



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 (16 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 <i>or</i> Math placement test score	
!	CHEM 111 & CHEM 111L – General Chem. I	4	C		CC-SCI	C or better in MATH 111/115/122/ 141 <i>or</i> Math placement test score	
!	BIOL 101 & BIOL 101L – Biol. Principles I	4	C		CC-SCI		
	BMEN 101 Prof. Dev. & Ethics in BMEN I	1		*	MR		
Semester Two (18 Credit Hours)							
!	ENGL 102 Rhetoric and Composition	3	C		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 Chem. II	4	C		PR	C or better in CHEM 111 <i>or</i> 141 & in MATH 111/115/122/141 <i>or</i> higher math	
!	BIOL 102 & BIOL 102L – Biol. Principles II	4			PR	C or better in BIOL 101 & 101L	
!	BMEN 211 Math. Modeling in BMEN I	3	C	*	MR	C or better in Math 141	
Semester Three (16 Credit Hours)							
	BMEN 202 Prof. Dev. & Ethics in BMEN II	1		*	MR	BMEN 101	
!	MATH 241 Vector Calculus	3	C		PR	C or better in MATH 142	
!	PHYS 211 & PHYS 211L – Essentials of Phys. I	4	C		PR	C or better in MATH 141	
!	CHEM 333 & CHEM 331L – Organic Chem. I	4			PR	C or higher in CHEM 112 <i>or</i> 142	
!	BIOL 302 & BIOL 302L – Cell & Molec. Biol.	4	C		PR	BIOL 102 <i>or</i> MSCI 311; Prereq or Coreq: CHEM 333	
Semester Four (16 Credit Hours)							
	BMEN 260 Introduction to Biomechanics	3		*	MR	C or better in BMEN 211, MATH 241 & in PHYS 211	
!	BMEN 290 Thermodynamics of Biomol. Sys.	3		*	MR	C or better in BMEN 211, CHEM 112 <i>or</i> 142, MATH 241, & in PHYS 211	
!	MATH 242 Elem. Differential Equations	3	C		PR	C or better in MATH 142	
!	PHYS 212 & PHYS 212L – Essentials of Phys. II	4			PR	C or better PHYS 211 <i>and</i> MATH 142	
	STAT 509 Statistics for Engineers	3			PR	MATH 142	
Semester Five (18 Credit Hours)							
!	BMEN 271 Introduction to Biomaterials	3		*	MR	BMEN 290, CHEM 333, & C or better in BIOL 302	
!	BMEN 321 Biomonitoring & Electrophysiology	3		*	MR	BIOL 302, PHYS 212, & C or better in MATH 242	
	BMEN 391 Kinetics in Biomolecular Systems	3		*	MR	BMEN 290, CHEM 333, & C or better in MATH 242	
!	ECHE 320 Chemical Engr. Fluid Mechanics	3		*	PR	PHYS 211; Prereq or Coreq: MATH 241	
	Carolina Core Requirement ⁴	3			CC		
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Semester Six (15 Credit Hours)							
	BMEN 303 Prof. Dev. & Ethics in BMEN III	1		*	MR	BMEN 202	
	BMEN 345 Human Anat. & Phys. for BMEN	4		*	MR	BMEN 271 & C or better in BIOL 302	
!	BMEN 354 Biotransport	3		*	MR	ECHE 320 <i>or</i> EMCH/ENCP 360, & C or better in MATH 242	
!	BMEN 361 Biomedical Instrumentation	4		*	MR	BMEN 321 & STAT 509	
	Biomedical Engineering Elective ⁵	3		*	PR	See course listing in Bulletin .	
Semester Seven (16 Credit Hours)							
!	BMEN 427 Senior BMEN Design I	3		*	MR/CC-INF	BMEN 271, 354, & 361	
	Biomedical Engineering Elective ⁵	3		*	PR	See course listing in Bulletin .	
	Engineering Elective ⁶	3		*	PR	See course listing in Bulletin .	
	Technical Elective ⁷	3			PR	See course listing in Bulletin .	
	Technical Lab Elective ⁸	1			PR	See course listing in Bulletin .	
	Carolina Core Requirement ⁴	3			CC		

