Major Map: Aerospace Engineering
Bachelor of Science in Engineering (B.S.E.)
College of Engineering and Computing
Department of Mechanical Engineering
Bulletin Year: 2020-2021

South Carolina
UofSC

This course plan is a recommended sequence for this major. Courses designated as critical (!) may have a deadline for completion and/or affect time to graduation. Please see the Program Notes section for details regarding "critical courses" for this particular Program of Study.

!	Course Subject and Title	Credit Hours	Min. Grade[1]	Major GPA[2]	Code	Prerequisites	Notes
Semester One (17 Credit Hours)							
	ENGL 101 Critical Reading and Composition	3	C		CC-CMW		
!	MATH 141 Calculus 1[3]	4	C		CC-ARP	C or better in MATH 112/115/116 *or* Math placement test score	
	CHEM 111 & CHEM 111L – General Chemistry I	4	C		CC-SCI	C or better in MATH 111/115/122/141 or higher math *or* Math placement test	
	AESP 101 Intro. to Aerospace Engineering	3		*	PR		
	Carolina Core AIU[4]	3			CC-AIU		
Semester Two (18 Credit Hours)							
	ENGL 102 Rhetoric and Composition	3			CC-CMW CC-INF	C or better in ENGL 101	
!	MATH 142 Calculus II	4	C		CC-ARP	C or better in MATH 141	
	CHEM 112 & CHEM 112L – General Chemistry II	4			PR	C or better in CHEM 111, MATH 111/115/122/141 or higher math	
!	PHYS 211 & PHYS 211L – Essentials of Physics I	4	C		CC-SCI	C or better in MATH 141	
	EMCH 111 Intro. to Computer-Aided Design	3		*	PR		
Semester Three (15 Credit Hours)							
!	EMCH 200 Statics	3	C	*	PR	C or better in MATH 141	
!	EMCH 201 Intro. to Applied Numerical Methods *(cross-listed: ENCP 201, PHYS 311)*	3		*	PR	MATH 141; Prereq or Coreq: MATH 142	
	MATH 241 Vector Calculus	3	C		PR	C or better in MATH 142	
	MATH 242 Elem. Differential Equations	3	C		PR	C or better in MATH 142	
	Carolina Core GSS[4]	3			CC-GSS		
Semester Four (16 Credit Hours)							
!	AESP 265 Aerodynamics I Incompressible Flow	3		*	MR	MATH 242 & EMCH 201	
	EMCH 290 Thermodynamics	3		*	PR	C or better in PHYS 211 & MATH 142	
!	EMCH 260 Solid Mechanics	3		*	PR	C or better in MATH 241 & EMCH 200 or ENCP 200	
!	STAT 509 Statistics for Engineers	3			PR	MATH 142	
	PHYS 212 & PHYS 212L – Essentials of Physics II	4			PR	C or better PHYS 211 *and* MATH 142	
Semester Five (15 Credit Hours)							
!	AESP 361 Aerospace Laboratory I	3		*	MR	STAT 509 & AESP 265; Prereq or Coreq: EMCH 371 & EMCH 310	
!	EMCH 310 Dynamics	3		*	MR	C or better in MATH 242 & EMCH 200 *or* ENCP 200	
!	EMCH 371 Materials	3		*	MR	D or better in EMCH 260 *or* ENCP 260	
	Track Elective[5]	3		*	PR	See Bulletin listing.	
	MATH 344 Applied Linear Algebra	3			PR	C or better in MATH 142	
Semester Six (15 Credit Hours)							
	AESP 420 Flight and Orbital Mechanics	3		*	MR	MATH 141, EMCH 200, & EMCH 310	
!	AESP 350 Aerospace Systems	3		*	MR	PHYS 212	
	EMCH 330 Mechanical Vibrations	3		*	MR	MATH 242 & EMCH 310	
!	EMCH 577 Aerospace Structures I	3		*	MR		
	Track Elective[5]	3		*	PR	See Bulletin listing.	
Semester Seven (15 Credit Hours)							
	AESP 314 Energy Power and Propulsion	3		*	MR	EMCH 290	
	AESP 362 Aerospace Laboratory II	3		*	MR	AESP 361	
	EMCH 377 Manufacturing	3		*	MR	EMCH 371	
	Track Elective[5]	3		*	PR	See Bulletin listing.	
	Carolina Core GHS[4]	3			CC-GHS		
Semester Eight (15 Credit Hours)							
	AESP 428 Design I	3		*	MR	AESP 350 & EMCH 577; Prereq or Coreq: AESP 314 & EMCH 377	
	AESP 466 Flight Dynamics and Control	3		*	MR	EMCH 330 *or* ENCP 330 *and* AESP 420	
	Track Elective[5]	3		*	PR	See Bulletin listing.	
	Track Elective[5]	3		*	PR	See Bulletin listing.	
	Carolina Core VSR[4]	3			CC-VSR		
Take during any semester (0-9 Credit Hours)							
	Carolina Core CMS[4]	0-3			CC-CMS		
	Carolina Core GFL[4]	0-6			CC-GFL		

