# Cell & Molecular Biology Biochemistry Option

Student:	
Student ID:	
Advisor:	

120 Earned Credits Total

**EL CMBI BS** 

### **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) - B	IOCHEMISTRY		3	6-42 Credits
Concentration Courses			(30	)-36 Credits)
Course Name	Course #	Semester	Credits	Grade
Introductory Microbiology	CMB 211		4	
Introductory Biochemistry	CMB 311		3	
Immunology and Serology	CMB 333	Fall	3	
General Genetics	CMB (BIO) 352		4	
Introductory Biochemistry Lab or Advanced Biochemistry Lab I (preferred)	CMB 312 or <i>CMB</i> <b>412</b>		2-3	
Physical Biochemistry <b>or</b> Structural Biochemistry	CMB 421 <b>or</b> CMB 426		3	
Fundamentals of Molecular Biology	CMB (BIO) 437	Spring	3	
Proteins and Enzymes	CMB 482	Spring	3	
Research in Cell and Molecular Biology	CMB 491 (fall) or 492(spring)		1-6	
Seminar in Cell and Molecular Biology	CMB 495	Fall	1	
Biological Sciences (BIO)				(3 Credits)
Course Name	Course #	Semester	Credits	Grade
Principles of Cell Biology	BIO 341	Fall	3	
Professional Electives:				(3 Credits)
Select an additional 3 credits from course; BIO 242; BPS 535; or PHY 4	•	Any 300 lev	el or high	er CMB
Course Name	Course #	Semester	Credits	Grade

Minimum 2.0 cumulative GPA required in
major and overrall for graduation.
Major GPA =
Overall GPA =

Effective: 2019-2020

<sup>\*</sup>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:		(1	6-18 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	

FREE ELECTIVES			
Course	Semester	Credits	Grade

MATH Requirement:		(	6-8 credits)
Course	Semester	Credits	Grade
*MTH 131		3	
OR			
*MTH 141 Preferred		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 <b>Preferred</b>		3	
*PHY 273 <b>Preferred</b>		1	
AND			
Course	Semester	Credits	Grade
*PHY 112		3	
*PHY 186		1	
OR	•		•
*PHY 204 <b>Preferred</b>		3	
*PHY 274 <b>Preferred</b>		1	

Effective: 2019-2020

<sup>\*</sup>Course fulfills general education and a major requirement

# Cell & Molecular Biology - B.S. THE UNIVERSITY OF RHODE ISLAND Biochemistry Option

Student:	
Student ID:	
Advisor:	

## **General Education Guidelines:**

120 Total Earned Credits

General education is 40 credits. Each of the twelve outcomes (A1-D1) must be met by at least 3 credits. A single course may meet more than one outcome, but cannot be double counted towards the 40 credit total. At least one course must be a Grand Challenge (G). No more than twelve credits can have the same course code. General education courses may also be used to meet requirements of the major or minor when appropriate.

#### LIST COURSES THAT MEET GENERAL EDUCATION:

General Education Credit Count						
At least 40 credits, no more than 12 credits with the same course code						
Course	Credits	Grade		Course	Credits	Grade
*BIO 101	3					
*BIO 103	1					
*BIO 102	3					
*BIO 104	1					
*CHM 101	3					
*MTH						
*PHY	3					
*PHY	1					
*PHY	3					
*PHY	1					
*CMB 211	4			_		
				Total Gen Ed Credits		

NOTE: BECAUSE MOST COURSES MEET MORE THAN ONE OUTCOME, YOUR OUTCOME AUDIT MIGHT BE COMPLETED BEFORE YOU REACH YOUR 40 CREDITS. HOWEVER, YOU MUST STILL COMPLETE 40 CREDITS OF GENERAL EDUCATION

#### LIST COURSE AS EACH OUTCOME IS MET:

General Education Outcome Audit		
	Course	
KNOWLEDGE		
A1. STEM	BIO 101	
A2. Social & Behavioral Sciences		
A3. Humanities		
A4. Arts & Design		
COMPETENCIES		
<b>B1.</b> Write effectively		
<b>B2.</b> Communicate effectively		
<b>B3.</b> Mathematical, statistical, or		
computational strategies	MTH	
<b>B4.</b> Information literacy		
RESPONSIBILITIES		
C1. Civic knowledge &		
responsibilities		
C2. Global responsibilities		
C3. Diversity & Inclusion		
INTEGRATE & APPLY		
<b>D1.</b> Ability to synthesize	CMB 211	
GRAND CHALLENGE		
<b>G. A</b> t least one course of your 40		
credits is an approved "G" course		
credits is all approved. G. course		

The requirement for transfer to CELS from University College for Academic Success is:		
Minimum 30 credits and a minimum cumulative gpa of 2.0 or better.		
Advising Notes:		

Effective: 2019-2020

<sup>\*</sup>course fulfills general education and a major requirement

## B.S. Cell & Molecular Biology - Biochemistry Option Sample 4 Year Plan - Effective Fall 2019 College of the Environment & Life Sciences

#### Freshman Year Fall Semester

#### Freshman Year Spring Semester

Cauras Cada	Description	<b>C</b>
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

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.

#### Sophmore Year Fall Semester

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

### Sophmore 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
BIO 341	Cell Biology	3
CMB Elective	CMB Elective	3
	*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 312 or 412	Introductory Biochemistry Lab or Advanced Biochemistry Lab	2-3
<u> </u>		15-17

Year 3 Milestones: Complete BIO 341 (341 is only taught in the Fall semester) CMB 312 (312, 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
	*General Education/Free Elective	3-4
	*General Education/Free Elective	3-4

#### Senior Year Spring Semester

Course Code	Description	Cr
CMB 492	Research in Cell and Molecular Biology	1-6
CMB 437	Fundamentals of Molecular Biology	3
CMB 482	Proteins and Enzymes	3
	*General Education/Free Elective	3-4
		15-17

Year 4 Milestones: Complete CMB remaining biochemistry concentration courses Earn total 120 credits with a cumulative GPA of 2.0 or higher. Minimum 2.0 cumulative gpa in CMB concentration courses.

15-17