UNIVERSITY OF SOUTH CAROLINA

Major Map: Mechanical Engineering
Bachelor of Science in Engineering (B.S.E.)
College of Engineering and Computing
Department of Mechanical Engineering
Catalog Year: 2016-2017

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.

Critical	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* Math placement test score	
	EMCH 101 Intro. to Mechanical Engineering	3		*	PR		
	Carolina Core Requirement[4]	3			CC		
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 *or* 141 *and* MATH 111/115 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 Engr. Graphics & Visualization	3		*	PR		
Semester Three (16 Credit Hours)							
!	EMCH 200 Statics	3	C	*	PR	MATH 141; Prereq or Coreq: EMCH 201	
!	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			PR	C or better in MATH 142	
!	PHYS 212 & PHYS 212L – Essentials of Physics II	4			PR	C or better PHYS 211 *and* MATH 142	
	STAT 509 Statistics for Engineers	3			PR	MATH 142	
Semester Four (15 Credit Hours)							
!	EMCH 361 Mechanical Engineering Lab. I	3		*	MR	STAT 509 & PHYS 212; Prereq or Coreq: EMCH 260 & EMCH 290	
!	EMCH 290 Thermodynamic Fundamentals	3		*	PR	MATH 241	
!	EMCH 260 Introduction to the Mechanics of Solids	3		*	PR	C or better in EMCH 200; & MATH 241	
!	ELCT 220 Electrical Engineering for Non-Majors *or* ELCT 221 Circuits	3		*	PR	MATH 142; & ELCT 102 *or* 220 *(ELCT 221 only)*	
	MATH 242 Elem. Differential Equations	3			PR	C or better in MATH 142	
Semester Five (15 Credit Hours)							
!	EMCH 310 Dynamics	3		*	MR	C or better in EMCH 200	
	EMCH 327 Design of Mechanical Elements	3		*	MR	EMCH 260	
!	EMCH 360 Fluid Mechanics	3		*	MR	C or better in EMCH 200; & EMCH 201 & MATH 241	
!	EMCH 362 Mechanical Engineering Lab. II	3		*	MR	EMCH 361, ELCT 220 or 221; Prereq or Coreq: EMCH 360 & 310	
	EMCH 394 Thermodynamic Sys. Design & Analysis	3		*	MR	EMCH 201 & 290	
Semester Six (15 Credit Hours)							
	EMCH 330 Mechanical Vibrations	3		*	MR	MATH 242 & EMCH 310	
!	EMCH 332 Kinematics & Dynamics of Machines	3		*	MR	EMCH 310 & 201	
!	EMCH 354 Heat Transfer	3		*	MR	EMCH 290, 360 & MATH 242	
	EMCH 363 Mechanical Engineering Lab. III	3		*	MR	EMCH 362; Prereq or Coreq: EMCH 332, 354, & 371	
!	EMCH 371 Engineering Materials	3		*	MR	EMCH 260	
Semester Seven (15 Credit Hours)							
	EMCH 377 Manufacturing Processes	3		*	MR	EMCH 371	
!	EMCH 427 Mechanical Design I	3		*	MR CC-INT	EMCH 327, 354, 371, 394; Prereq or Coreq: EMCH 332 & 362	
	EMCH Elective[5]	3		*	PR	See course listing in the Bulletin.	
	Technical Elective[6]	3		*	PR	See course listing in the Bulletin.	
	Carolina Core Requirement[4]	3			CC		
Semester Eight (15 Credit Hours)							
	EMCH 428 Mechanical Design II	3		*	MR	EMCH 427	
	EMCH Elective[5]	3		*	PR	See course listing in the Bulletin.	
	EMCH Elective[5]	3		*	PR	See course listing in the Bulletin.	
	Carolina Core Requirement[4]	3			CC		
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Graduation Requirements Summary

Minimum Total Hours	Major Requirements Hours	College & Program Requirements Hours	Minimum Carolina Core Hours	Minimum Overall GPA
126	42	50	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 major 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. (This major map also assumes that students complete two Carolina Core overlay courses. Additional hours may be required to meet all Carolina Core requirements if no overlay courses are taken.)
5. **EMCH Electives** (9 hours): EMCH 308, 441, 460, 497, or any EMCH course numbered 500 or higher.
6. **Technical Electives** (3 hours): **CHEM** 333, 334, 541, 542; **MATH** 520, 521, 526, 544, 550, 552; **PHYS** 501, 502; and all College of Engineering and Computing courses numbered greater than 101 and below 600 **EXCEPT** for the following: ENCP 102, 200, 201, 210, 260, 290, 330, 360, 491, 492; ECHE 310, 320, 321, ECIV 111, 200, 201, 210, 220, 360; BMEN 211, 260; CSCE 102.

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.

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.