Major Map: Biochemistry & Molecular Biology
Bachelor of Science (B.S.)
College of Arts and Sciences
Department of Chemistry & Biochemistry
Bulletin Year: 2021-2022

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 (18-19 Credit Hours)							
!	ENGL 101 Critical Reading and Composition	3	C		CC-CMW		
	MATH 141 Calculus 1[3]	4	C		CC-ARP	Math 112, 115, 116 *or* Math placement test	
	BIOL 101 Biological Principles 101	3	C		MR	Coreq: BIOL 101L	
	BIOL 101L Biological Principles I Lab	1	C		MR	Coreq: BIOL 101	
	CHEM 141 Principles of Chemistry I[4]	4	C		MR	Grade of C or higher 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		
Semester Two (18 Credit Hours)							
!	ENGL 102 Rhetoric and Composition	3	C		CC-CMW CC-INF		
	MATH 142 Calculus II	4	C		CC-ARP	MATH 141	
	BIOL 102 Biological Principles II	3	C		MR	BIOL 101; Coreq: BIOL 102L	
	BIOL 102L Biological Principles II Lab	1	C		MR	BIOL 101 & 101L; Coreq: BIOL 102	
	CHEM 142 Principles of Chemistry II[4]	4	C		MR	Grade of C or higher in CHEM 141	
	Foreign language[5] *or* other Carolina Core Requirement[6]	3			CC-GFL		
Semester Three (15 Credit Hours)							
	CHEM 333 Organic Chemistry I	3	C		MR	CHEM 112 *or* CHEM 142	
	CHEM 331L Essentials of Organic Chem. Lab I[7]	1	C		MR	Prereq/Coreq: CHEM 333	
	CHEM 322 Analytical Chemistry	3	C		MR	CHEM 112 & 112L & MATH 141; Coreq: CHEM 322L	
	CHEM 322L Analytical Chemistry Lab	1	C		MR	Coreq: CHEM 322	
	PHYS 211 Essentials of Physics I	3	C		CC-SCI	MATH 141; Coreq: PHYS 211L	
	PHYS 211L Essentials of Physics I Lab	1	C		CC-SCI	Prereq/Coreq: PHYS 211	
	Foreign language[5] *or* Carolina Core Requirement[6]	3			CR/CC		
Semester Four (15 Credit Hours)							
	BIOL 302 Cell & Molecular Bio.	3	C		MR	BIOL 102 *or* MSCI 311; Prereq/Coreq: CHEM 333	
	BIOL 302L Cell & Molecular Bio. Lab	1	C		MR	Prereq/Coreq: BIOL 302	
	CHEM 334 Organic Chemistry II	3	C		MR	CHEM 333	
	CHEM 332L Essentials of Organic Chem. Lab II[7]	1	C		MR	CHEM 331L; Prereq/Coreq: CHEM 334	
	PHYS 212 Essentials of Physics II	3	C		CC-SCI	PHYS 211 & MATH 142; Coreq: PHYS 212L	
	PHYS 212L Essentials of Physics II Lab	1	C		CC-SCI	Prereq/Coreq: PHYS 212	
	MATH 241 Vector Calculus	3	C		PR	MATH 142	
Semester Five (15 Credit Hours)							
	CHEM 555 Biochem./Molecular Biol. I *(cross-listed BIOL 545)*	3	C		MR	C or better in CHEM 334	
	CHEM 550L Biochem. Lab *(cross-listed: BIOL 541L)*	1	C		MR	Prereq/Coreq: C or higher in CHEM 550 *or* BIOL 541 *or* CHEM 555 *or* BIOL 545	
	CHEM 541 Physical Chemistry	3	C		MR	CHEM 112 *(or CHEM 142)* & MATH 241; Prereq/Coreq: PHYS 212	
	CHEM 541L Physical Chemistry Lab	2	C		MR/CC-INT	CHEM 321L *or* 322L; Prereq/Coreq: CHEM 541	
	BIOL 303 Fundamental Genetics	3	C		MR	BIOL 102 *or* MSCI 311	
	History[8]	3			CR		
Semester Six (15 Credit Hours)							
	CHEM 545 Physical Biochemistry	3	C		MR	C or better in CHEM 541 & 550 *or* 555	
	CHEM 556 Biochem./Molecular Biol. II *(cross-listed: BIOL 546)*	3	C		MR	C or better in BIOL 302	
	STAT 201 Elementary Statistics[9]	3			CR	MATH 111 *or* 115 *or* STAT 110	
	Social Science	3			CR		
	Carolina Core Requirement[6]	3			CC		
Semester Seven (16 Credit Hours)							
	BIOL 550 Bacteriology	3	C		MR	BIOL 302 *or* MSCI 311; Coreq: BIOL 550L	
	BIOL 550L Bacteriology Lab	1	C		MR	Coreq: BIOL 550	
	BIOL/CHEM Elective (400-600 level)[10]	3	C		MR	BIOL 302 *(BIOL 425 & 620)*; BIOL 302 *or* MSCI 311 *(BIOL 460 & 543 only)*	
	BIOL/CHEM Elective *(400-600 level)*[10]	3	C		MR		
	Humanities or Fine Arts	3			CR		
	Carolina Core Requirement[6]	3			CC		

K. Shimizu

Semester Eight (16 Credit Hours)							
	BIOL/CHEM Elective *(400-600 level)*[10]	3	C		MR		
	CSCE 102 General Applications Programming	3			CR		
	Carolina Core Requirement[6] *or* Approved Elective[11]	3			CC/PR		
	Carolina Core Requirement[6] *or* Approved Elective[11]	3			CC/PR		
	Carolina Core Requirement[6] *or* Approved Elective[11]	3			CC/PR		
	Approved Elective[11]	1			PR		

Graduation Requirements Summary

Minimum Total Hours	Minimum Major Requirements Hours	College & Program Requirements Hours	Carolina Core Hours	Minimum Institutional GPA
128	63	19-31	34-46	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 115 before taking MATH 141.
4. CHEM 111 and 111L may be taken in place of CHEM 141, and CHEM 112 and 112L may be taken in place of CHEM 142.
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 Carolina Core provides the common core of knowledge, skill and academic experience for all Carolina undergraduate students.
7. CHEM 333L and CHEM 334L are also accepted in place of CHEM 331L and CHEM 332L, respectively.
8. 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.
9. If CHEM 111, 112, 322, and 322L are all completed at USC, STAT 201 is not required. Also, if CHEM 621 and 621L are completed, STAT 201 is not required. Students who exempt STAT 201 through this process will be required to take an approved elective to reach minimum hours for graduation.
10. Students are encouraged to start undergraduate research as early as possible to allow for participation in long-term projects. No more than 3 hours of research (BIOL 399 or CHEM 496) can be used to satisfy the elective requirement. Extramural Research opportunities, such as REU's may qualify for CHEM 496 credit; however, a request form must be submitted and preapproved by the Department of Chemistry.
11. The Biochemistry and Molecular Biology Major requires electives only if needed to meet 128 credit hours. 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.

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.
- 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.
- Biochemistry and Molecular Biology majors may enroll in a biology or chemistry course a **maximum of twice** to earn the required grade of C or higher.
- A Biochemistry and Molecular Biology major must receive a grade of C or higher in any major, college, or program requirement course in order for it to serve as the required prerequisite for any higher-level course.
- 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.