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

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
AESP 460	Special Problems: Aerospace Engineering	
AESP 543	Aerospace Propulsion	
ELCT 221	Circuits	
ELCT 222	Signals and Systems	
ELCT 321	Digital Signal Processing	
ELCT 331	Control Systems	
ELCT 361	Electromagnetics	
ELCT 371	Electronics	
ELCT 531	Digital Control Systems	
ELCT 562	Wireless Communications	
ELCT 564	RF Circuit Design for Wireless Communications	
ELCT 572	Power Electronics	
EMCH 332	Kinematics	
EMCH 354	Heat Transfer	
EMCH 377	Manufacturing	
EMCH 516	Control Theory in Mechanical Engineering	
EMCH 530	Introduction to Engineering Optimization	
EMCH 532	Intermediate Dynamics	
EMCH 535	Robotics in Mechanical Engineering	
EMCH 544	Compressible Fluid Flow	
EMCH 554	Intermediate Heat Transfer	
EMCH 560	Intermediate Fluid Mechanics	
EMCH 578	Introduction to Aerodynamics	
EMCH 585	Introduction to Composite Materials	
EMCH 592	Introduction to Combustion	
Total Credit Hours		**46**

4. Major Requirements (45 hours)

Course	Title	Credits
AESP 265	Aerodynamics I Incompressible Flow	3
AESP 314	Energy Power and Propulsion	3
AESP 350	Aerospace Systems	3
AESP 361	Aerospace Laboratory I	3
AESP 362	Aerospace Laboratory II	3
AESP 365	Aerodynamics II: Compressible Flow	3
AESP 415	Aircraft Design Part I Basics	3
AESP 420	Flight and Orbital Mechanics	3
AESP 428	Design I	3
AESP 466	Flight Dynamics and Control	3
EMCH 308	Introduction to Finite Element Stress Analysis	3
EMCH 310	Dynamics	3
or ENCP 210	Dynamics	
EMCH 330	Mechanical Vibrations	3
or ENCP 330	Introduction to Vibrations	
EMCH 371	Materials	3
EMCH 577	Aerospace Structures I	3
Total Credit Hours		**45**