



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 <sup>1</sup>	Program GPA <sup>2</sup>	Code	Prerequisites	Notes
<b>Semester One (17 Credit Hours)</b>							
	ENGL 101 Critical Reading and Composition	3	C		CC-CMW		
!	MATH 141 Calculus 1 <sup>3</sup>	4	C		CC-ARP	C or better in MATH 112/115/116 <i>or</i> Math placement test score	
	CHEM 111 & CHEM 111L – General Chemistry I	4	C		CC-SCI	C or better in MATH 111/115/122/141 <i>or</i> higher math <i>or</i> Math placement test	
	EMCH 101 Intro. to Mechanical Engineering	3		*	PR		
	Carolina Core AIU <sup>4</sup>	3			CC-AIU		
<b>Semester Two (17 Credit Hours)</b>							
	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	
	PHYS 211 & PHYS 211L – Essentials of Physics I	4			CC-SCI	C or better in MATH 141	
	EMCH 111 Intro. to Engr. Graphics & Visualization	3		*	PR		
	Carolina Core GHS <sup>4</sup>	3			CC-GHS		
<b>Semester Three (15 Credit Hours)</b>							
!	EMCH 200 Statics	3	C	*	PR	MATH 141; Prereq or Coreq: EMCH 201	
!	EMCH 201 Intro. to Applied Numerical Methods ( <i>cross-listed: ENCP 201, PHYS 311</i> )	3		*	PR	MATH 141; Prereq or Coreq: MATH 142	
	ELCT 220 Electrical Engineering for Non-Majors	3		*	PR	MATH 142	
!	MATH 241 Vector Calculus	3			PR	C or better in MATH 142	
	Carolina Core GSS <sup>4</sup>	3			CC-GSS		
<b>Semester Four (15 Credit Hours)</b>							
!	EMCH 260 Introduction to the Mechanics of Solids	3		*	PR	C or better in EMCH 200; & MATH 241 & EMCH 111	
!	EMCH 290 Thermodynamic Fundamentals	3		*	PR	MATH 241	
	CSCE 206 Scientific Applications Programming	3			PR	MATH 122 or 141	
	MATH 242 Elem. Differential Equations	3			PR	C or better in MATH 142	
	Math/Science Elective <sup>5</sup>	3			PR		
<b>Semester Five (15 Credit Hours)</b>							
!	EMCH 310 Dynamics	3		*	MR	C or better in EMCH 200	
!	EMCH 360 Fluid Mechanics	3		*	MR	C or better in EMCH 200; & EMCH 201 & MATH 241	
!	EMCH 361 Mechanical Engineering Lab. I <sup>6</sup>	3		*	MR	STAT 509 & PHYS 212; Prereq or Coreq: EMCH 260 & EMCH 290	
	EMCH 367 Microcontrollers in Mechanical Engr. <sup>6</sup>	3		*	MR	EMCH 361	
	Carolina Core VSR <sup>4</sup>	3			CC-VSR		
<b>Semester Six (16 Credit Hours)</b>							
!	EMCH 332 Kinematics & Dynamics of Machines	3		*	MR	EMCH 310 & EMCH 201	
!	EMCH 354 Heat Transfer	3		*	MR	EMCH 290, EMCH 360 & MATH 242	
!	EMCH 362 Mechanical Engineering Lab. II	3		*	MR	EMCH 361, ELCT 220 <i>or</i> 221; Prereq or Coreq: EMCH 360 & EMCH 310	
	EMCH 368 Mechatronics	4		*	MR	D or better in EMCH 367	
	EMCH 380 Project Management for Engineers	3		*	MR	D or better in MATH 241	
<b>Semester Seven (15 Credit Hours)</b>							
!	EMCH 327 Design of Mechanical Elements <i>or</i> EMCH 394 Thermodynamic Sys. Design & Analysis	3		*	MR	EMCH 260 ( <i>EMCH 327</i> ); EMCH 201 & 290 ( <i>EMCH 394</i> )	
!	EMCH 371 Engineering Materials <sup>6</sup>	3		*	MR	EMCH 260, CHEM 112 & 112L	
!	EMCH 427 Mechanical Design I <sup>6</sup>	3		*	MR CC-INT <sup>1</sup>	EMCH 327, 354, 371, 394; Prereq or Coreq: EMCH 332 & 362	
	EMCH Elective <sup>7</sup>	3		*	PR	See Bulletin listing.	
	Free Elective <sup>8</sup>	3		*	PR	See Bulletin listing.	
<b>Semester Eight (15 Credit Hours)</b>							
	EMCH 377 Manufacturing Processes	3		*	MR	EMCH 371	
	EMCH 428 Mechanical Design II	3		*	MR	EMCH 427	
	EMCH Elective <sup>7</sup>	3		*	PR	See Bulletin listing.	
	Free Elective <sup>8</sup>	3		*	PR	See Bulletin listing.	
	Free Elective <sup>8</sup>	3		*	PR	See Bulletin listing.	