Semester Eight (15 Credit Hours)						
BMEN 428 Senior BMEN Design II	3		*	MR	BMEN 427	
Biomedical Engineering Elective ⁵	3		*	PR	See course listing in Bulletin .	
Engineering Elective ⁶	3		*	PR	See course listing in Bulletin .	
Technical Elective ⁷	3			PR	See course listing in Bulletin .	
Carolina Core Requirement ⁴	3			CC		

Graduation Requirements Summary

Minimum Total Hours	Major Requirements Hours	College & Program Requirements Hours	Minimum Carolina Core Hours	Minimum Overall GPA
130	38	58	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 major GPA of 2.00 for this program.
- 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 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.
- Biomedical Engineering Electives (9 hours):** BMEN 342, all BMEN 389's, BMEN 392, BMEN 499, BMEN 546, BMEN 572, all BMEN 589's, EMCH 580, EXSC 535, PSYC 507. At most 3 credit hours may come from BMEN 499.
- Engineering Electives (6 hours):** ECHE 300, ECHE 321, ECHE 322, ECHE 372, ECHE 430, ECHE 440, ECHE 456, ECHE 550, ECHE 567, ECHE 572, ECHE 573; ECIV 350, ECIV 521; ELCT 220, ELCT 321, ELCT 331, ELCT 350, ELCT 361, ELCT 363, ELCT 540; EMCH 111, EMCH 308, EMCH 327, EMCH 330, EMCH 332, EMCH 354, EMCH 371, EMCH 497, EMCH 501, EMCH 502, EMCH 507, EMCH 508, EMCH 516, EMCH 528, EMCH 529, EMCH 532, EMCH 535, EMCH 554, EMCH 555, EMCH 557, EMCH 560, EMCH 571, EMCH 575, EMCH 580, EMCH 584, EMCH 585, EMCH 586; CSCE 204, CSCE 206, CSCE 215, CSCE 240, CSCE 245, CSCE 317, CSCE 330, CSCE 350, CSCE 355, CSCE 500, CSCE 551, CSCE 555, CSCE 561, CSCE 563; any Biomedical Engineering Elective.
- Technical Electives (6 hours):** BIOL 250, BIOL 301, BIOL 303, BIOL 415, BIOL 460, BIOL 505, BIOL 530, BIOL 531, BIOL 534, BIOL 541 (or CHEM 550), BIOL 545 (or CHEM 555), BIOL 546 (or CHEM 556), BIOL 553, BIOL 610, BIOL 612, BIOL 620, BIOL 635, BIOL 653, BIOL 655, BIOL 656, BIOL 662, BIOL 665, BIOL 667, BIOL 690; CHEM 321, CHEM 322, CHEM 334, CHEM 340, CHEM 541, CHEM 542, CHEM 545, CHEM 550 (or BIOL 542), CHEM 555 (or BIOL 545), CHEM 556 (or BIOL 546); EXSC 530, EXSC 535, EXSC 562; MATH 344, MATH 374, MATH 520, MATH 521, MATH 524, MATH 526 or 544, MATH 546, MATH 547, MATH 550, MATH 552; PHYS 514, PHYS 515, PHYS 516, PHYS 517, PHYS 521, PHYS 522; STAT 516, STAT 518, STAT 519, STAT 520, STAT 523, STAT 525, STAT 528, STAT 530, STAT 582; any Biomedical Engineering Elective or Engineering Elective.
- Technical Laboratory Elective (1 hour):** BIOL 250L, BIOL 460L, BIOL 505L, BIOL 534L, BIOL 541L (or CHEM 550L); CHEM 321L, CHEM 332L, CHEM 333L, CHEM 334L, CHEM 340L, CHEM 541L, CHEM 542L, CHEM 550L (or BIOL 541L); ECIV 350L; EMCH 555L; EXSC 530L; MATH 344L. Note: CHEM 333L is a two-credit course that may satisfy the CHEM 331L and technical lab elective.

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.