UNIVERSITY OF South Carolina

Major Map: Physics
Bachelor of Science (B.S.)
Engineering Physics (Mechanical Option) Concentration
College of Arts and Sciences
Department of Physics & Astronomy
Bulletin Year: 2025-2026

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 *or* placement through the MAP	
	CHEM 111 & CHEM 111L – General Chemistry I	4	C		CC-SCI	C or better in MATH 111/115/122/141 or higher math *or* placement through the MAP	
!	PHYS 199 Measurement & Analysis in Physics *(offered fall only)*	2	C		PR	C or better in MATH 115 or higher	
	UNIV 101 The Student in the University *or* Carolina Core Requirement[4]	3			PR/CC		
Semester Two (17 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		CC-SCI	CHEM 111 *or* 141 & MATH 111, 115 *or* higher math; Prereq or Coreq: MATH 122, 141 or higher & CHEM 112L	
!	PHYS 211 Essentials of Physics I	3	C		PR	C or better in MATH 141	
	Carolina Core Requirement[4]	3			CC		
Semester Three (16-17 Credit Hours)							
!	MATH 241 Vector Calculus	3	C		PR	C or better in MATH 142	
!	PHYS 212 Essentials of Physics II	3	C		PR	C or better in PHYS 211 & MATH 142	
	CSCE 145 Algorithmic Design I	4	C		CR	Prereq or Coreq: MATH 111 *or* 115	
	Carolina Core Requirement[4]	3			CC		
	Foreign language[5] *or* other Carolina Core Req.[4]	3-4			CC-GFL		
Semester Four (18 Credit Hours)							
!	MATH 242 Elementary Differential Equations *or* MATH 520 Ordinary Differential Equations	3	C		PR	C or better in MATH 142 *(MATH 242);* C or better in MATH 344 or 544 *(MATH 520)*	
!	PHYS 307 Introduction to Modern Physics *(offered spring only)*	3	C		MR	C or better in PHYS 212 & MATH 241	
!	PHYS 311 Intro. to Applied Numerical Methods *(cross-listed: EMCH 201, ENCP 201)*	3	C		MR	Prereq: MATH 141 or Co-req: MATH 142	
!	EMCH 200 Statics	3	C		MR	C or better in MATH 142	
	History[6]	3			CR		
	Foreign language[5] *or* other Carolina Core Req.[4]	3			CC-GFL		
Semester Five (18 Credit Hours)							
	MATH 300 Transition to Adv. Mathematics *or* MATH 344 Applied Linear Algebra *or* MATH course *(500-level or above)*	3	C		PR	C or better in MATH 142 *(MATH 300 and 344)*	
	PHYS 306 Principles of Physics III *(offered fall only)*	3	C		PR	C or better in PHYS 212 & MATH 142; Prereq or Co-req: MATH 241	
!	EMCH 260 Solid Mechanics	3	C		MR	C or better in EMCH 200 & Math 241; C or better in EMCH 200 *or* ENCP 200	
	PHYS 501 Quantum Physics I *(offered fall only)*	3	C		MR	C or better in PHYS 307 & MATH 242 or 520	
	STAT 509 Statistics for Engineers *or* STAT 515 Statistical Methods I	3	C		CR	MATH 142 or equiv. *(STAT 509)*; C or better in MATH 112, 115, 122 or 141, *or* in both STAT 110 or higher & MATH 111 *or* placement through the MAP *(STAT 515)*	
	Foreign language[5] *or* Carolina Core Req.[4]	3			CR/CC		
Semester Six (16-17 Credit Hours)							
	MATH course *(500-level or above)*	3	C		PR		
	PHYS 310 Intermediate Experimental Physics	4	C		MR	C or better in PHYS 212 & STAT 509 or 515	
	Engineering Physics Concentration course[7]	3-4	C		MR	See Bulletin listing	
	EMCH Elective *(300-level or above)*	3	C		MR		
	Social Science	3			CR		
Semester Seven (17 Credit Hours)							
	PHYS 503 Mechanics *(offered fall only)*	4	C		MR	C or better in PHYS 211 & MATH 242 *or* 520	
	EMCH 290 Thermodynamics	3	C		MR	C or better in PHYS 211 & MATH 142	
	EMCH Elective *(300-level or above)*	3	C		MR		
	PHYS 541 Advanced Experimental Physics I	4	C		MR	C or better in PHYS 310	
	Humanities or Fine Arts	3			CR		

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Semester Eight (13-14 Credit Hours)							
	PHYS 504 Electromagnetic Theory *(offered spring only)*	4	C		MR	C or better in PHYS 503	
	EMCH Elective *(300-level or above)*	3	C		MR		
	EMCH Elective *(300-level or above)*	3	C		MR		
	Engineering Physics Concentration course[7]	3-4	C		MR	See Bulletin listing	

Graduation Requirements Summary

Minimum Total Hours	Minimum Major Requirements Hours	College & Program Requirements Hours	Carolina Core Hours	Minimum Institutional GPA
125	52	39-45	34-40	2.000

1. Regardless of individual course grades, students must maintain a minimum 2.000 cumulative GPA.
2. Some colleges require a minimum GPA for major courses. Courses indicated in this column are included in the major GPA for this program of study.
3. Students who do not place into MATH 141 will be required to successfully complete MATH 112, 115, or 116 before taking MATH 141.
4. The Carolina Core provides the common core of knowledge, skill and academic experience for all Carolina undergraduate students.
5. Students in the College of Arts and Sciences are required to demonstrate proficiency in one foreign language equivalent to the 122 course through course credit or the corresponding foreign language placement score.
6. The College of Arts and Sciences requires one U.S. History and one non-U.S. History course, both of which must be chosen from the approved Carolina Core GHS courses. Whichever is not fulfilled through the Carolina Core GHS requirement must be fulfilled through this college requirement.
7. Engineering Physics Concentration courses - choose two from following (6-8 hours): PHYS 502, 506, 509, 511, 512, 514, 521, or 542.

Program Notes:

- ENGL 101 and ENGL 102 must be completed in the student's first 60 semester hours of work in order for these courses to be credited toward graduation. Other courses designated as critical are prerequisites for subsequent courses, and a delay in completion of these courses may affect time to graduation.
- All undergraduate students must take a 3-credit course or its equivalent with a passing grade that covers the founding documents. This course may fulfill any requirement in the program of study. Courses that meet this requirement are listed in the academic bulletin.
- The last 30 credit hours toward your degree 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.