Take during any semester (0-9 Credit Hours)					
Carolina Core CMS <sup>4</sup>	0-3			CC-CMS	
Carolina Core GFL <sup>4</sup>	0-6			CC-GFL	

### Graduation Requirements Summary

Minimum Total Hours	Minimum Major Requirements Hours	College & Program Requirements Hours	Minimum Carolina Core Hours	Minimum Institutional GPA
125	43	48	34	2.00

- Regardless of individual course grades, students must maintain a minimum 2.00 cumulative GPA.
- Some colleges require a minimum GPA for major courses. Courses indicated in this column are included in the Mechanical Engineering program GPA of 2.00.
- Students who place into MATH 115 will be required to successfully complete it before taking MATH 141.
- The [Carolina Core](#) provides the common core of knowledge, skill and academic experience for all Carolina undergraduate students. Students are encouraged to complete PHIL 325 Engineering Ethics as an overlay course for VSR and CMS. 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.
- Math/Science Elective** (3 hours): BIOL 110 or 300 and above, CHEM 112 or higher, MATH 300 or higher, PHYS 212 or higher, STAT 506 or higher.
- Prerequisites for this course are under revision.
- EMCH Electives** (6 hours): **EMCH** 308, 441, 460, 497, or any EMCH course numbered 500 or higher.
- Free Elective** (9 hours): Any course taken at the University or transferred in as a University course that does not essentially duplicate a course otherwise applied to the degree. A list of such courses that cannot be used as a free elective is maintained in the department office. This list includes: **ENCP** 101, 102, 200, 201, 210, 260, 290, 330, 360, 491, 492; **ECHE** 101, 310, 320, 321; **ECIV** 101, 111, 200, 201, 210, 220, 360; **BMEN** 101, 211, 260; **ELCT** 101.

### Program Notes:

- Courses identified as “critical” must be completed by 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:			
<b>CC</b>	Carolina Core	<b>CC-INF</b>	Carolina Core – Information Literacy
<b>CC-AIU</b>	Carolina Core-Aesthetic and Interpretive Understanding	<b>CC-INT</b>	Carolina Core – Integrative Course
<b>CC-ARP</b>	Carolina Core-Analytical Reasoning and Problem-Solving	<b>CC-SCI</b>	Carolina Core – Scientific Literacy
<b>CC-CMS</b>	Carolina Core-Effective, Engaged, and Persuasive Communication: Spoken Component	<b>CC-VSR</b>	Carolina Core – Values, Ethics, and Social Responsibility
<b>CC-CMW</b>	Effective, Engaged, and Persuasive Communication: Written Component	<b>CR</b>	College Requirement
<b>CC-GFL</b>	Carolina Core-Global Citizenship and Multicultural Understanding: Foreign Language	<b>MR</b>	Major Requirement
<b>CC-GHS</b>	Carolina Core – Historical Thinking	<b>PR</b>	Program Requirement
<b>CC-GSS</b>	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.