

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 (17-18 Credit Hours)							
!	ENGL 101 Critical Reading and Composition	3	C		CC-CMW		
	MATH 141 Calculus 1 ³	4			CC-ARP	C or better in Math 112/115/116 or Math placement test	
	CHEM 141 Principles of Chemistry I ⁴	4	C		PR	C or better in MATH 141 or higher math (or by placement score into MATH 142 or higher math)	
	Foreign language ⁵ or other Carolina Core Requirement ⁶	3-4			CC-GFL		
	UNIV 101 The Student in the University or Carolina Core Requirement ⁶	3			PR/CC		
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			CC-ARP	C or better in MATH 141	
!	CHEM 142 Principles of Chemistry II ⁴	4	C		PR	C or better in CHEM 141	
	PHYS 211 Essentials of Physics I	3	C		CC-SCI	C or better in MATH 141; Coreq: PHYS 211L	
	PHYS 211L Essentials of Physics I Lab	1	C		CC-SCI	Coreq: PHYS 211	
	Foreign language ⁵ or other Carolina Core Requirement ⁶	3			CC-GFL		
Semester Three (15 Credit Hours)							
	MATH 241 Vector Calculus ⁷	3			PR	C or better in MATH 142	
	CHEM 333 Organic Chemistry I	3	C		MR	C or better in CHEM 112 or CHEM 142	
	CHEM 333L Organic Chemistry I Lab	2	C		MR	Prereq or Coreq: CHEM 333	
	PHYS 212 Essentials of Physics II ⁷	3	C		CC-SCI	C or better in PHYS 211 & MATH 142; Coreq: PHYS 212L	
	PHYS 212L Essentials of Physics II Lab ⁷	1	C		CC-SCI	PHYS 212	
	Foreign language ⁵ or Carolina Core Requirement ⁶	3			CR/CC		
Semester Four (15 Credit Hours)							
	CHEM 322 Analytical Chemistry	3	C		MR	C or better in CHEM 112/112L or CHEM 142; MATH 141; Coreq: CHEM 322L	
	CHEM 322L Analytical Chemistry Lab	1	C		MR	Coreq: CHEM 322	
	CHEM 334 Organic Chemistry II	3	C		MR	C or better in CHEM 333	
	CHEM 334L Organic Chemistry II Lab	2	C		MR	CHEM 333L; Prereq/Coreq: CHEM 334	
	History ⁹	3			CR		
	Carolina Core Requirement ⁶	3			CC		
Semester Five (14-17 Credit Hours)							
	CHEM Elective ¹⁰	3	C		MR	See Bulletin listing	
	CHEM 541 & CHEM 541L – Physical Chemistry or CHEM 542 & CHEM 542L – Physical Chemistry	5	C		MR/CC-INT	See Bulletin listing	
	STAT 509 Statistics for Engineers or STAT 515 Statistical Methods I ^{7 & 8} (only if needed)	0-3			CR	MATH 142 (STAT 509 only); MATH 122 or 141 or both MATH 111 or higher and any statistics class (STAT 515 only)	
	Cognate or Minor Course ⁷ or Approved Elective ¹¹	3	C (minor)		PR		
	Humanities or Fine Arts	3			CR		
Semester Six (14-15 Credit Hours)							
	CHEM 541 & CHEM 541L – Physical Chemistry or CHEM 542 & CHEM 542L – Physical Chemistry	5	C		MR/CC-INT	See Bulletin listing	
	CSCE 206 Scientific Applications Programming or CSCE 145 Algorithmic Design I	3-4			CR	MATH 122 or 141 (CSCE 206 only); pre- or co-req: MATH 111 or 115 (CSCE 145 only)	
	Cognate or Minor Course ⁷ or Approved Elective ¹¹	3	C (minor)		PR		
	Carolina Core Requirement ⁶	3			CC		
Semester Seven (12-15 Credit Hours)							
	CHEM 496-499 Undergraduate Research ¹² (optional)	0-3	C		MR	Independent Study Contract Required	
	Cognate or Minor Course ⁷ or Approved Elective ¹¹	3	C (minor)		PR		
	Cognate or Minor Course ⁷ or Approved Elective ¹¹	3	C (minor)		PR		
	Social Science	3			CR		
	Carolina Core Requirement ⁶ or Approved Elective ¹¹	3			CC/PR		

Semester Eight (15 Credit Hours)						
Minor Course ⁷ or Approved Elective ¹¹	3	C (minor)		PR		
Minor Course ⁷ or Approved Elective ¹¹	3	C (minor)		PR		
Carolina Core Requirement ⁶ or Approved Elective ¹¹	3			CC/PR		
Approved Elective ¹¹	3			PR		
Approved Elective ¹¹	3			PR		

