UofSC South Carolina

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]	Program 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 Chem. I	4	C		CC-SCI	C or better in MATH 111/115/122/141 *or* higher math *or* Math placement test score	
!	BIOL 101 & BIOL 101L – Biol. Principles I	4	C		CC-SCI		
	BMEN 101 Introduction to Biomedical Engr.	2		*	MR	Coreq or prereq: MATH 141	
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 Chem. II	4	C		PR	C or better in CHEM 111 or 141, MATH 111/115/122/141 or higher math	
!	PHYS 211 & PHYS 211L – Essentials of Phys. I	4	C		PR	C or better in MATH 141	
!	BMEN 211 Computational Tools for Modeling Biomedical Systems	3	C	*	MR	C or better in Math 141; Coreq or prereq: CHEM 111 *or* 141	
Semester Three (17 Credit Hours)							
!	BMEN 212 Fundamentals of Biomedical Systems	3	C	*	MR	C or better in BMEN 211, CHEM 111 *or* 141, & MATH 142	
!	MATH 241 Vector Calculus	3	C		PR	C or better in MATH 142	
!	PHYS 212 & PHYS 212L – Essentials of Phys. II	4			PR	C or better PHYS 211 *and* MATH 142	
!	CHEM 333 Organic Chemistry I	3	C		PR	C or higher in CHEM 112 *or* 142	
!	BMEN 240 Cellular & Molecular Biol. with Engr. Applications	4	C	*	MR	C or better in BIOL 101, BMEN 211, CHEM 112 *or* 142, & MATH 142	
Semester Four (15 Credit Hours)							
!	BMEN 263 Introduction to Biomechanics	3	C	*	MR	C or better in BMEN 212, MATH 241 & PHYS 211	
!	BMEN 290 Thermodynamics of Biomol. Sys.	3	C	*	MR	C or better in BMEN 240 or 211, MATH 241, & PHYS 211	
!	MATH 242 Elem. Differential Equations	3	C		PR	C or better in MATH 142	
!	CHEM 334 Organic Chemistry II	3	C		PR	C or better in CHEM 333	
	STAT 509 Statistics for Engineers	3			PR	MATH 142 or equivalent	
Semester Five (17 Credit Hours)							
!	BMEN 271 Introduction to Biomaterials	3		*	MR	CHEM 333, & C or better in BMEN 240 *or* BIOL 302, BMEN 260 *or* 263, & BMEN 290	
!	BMEN 321 Biomonitoring & Electrophysiology	3		*	MR	PHYS 212, & C or better in BMEN 211 *or* 212, BMEN 240 *or* BIOL 302, & MATH 242	
!	BMEN 381 Biomedical Engineering Lab I	2		*	MR	BMEN 260 *or* 263, STAT 509; Prereq or coreq: BMEN 271	
!	ECHE 320 Chemical Engr. Fluid Mechanics *or* ENCP 360 Fluid Mechanics *or* EMCH 360 Fluid Mechanics	3		*	PR	See Bulletin listing.	
	CHEM 550 Biochemistry *(cross-listed: BIOL 541)*	3			PR	C or better in CHEM 334	
	Carolina Core AIU[4]	3			CC-AIU		
Semester Six (16 Credit Hours)							
	BMEN 303 Prof. Dev. & Ethics in BMEN	1		*	MR	BMEN 101	
!	BMEN 345 Human Anat. & Phys. for BMEN	4		*	MR	BMEN 271 & C or better in BIOL 302 *or* BMEN 240	
!	BMEN 354 Biotransport	3		*	MR	ECHE 320 or EMCH/ENCP 360, & C or better in MATH 242	
!	BMEN 363 Biomedical Instrumentation	3		*	MR	BMEN 321	
!	BMEN 382 Biomedical Engineering Lab II	2		*	MR	BMEN 321 & 381; Prereq *or* coreq: BMEN 363	
	Carolina Core VSR[4]	3			CC-VSR		

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	Semester Seven (15 Credit Hours)						
!	BMEN 427 Senior BMEN Design I	3		*	MR CC-INT	BMEN 271, 345, 354, & 361 *or* 363	
	BMEN 391 Kinetics in Biomolecular Systems	3		*	MR	CHEM 333 *or* 550 *or* BIOL 541; C or better in BMEN 290 & MATH 242	
	Biomedical Engineering Elective[5]	3		*	PR	See Bulletin listing.	
	Technical Elective[7]	3			PR	See Bulletin listing.	
	Carolina Core GSS[4]	3			CC-GSS		
	Semester Eight (15 Credit Hours)						
	BMEN 428 Senior BMEN Design II	3		*	MR	BMEN 427	
	Biomedical Engineering Elective[5]	3		*	PR	See Bulletin listing.	
	Engineering Elective[6]	3		*	PR	See Bulletin listing.	
	Technical Elective[7]	3			PR	See Bulletin listing.	
	Carolina Core GHS[4]	3			CC-GHS		
	Take during any semester (0-9 Credit Hours)						
	Carolina Core CMS[4]	0-3			CC-CMS		
	Carolina Core GFL[4]	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
130	48	48	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 Biomedical Engineering program GPA of 2.00.
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. **Biomedical Engineering Electives (6 hours): BMEN** 342, 346, 389, 392, 499, 535, 536, 546, 547, 548, 565, 572, all BMEN 589's, **EMCH** 580, **EXSC** 335. At most 3 credit hours may come from BMEN 499.
6. **Engineering Electives (3 hours):** Engineering electives include all Biomedical Engineering Electives as well as **ECHE** 300, 321, 322, 372, 430, 440, 456, 550, 567, 572, 573; **ECIV** 350, 521; **ELCT** 321, 331, 350, 361, 363, 540; **EMCH** 111, 308, 327, 330, 332, 354, 371, 497, 501, 502, 507, 508, 516, 528, 529, 532, 535, 554, 555, 557, 560, 571, 575, 580, 584, 585, 586; **CSCE** 206, 215, 240, 317, 330, 350, 355, 500, 551 (or MATH 562), 555, 561 (or MATH 527), 563.
7. **Technical Electives (6 hours):** Technical Electives include all Biomedical Engineering Electives, and Engineering electives as well as **BIOL** 102, 102L, 250, 250L, 301, 302L, 303, 415, 460, 505, 530, 531 (or ENHS 661/EPID 661), 534, 541L (or CHEM 550L), 553, 610, 612, 620, 635, 653, 655, 656, 662, 665, 667, 690; **CHEM** 321, 321L, 322, 331L (or CHEM 333L), 332L (or CHEM 333L), 340, 541, 542, 545, 550L; **EXSC** 330, 562; **MATH** 344 (or MATH 526), 374, 520, 524, 544, 546, 547, 550, 552; **PHYS** 514, 515, 516, 517, 521; **STAT** 516, 518, 519, 520 (or MGSC 520), 523, 525 (or MGSC 525), 528, 530, 582 (or CSCE 582).

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 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.