

ABOUT Cell & Molecular Biology - Biochemistry Option:

Biochemistry is a fundamental science focusing on the understanding of living systems from a physical and chemical perspective. The biochemistry option emphasizes the study of cells and multicellular organisms through the lens of the molecular-level characterization of all biological macromolecules in order to define their structures and functions. The requirements for this option include focused biochemistry specialty courses in proteins, enzymes and physical chemistry, plus laboratory courses that emphasize modern methods used to purify and physically and/or functionally characterize biological macromolecules; such as DNA, RNA, proteins, lipids, and carbohydrates.

Step 1: REVIEW YOUR PROGRAM REQUIREMENTS

Cell & Molecular Biology (CMB) - BIOCHEMISTRY					36-42 Credits
Concentration Courses					(33-39 Credits)
Course Name	Course #	Semester	Credits	Grade	
Integrative Microbiology	CMB 211		4		
Introductory Biochemistry	CMB 311		3		
Immunology and Serology	CMB 333		3		
General Genetics	CMB 352		4		
Advanced Biochemistry Lab I	CMB 412		3		
Physical Biochemistry or Structural Biochemistry	CMB 421 or CMB 426		3		
Fundamentals of Molecular Biology	CMB 437		3		
Proteins and Enzymes	CMB 482		3		
Research in Cell and Molecular Biology	CMB 491		1-6		
Seminar in Cell and Molecular Biology	CMB 495		1		
Principles of Cell Biology	BIO 341		3		
Professional Electives:					(3 Credits)
<i>Select an additional 3 credits from one other 300 level or above CMB course, determined in consultation with your advisor.</i>					
Course Name	Course #	Semester	Credits	Grade	

Minimum 2.0 cumulative GPA required in major and overall for graduation.

Major GPA = _____

Overall GPA = _____

***Course fulfills general education and a major requirement**

Step 1: REVIEW YOUR PROGRAM REQUIREMENTS CONTINUED:

Introduction Requirement (1 credit)			
Course	Semester	Credits	Grade
URI 101		1	

BIOLOGY (8 credits)			
Course	Semester	Credits	Grade
*BIO 101		3	
*BIO 103		1	
*BIO 102		3	
*BIO 104		1	

CHEMISTRY Requirement: (16-18 credits)			
Course	Semester	Credits	Grade
*CHM 101		3	
CHM 102		1	
OR			
CHM 191		5	
AND			
Course	Semester	Credits	Grade
CHM 112		3	
CHM 114		1	
OR			
CHM 192		5	
AND			
Course	Semester	Credits	Grade
CHM 227		3	
CHM 228		3	
CHM 226		2	

MATH Requirement: (6-8 credits)			
Course	Semester	Credits	Grade
*MTH 131		3	
OR			
*MTH 141 <i>Preferred</i>		4	

AND 1 OF THE FOLLOWING: MTH *111, 132, *142; *CSC 201; STA 307, 308, or 409

Course	Semester	Credits	Grade

PHYSICS Requirement: (8 credits)			
Course	Semester	Credits	Grade
*PHY 111		3	
*PHY 185		1	
OR			
*PHY 203 <i>Preferred</i>		3	
*PHY 273 <i>Preferred</i>		1	
AND			
Course	Semester	Credits	Grade
*PHY 112		3	
*PHY 186		1	
OR			
*PHY 204 <i>Preferred</i>		3	
*PHY 274 <i>Preferred</i>		1	

FREE ELECTIVES			
Course	Semester	Credits	Grade

Course	Semester	Credits	Grade

*Course fulfills general education and a major requirement

B.S. Cell & Molecular Biology - Biochemistry Option

Sample 4 Year Plan - Effective Fall 2026

College of the Environment & Life Sciences

Freshman Year *Fall* Semester

Course Code	Description	Cr
URI 101	Planning for Academic Success	1
*BIO 101/103	Principles of Biology I/Lab	4
*MTH ____	Precalculus, Applied Calculus I, or Introductory Calculus	3-4
*CHM 101/102	General Chemistry I/Lab	4
	*General Education	3-4
		15-17

Freshman Year *Spring* Semester

Course Code	Description	Cr
*BIO 102/104	Principles of Biology II/Lab	4
*CHM 112/114	General Chemistry II/Lab	4
	2nd required CSC, MTH, or STA course	3-4
	*General Education	3-4
	*General Education	3-4
		15-17

Year 1 Milestones: Complete **BIO** 101, 103, 102, 104, **CHM** 101, 102, 112, 114, **MTH** 131 or 141. Earn 30 credits with a cumulative GPA of 2.0 or higher.

Sophomore Year *Fall* Semester

Course Code	Description	Cr
CHM 227	Organic Chemistry Lecture I	3
CMB 211	Integrative Microbiology	4
*PHY ____	General Physics I Lecture/Lab	4
	*General Education	3-4
	*General Education	3-4
		15-17

Sophomore Year *Spring* Semester

Course Code	Description	Cr
CHM 228	Organic Chemistry Lecture II	3
CMB 311	Introductory Biochemistry Lecture	3
*PHY ____	General Physics II Lecture/Lab	4
	Professional Elective	3
	*General Education	3-4
		15-17

Year 2 Milestones: Complete **CMB** 211, and 311. Begin Organic Chemistry sequence. Begin Physics sequence. Meet with a CMB Faculty advisor to discuss research opportunities and plan year 3 and 4 courses. Earn 60 total credits with a cumulative GPA of 2.0 or higher.

Junior Year *Fall* Semester

Course Code	Description	Cr
CHM 226	Organic Chemistry Lab	2
CMB 333	Immunology and Serology	3
CMB 341	Cell Biology	3
	*General Education/Free Elective	3-4
	*General Education/Free Elective	3-4
		15-17

Junior Year *Spring* Semester

Course Code	Description	Cr
CMB 352	General Genetics	4
CMB 421**	Physical Biochemistry	3
	*General Education/Free Elective	3-4
CMB 412	<i>Advanced Biochemistry Lab</i>	3
		15-17

Year 3 Milestones: Complete **CMB** 341, 412 (*412, 421, 437, & 482 are only taught in the Spring*), 333, & 352. Complete Organic Chemistry sequence. Meet with a CMB Faculty advisor to plan year 4 courses. Earn 90 total credits with a cumulative GPA of 2.0 or higher. Prepare intent to graduate with faculty advisor for Fall submission.

Senior Year *Fall* Semester

Course Code	Description	Cr
CMB 495	Seminar in Cell & Molecular Biology	1
CMB 491	Research in Cell and Molecular Biology	1-6
CMB 426**	Structural Biochemistry	3
	*General Education/Free Elective	3-4
		15-17

Senior Year *Spring* Semester

Course Code	Description	Cr
CMB 437	<i>Fundamentals of Molecular Biology</i>	3
CMB 482	<i>Proteins and Enzymes</i>	3
	*General Education/Free Elective	3-4
	*General Education/Free Elective	3-4
		15-17

Students may choose between **CMB 421 (Spring only) and **CMB 426** (Fall only)