

Major Map: Physics Bachelor of Science (B.S.)

Engineering Physics (Electrical 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			Min. Grade ¹			Prerequisites	Notes
	er One (16 Credit Hours)	,		ı			
	ENGL 101 Critical Reading and Composition	3	С		CC-CMW		
!	MATH 141 Calculus 1³	4	С		CC-ARP	C or better in Math 112/115/116 <i>or</i> placement through the MAP	
	CHEM 111 & CHEM 111L – General Chemistry I	4	С		CC-SCI	C or better in MATH 111/115/122/141 or higher math <i>or</i> placement through the MAP	
!	PHYS 199 Measurement & Analysis in Physics (offered fall only)	2	С		PR	C or better in MATH 115 or higher	
	UNIV 101 The Student in the University	3			PR/CC		
	or Carolina Core Requirement ⁴						
mest	er Two (17 Credit Hours)			1	00 01 01	0 1 " : 5101 101	
!	ENGL 102 Rhetoric and Composition	3	С		CC-CMW CC-INF		
!	MATH 142 Calculus II	4	С		CC-ARP	C or better in MATH 141	
	CHEM 112 & CHEM 112L – General Chemistry II	4	С		CC-SCI	CHEM 111 <i>or</i> 141 & MATH 111, 115 <i>or</i> higher math; Prereq or Coreq: MATH 122, 141 or higher & CHEM 112L	
!	PHYS 211 Essentials of Physics I	3	С		PR	C or better in MATH 141	
	Carolina Core Requirement ⁴	3			CC		
mest	er Three (16-17 Credit Hours)					·	
	MATH 241 Vector Calculus	3	С		PR	C or better in MATH 141	
i	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	Prereg or Coreg: MATH 111 or 115	
	Carolina Core Requirement ⁴	3	C		CC	Prefeq of Coreq. MATH TIT 0/ 113	
			-				
	Foreign language ⁵ or other Carolina Core Req. ⁴	3-4			CC-GFL		
mest	er Four (18 Credit Hours)						
	MATH 242 Elementary Differential Equations or MATH 520 Ordinary Differential Equations	3	С		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	С		MR	C or better in PHYS 212 & MATH 241	
	STAT 509 Statistics for Engineers or STAT 515 Statistical Methods I	3	С		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	
	EL OT 100 EL				140	placement through the MAP (STAT 515)	
	ELCT 102 Electrical Science	3	С		MR	Prereq or Coreq: MATH 141	
	History ⁶	3			CR		
	Foreign language ⁵ <i>or</i> other Carolina Core Req. ⁴	3			CC-GFL		
nest	er Five (15 Credit Hours)						
	MATH 300 Transition to Adv. Mathematics or MATH 344 Applied Linear Algebra or MATH course (500-level or above)	3	С		PR	C or better in MATH 142 (MATH 300 and 344)	
	PHYS 306 Principles of Physics III (offered fall only)	3	С		PR	C or better in PHYS 212 & MATH 142; Prereq or Co-req: MATH 241	
	PHYS 311 Intro. to Applied Numerical Methods (cross-listed: EMCH 201, ENCP 201)	3	С		MR	Prereq: MATH 141 or Co-req: MATH 142	
	PHYS 501 Quantum Physics I (offered fall only)	3	С		MR	C or better in PHYS 307 & MATH 242 or 520	
	Foreign language ⁵ or Carolina Core Requirement ⁴		<u> </u>		CR/CC	2 1. 2010 1.1. 0 001 0 10/1111 2-12 01 020	
nest	er Six (16 Credit Hours)				3.400		
	MATH course (500-level or above)	3	С		PR		
	PHYS 310 Intermediate Experimental Physics	4	С		MR	C or better in PHYS 212 & STAT 509 or 515	
		3	C				
	PHYS 506 Thermal Physics & Statistical	٥			MR	C or better in PHYS 306, 307, MATH 241	
	Mechanics (offered spring only) ELCT 221 Circuits	3	С		MR	and MATH 242 or 520 C or better in MATH 142 & ELCT 102 or D or	
	1	3	С		MR	better in ELCT 220 MATH 141	
	CSCE 211 Digital Logic Design	ა					
mest		<u>3</u>					
mest	er Seven (17 Credit Hours)	i	С		MR	C or better in PHYS 211 & MATH 242 or 520	
mest	er Seven (17 Credit Hours) PHYS 503 Mechanics (offered fall only)	4	С		MR MR	C or better in PHYS 211 & MATH 242 or 520	
mest	er Seven (17 Credit Hours)	i	C C		MR MR MR	C or better in ELCT 221 & MATH 242 C or better in ENGL 102 & CSCE 211;	
emest	er Seven (17 Credit Hours) PHYS 503 Mechanics (offered fall only) ELCT 222 Signals and Systems	4 3	С		MR	C or better in ELCT 221 & MATH 242	

Semester Eight (16-19 Credit Hours)					
PHYS 504 Electromagnetic Theory (offered spring	4	С	MR	C or better in PHYS 503	
only)					
ELCT 301 Electronics Lab	3	С	MR	D or better in ELCT 201; Prereq or Coreq: D	
				or better in ELCT 371	
ELCT 371 Electronics	3	С	MR	C or better in ELCT 222	
Engineering Physics Concentration course ⁷	3	С	MR	See Bulletin listing	
Social Science	3		CR		
Carolina Core Requirement ⁴ (only if needed to	0-3		CC		
meet CC requirements)					

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 (3-4 hours): PHYS 502, 511, 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 <u>Carolina Core</u> 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.