J. Khan

Graduation Requirements Summary

Minimum Total Hours	Minimum Major Requirements Hours	College & Program Requirements Hours	Minimum Carolina Core Hours	Minimum Institutional GPA
126	39	53	34	2.00

1. Regardless of individual course grades, students must maintain a minimum 2.00 cumulative GPA.
2. Some colleges require a minimum GPA for major courses. Courses indicated in this column are included in the program GPA of 2.00 for this program.
3. Students who place into MATH 115 will be required to successfully complete it before taking MATH 141.
4. The Carolina Core provides the common core of knowledge, skill and academic experience for all Carolina undergraduate students. Students in the College of Engineering and Computing are required to demonstrate proficiency in one foreign language equivalent to the 121 course by 1) a score of two or better on the foreign language placement test; or 2) completion of the 109 and 110 courses in FREN, GERM, LATN, or SPAN or completion of the 121 course in another foreign language. Students who do not place out of the GFL requirement may need to take additional hours to meet this requirement.
5. **Track Electives** (15 hours): Students must select one of the following tracks:
    a. **Aeromechanical Systems:** AESP 415. EMCH 585, EMCH 308, plus two of: EMCH 332, EMCH 354, EMCH 535, EMCH 544, EMCH 530.
    b. **Integrated Information Technology:** ITEC 233, ITEC 245; plus two of: ITEC 444, ITEC 445, ITEC 493; plus one of: ITEC 370, ITEC 447.
    c. **Power Electronics Systems:** ELCT 221, ELCT 222, ELCT 331, ELCT 371, ELCT 572
    d. **Control Systems:** ELCT 221, ELCT 222, ELCT 331, ELCT 371, ELCT 531
    e. **Communication Systems:** ELCT 221, ELCT 222; plus 3 of: ELCT 321. ELCT 361, ELCT 562, ELCT 564

Program Notes:

- Courses identified as "critical" must be completed in the semester in which they are listed in order to ensure a timely graduation due to prerequisite requirements for subsequent required courses.
- A student cannot repeat courses from the College of Engineering and Computing in which they earned a grade of C or better. In addition, a student cannot repeat any course from the College a second time. No more than four courses from the College of Engineering and Computing may be repeated in order to satisfy the requirements for any degree from the College, regardless of satisfactory work. For this purpose, withdrawal from a course with a grade of **W** is not regarded as enrollment in that course. A student that does not satisfactorily complete a degree-required College course within two attempts must change major or transfer out of the College of Engineering and Computing.
- The last 30 credit hours toward your degree and at least half of the major must be earned in residence at the University of South Carolina-Columbia.
- Disclaimer: Prerequisites on courses are subject to change. Please refer to the Bulletin.

University Requirements: Bachelor's degree-seeking students must meet Carolina Core (general education) requirements. For more information regarding these requirements, please visit the Carolina Core page on the University website.

Codes:			
CC	Carolina Core	**CC-INF**	Carolina Core – Information Literacy
CC-AIU	Carolina Core-Aesthetic and Interpretive Understanding	**CC-INT**	Carolina Core – Integrative Course
CC-ARP	Carolina Core-Analytical Reasoning and Problem-Solving	**CC-SCI**	Carolina Core – Scientific Literacy
CC-CMS	Carolina Core-Effective, Engaged, and Persuasive Communication: Spoken Component	**CC-VSR**	Carolina Core – Values, Ethics, and Social Responsibility
CC-CMW	Effective, Engaged, and Persuasive Communication: Written Component	**CR**	College Requirement
CC-GFL	Carolina Core-Global Citizenship and Multicultural Understanding: Foreign Language	**MR**	Major Requirement
CC-GHS	Carolina Core – Historical Thinking	**PR**	Program Requirement
CC-GSS	Carolina Core – Social Sciences		

Disclaimer: Major maps are only a suggested or recommended sequence of courses required in a program of study. Please contact your academic advisor for assistance in the application of specific coursework to a program of study and course selection and planning for upcoming semesters.