AEROSPACE ENGINEERING, B.S.E.

Degree Requirements (125-137 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>
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<tbody>
<tr>
<td>1. Carolina Core</td>
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<td>2. College Requirements</td>
<td>0</td>
</tr>
<tr>
<td>3. Program Requirements</td>
<td>46</td>
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<td>4. Major Requirements</td>
<td>45</td>
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</tbody>
</table>

Founding Documents Requirement
All undergraduate students must take a 3-credit course or its equivalent with a passing grade in the subject areas of History, Political Science, or African American Studies that covers the founding documents including the United State Constitution, the Declaration of Independence, the Emancipation Proclamation and one or more documents that are foundational to the African American Freedom struggle, and a minimum of five essays from the Federalist papers. This course may count as a requirement in any part of the program of study including the Carolina Core, the major, minor or cognate, or as a general elective. Courses that meet this requirement are listed here (https://academicbulletins.sc.edu/undergraduate/founding-document-courses/).

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)
must be passed with a grade of C or higher
• MATH 141
• MATH 142

SCI – Scientific Literacy (8 hours)
must be passed with a grade of C or higher
• 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.

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 (46 hours)

Supporting Courses (46 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>ELCT 220</td>
<td>Electrical Engineering for Non-Majors</td>
<td>3</td>
</tr>
<tr>
<td>ELCT 221</td>
<td>Circuits</td>
<td></td>
</tr>
<tr>
<td>STAT 509</td>
<td>Statistics for Engineers</td>
<td>3</td>
</tr>
</tbody>
</table>

Lower Division Engineering
AESP 101
or ENCP 101
Introduction into Aerospace Engineering

EMCH 111
or ENCP 102
Introduction to Computer-Aided Design

EMCH 200
or ENCP 200
Statics

EMCH 201
or ENCP 201
Introduction to Applied Numerical Methods

EMCH 260
or ENCP 260
Solid Mechanics

EMCH 290
or ENCP 290
Thermodynamics

Aerospace Engineering Electives
Select nine hour from the following:

EMCH 377
Manufacturing

EMCH 354
Heat Transfer

EMCH 332
Kinematics

AESP 460
Special Problems: Aerospace Engineering

AESP 543
Aerospace Propulsion

EMCH 585
Introduction to Composite Materials

EMCH 535
Robotics in Mechanical Engineering

EMCH 544
Compressible Fluid Flow

EMCH 530
Introduction to Engineering Optimization

EMCH 592
Introduction to Combustion

EMCH 516
Control Theory in Mechanical Engineering

EMCH 578
Introduction to Aerodynamics

EMCH 532
Intermediate Dynamics

EMCH 564
Intermediate Heat Transfer

EMCH 560
Intermediate Fluid Mechanics

ELCT 221
Circuits

ELCT 222
Signals and Systems

ELCT 321
Digital Signal Processing

ELCT 361
Electromagnetics

ELCT 371
Electronics

ELCT 331
Control Systems

ELCT 572
Power Electronics

ELCT 531
Digital Control Systems

ELCT 562
Wireless Communications

ELCT 564
RF Circuit Design for Wireless Communications

Total Credit Hours

45

4. Major Requirements (45 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</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>
<tr>
<td>AESP 428</td>
<td>Design I</td>
<td>3</td>
</tr>
<tr>
<td>AESP 466</td>
<td>Flight Dynamics and Control</td>
<td>3</td>
</tr>
</tbody>
</table>