Cell & Molecular Biology B.S. Bioinformatics Option

THE UNIVERSITY OF RHODE ISLAND

Student:	
Student ID:	
Advisor:	

120 Earned Credits Total

EL CMBI BS

ABOUT Cell & Molecular Biology - Bioinformatics Option:

This option provides an interdisciplinary curriculum that trains students in cell and molecular biology, computer sciences, and provides an integration of these two broader areas. Graduates from this program can pursue their next degree in a variety of biological, computational, and bioinformatics programs. There are currently over fifty graduate-level degree programs and certificate programs in Bioinformatics and Computational Biology in the United States. Our students should be competitive applicants to enter many of these graduate programs.

Step 1: REVIEW YOUR PROGRAM REQUIREMENTS

	olecular Bio						40 (Credits Total
	ation Cours	<u> </u>	,					(18 Credits)
Course Nan	ne			Course #		Semester	Credits	Grade
Integrative	Microbiolog	SY.		*CMB 211			4	
Introducto	ry Biochemis	stry		CMB 311			3	
Intro. Com	ntro. Computational Biology CMB 320				3			
General G	enetics			CMB (BIO)	352		4	
Molecular	Sequence Ar	nalysis		CMB 450			3	
Seminar in	Cell and Mo	lecular Biolo	ogy	CMB 495			1	
Select 1 c	redit CMB l	aboratory	coursewo	rk at the 30	0 or 400 level		•	(1 Credit)
Course Na	me			Course #		Semester	Credits	Grade
Compute	r Sciences (CSC)						(12 Credits)
Course Nan	Course Name		Course #	Course #		Credits	Grade	
		*CSC 201 c	*CSC 201 or CSC 106 or other					
Introduction	on to Compu	ter Program	ming	prerequisit	prerequisites of CSC 211		4	
Object-Ori	ented Progra	ımming		CSC 211	CSC 211		4	
Data Struc	tures and Ab	stractions		CSC 212			4	
Professio	nal Elective	s: Select 9	credits fro	om any 300	level or higher CN	1B course; o	r	(9 Credits)
from the	following li	st of appro	ved electi	ves				
Course #	Course Nam	ie			Course #	Course Name	9	
CMB 341	Principles of	of Cell Biolog	gy		CSC 412	Operating S	ystems and	l Networks
BPS 535	Pharmaceu	ıtical Biotec	hnology		CSC 415	Introduction	n to Paralle	l Computing
PHY 430	Modern Bio	ological Phy	sics		CSC 436	Database M	lanagemen	t Systems
CSC 305	Software E	ngineering			CSC 440	Design and Analysis of Algorithms		
CSC 310	Programmi	ing for Data	Science		CSC 491/492 Independent Research			
CSC 320	Social Issue	es in Compu	ting					
Course #	Semester	Credits	Grade		_			

^{*}Course approved for general education.

Minimum 2.0 cumulative GPA required in major for graduation.

Minimum overrall 2.0 cumulative GPA required for graduation.

120 earned credits required for graduation.

Major GPA =

Effective: 2022-2023

Step 1: REVIEW YOUR PROGRAM REQUIREMENTS CONTINUED:

Introduction Require		(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 Req	uirement:	(16-	18 credits)		
Course	Semester	Credits Grade			
*CHM 101		3			
CHM 102		1			
OR	<u> </u>				
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

^{*}Course fulfills general education and a major requirement

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		3	
*PHY 273		1	

AND

Course	Semester	Credits	Grade
*PHY 112		3	
*PHY 186		1	
OR			
*PHY 204		3	
*PHY 274		1	

Effective: 2022-2023

Cell & Mol	ecular Bi	iology - B.S	S. THE UN	<u>IVERSIT</u>	Y OF R	HODE ISLANI Student:		
Bioinformati	ics Option		·			Student ID:		_
.20 Total Ear	rned Credit	ts				Advisor:		_
								_
<u> Seneral Edi</u>	ucation G	<u>uidelines:</u>						
General edu	cation is 40	0 credits. Eac	h of the twelve	e outcome	es (A1-D1)	must be met by at least 3 credits. A single	course may	
						s the 40 credit total. At least one course n		
	•					course code. General education courses r	nay also be	
ised to mee	t requirem	nents of the r	major or minor	when app	propriate.			
IST COURSE			L EDUCATION:			LIST COURSE AS EACH OUTCOME IS		
			on Credit Count			General Education Outcom	e Audit	T
		-	more than 12 c	redits			Course	Grade
		ith the same			I .	KNOWLEDGE		
Course	Credits	Grade	Course	Credits	Grade	A1. STEM	+	
						A2. Social & