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

Requirements Credit Hours
1. Carolina Core 34-46
2. College Requirements 0
3. Program Requirements 46
4. Major Requirements 45

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.

- 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 (46 hours)

Supporting Courses (46 hours)

Course Title Credits
CHEM 112 General Chemistry II 3
CHEM 112L General Chemistry II Lab 1
MATH 241 Vector Calculus 3
MATH 242 Elementary Differential Equations 3
MATH 344 Applied Linear Algebra 3
ELCT 220 Electrical Engineering for Non-Majors 3
or ELCT 221 Circuits
STAT 509 Statistics for Engineers 3

Lower Division Engineering
Aerospace Engineering, B.S.E.

AESP 101 Introduction into Aerospace Engineering 3
or ENCP 101 Introduction to Engineering

EMCH 111 Introduction to Computer-Aided Design 3
or ENCP 102 Introduction to Computer-Aided Design

EMCH 200 Statics (must be passed with a grade of C or higher) 3
or ENCP 200 Statics

EMCH 201 Introduction to Applied Numerical Methods 3
or ENCP 201 Introduction to Applied Numerical Methods

EMCH 260 Solid Mechanics 3
or ENCP 260 Introduction to the Mechanics of Solids

EMCH 290 Thermodynamics 3
or ENCP 290 Thermodynamic Fundamentals

Aerospace Engineering Electives
Select nine hour from the following: 9

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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<tbody>
<tr>
<td>AESP 265</td>
<td>Aerodynamics I Incompressible Flow</td>
<td>3</td>
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<tr>
<td>AESP 314</td>
<td>Energy Power and Propulsion</td>
<td>3</td>
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<td>AESP 350</td>
<td>Aerospace Systems</td>
<td>3</td>
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<td>AESP 361</td>
<td>Aerospace Laboratory I</td>
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<tr>
<td>AESP 362</td>
<td>Aerospace Laboratory II</td>
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<tr>
<td>AESP 420</td>
<td>Flight and Orbital Mechanics</td>
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<tr>
<td>AESP 428</td>
<td>Design I</td>
<td>3</td>
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<tr>
<td>AESP 466</td>
<td>Flight Dynamics and Control</td>
<td>3</td>
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