSR overlay)
- any overlay or stand-alone CC-CMS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

**INF – Information Literacy 1 (0-3 hours)**
- any overlay or stand-alone CC-INF course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

**VSR – Values, Ethics, and Social Responsibility 1 (0-3 hours)**
- PHIL 325 (CMS/VSR overlay)
- any overlay or stand-alone CC-VSR course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

1 Carolina Core Stand Alone or Overlay Eligible Requirements — Overlay-approved courses offer students the option of meeting two Carolina Core components in a single course. A maximum of two overlays is allowed. The total Carolina Core credit hours for this program must add up to a minimum of 34 hours.

### 2. College Requirements (0 hours)

No college-required courses for this program.

### 3. Program Requirements (53 hours)

#### Supporting Courses (53 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 112</td>
<td>General Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 112L</td>
<td>General Chemistry II Lab</td>
<td>1</td>
</tr>
<tr>
<td>MATH 241</td>
<td>Vector Calculus</td>
<td>3</td>
</tr>
<tr>
<td>MATH 242</td>
<td>Elementary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 344</td>
<td>Applied Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 212</td>
<td>Essentials of Physics II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 212L</td>
<td>Essentials of Physics II Lab</td>
<td>3</td>
</tr>
<tr>
<td>STAT 509</td>
<td>Statistics for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>AESP 101</td>
<td>Introduction into Aerospace Engineering</td>
<td>3</td>
</tr>
<tr>
<td>or ENCP 101</td>
<td>Introduction to Engineering I</td>
<td></td>
</tr>
<tr>
<td>EMCH 111</td>
<td>Introduction to Computer-Aided Design</td>
<td>3</td>
</tr>
<tr>
<td>or ENCP 102</td>
<td>Introduction to Engineering II</td>
<td></td>
</tr>
<tr>
<td>EMCH 200</td>
<td>Statics (must be passed with a grade of C or higher)</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 201</td>
<td>Introduction to Applied Numerical Methods</td>
<td>3</td>
</tr>
<tr>
<td>or ENCP 201</td>
<td>Introduction to Applied Numerical Methods</td>
<td></td>
</tr>
<tr>
<td>EMCH 260</td>
<td>Solid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>or ENCP 260</td>
<td>Introduction to the Mechanics of Solids</td>
<td></td>
</tr>
<tr>
<td>EMCH 290</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>or ENCP 290</td>
<td>Thermodynamic Fundamentals</td>
<td></td>
</tr>
</tbody>
</table>
## Track Electives

Select one of the following tracks:  

**Aeromechanical Systems:**
- AESP 415  
  Aircraft Design Part I Basics  
  **15**
- EMCH 585  
  Introduction to Composite Materials  
- EMCH 308  
  Introduction to Finite Element Stress Analysis  

Select two of the following:
- EMCH 332  
  Kinematics  
- EMCH 354  
  Heat Transfer  
- EMCH 535  
  Robotics in Mechanical Engineering  
- EMCH 544  
  Compressible Fluid Flow  
- EMCH 530  
  Introduction to Engineering Optimization  

**Integrated Information Technology:**
- ITEC 233  
  Introduction to Computer Hardware and Software  
- ITEC 245  
  Introduction to Networking  

Select two of the following:
- ITEC 444  
  Introduction to Human Computer Interaction  
- ITEC 445  
  Advanced Networking  
- ITEC 493  
  Information Technology Security for Managers  

Select one of the following:
- ITEC 370  
  Database Systems in Information Technology  
  or  
- ITEC 447  
  Management of Information Technology  

**Power Electronics Systems:**
- ELCT 221  
  Circuits  
- ELCT 222  
  Signals and Systems  
- ELCT 371  
  Electronics  
- ELCT 331  
  Control Systems  
- ELCT 572  
  Power Electronics  

**Control Systems:**
- ELCT 221  
  Circuits  
- ELCT 222  
  Signals and Systems  
- ELCT 371  
  Electronics  
- ELCT 331  
  Control Systems  
- ELCT 531  
  Digital Control Systems  

**Communication Systems:**
- ELCT 221  
  Circuits  
- ELCT 222  
  Signals and Systems  

Select three of the following:
- ELCT 321  
  Digital Signal Processing  
- ELCT 361  
  Electromagnetics  
- ELCT 562  
  Wireless Communications  
- ELCT 564  
  RF Circuit Design for Wireless Communications  

### Total Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AESP 265</td>
<td>Aerodynamics I Incompressible Flow</td>
<td>3</td>
</tr>
<tr>
<td>AESP 314</td>
<td>Energy Power and Propulsion</td>
<td>3</td>
</tr>
<tr>
<td>AESP 350</td>
<td>Aerospace Systems</td>
<td>3</td>
</tr>
<tr>
<td>AESP 361</td>
<td>Aerospace Laboratory I</td>
<td>3</td>
</tr>
<tr>
<td>AESP 362</td>
<td>Aerospace Laboratory II</td>
<td>3</td>
</tr>
<tr>
<td>AESP 420</td>
<td>Flight and Orbital Mechanics</td>
<td>3</td>
</tr>
</tbody>
</table>