Graduation Requirements Summary

Minimum Total Hours	Minimum Major Requirements Hours	College & Program Requirements Hours	Carolina Core Hours	Minimum Institutional GPA
120	27	47-60	34-46	2.000

- Regardless of individual course grades, students must maintain a minimum 2.000 cumulative GPA.
- 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.
- Students who do not place into MATH 141 will be required to successfully complete MATH 112, 115, or 116 before taking MATH 141.
- CHEM 111 and CHEM 111L may be taken in place of CHEM 141, and CHEM 112 and CHEM 112L may be taken in place of CHEM 142.
- 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.
- The [Carolina Core](#) provides the common core of knowledge, skill and academic experience for all Carolina undergraduate students.
- The cognate is intended to support the course work in the major. The cognate must consist of twelve hours of courses at the advanced level, outside of, but related to the major. In place of a cognate, a student may choose a minor consisting of at least 18 credit hours of courses concentrated in one area that follow a structured sequence. All minor courses must be passed with a grade of C or higher. For B.S. degrees, grades of D are acceptable for completion of the cognate requirement, except where restricted by the major program. A second major eliminates the minor/cognate requirement. Students may use MATH 241, STAT 509/515, and PHYS 212 and 212L toward the cognate requirement, but would need to complete additional electives to meet hours to graduate.
- If CHEM 141, 142, 322, and 322L (or CHEM 141, 142, 322 and 322L) are all completed at USC, STAT 509 or 515 is not required. Also, if CHEM 621 and 621L are completed, STAT 509 or 515 is not required. Students who exempt STAT 509 or 515 through this process will be required to take an approved elective to reach minimum hours for graduation.
- 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.
- CHEM Electives (3-4 hours)

Choose one from the following:

CHEM 511 Inorganic Chemistry (3)	CHEM 621 Instrumental Analysis (3) (and CHEM 621L)
CHEM 533 Comprehensive Organic Chemistry III (3)	CHEM 623 Introductory Environmental Chemistry (3)
CHEM 545 Physical Biochemistry (3)	CHEM 624 Aquatic Chemistry (3) –cross-listed: MSCI 624
CHEM 550 Biochemistry (3) –cross-listed: BIOL 541	CHEM 633 Introduction to Polymer Synthesis (3)
CHEM 555 Biochemistry/Molecular Biology I (3) –cross-listed: BIOL 545	CHEM 644 Materials Chemistry (3)

- No courses of a remedial, developmental, skill-acquiring, or vocational nature may apply as credit toward degrees in the College of Arts and Sciences. The College of Arts and Sciences allows the use of the Pass-Fail option on elective courses. Further clarification on inapplicable courses can be obtained from the College of Arts and Sciences.
- Students are encouraged to start undergraduate research as early as possible to allow participation in long-term projects. Three credits of undergraduate research are required, but additional research experience is recommended. Extramural Research opportunities, such as REU's may qualify for CHEM 496-499 credit; however, a request form must be submitted and preapproved by the Department of Chemistry.

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. CHEM 142 is a prerequisite for subsequent required courses and may delay progression if not taken in a timely manner.
- 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.
- Any Chemistry or Biochemistry and Molecular Biology major can qualify for ACS certification by taking additional courses as listed: CHEM 511, CHEM 621, CHEM 621L, CHEM 550 or CHEM 555, and 6 credits of undergraduate research, CHEM 496-499.
- CHEM 401 Industrial Chemistry Capstone Experience is a recommended elective that prepares students for future roles in chemistry.
- Chemistry majors may enroll in a chemistry course a **maximum of twice** to earn the required grade of C or higher.
- A Chemistry major must receive a grade of C or higher in any chemistry course in order for it to be used to satisfy a major requirement.
- 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-AIU	Carolina Core-Aesthetic and Interpretive Understanding
CC-ARP	Carolina Core-Analytical Reasoning and Problem-Solving
CC-CMS	Carolina Core-Effective, Engaged, and Persuasive Communication: Spoken Component
CC-CMW	Effective, Engaged, and Persuasive Communication: Written Component
CC-GFL	Carolina Core-Global Citizenship and Multicultural Understanding: Foreign Language
CC-GHS	Carolina Core – Historical Thinking
CC-GSS	Carolina Core – Social Sciences
CC-INF	Carolina Core – Information Literacy
CC-INT	Carolina Core – Integrative Course
CC-SCI	Carolina Core – Scientific Literacy
CC-VSR	Carolina Core – Values, Ethics, and Social Responsibility
CR	College Requirement
MR	Major Requirement
PR	Program Requirement

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.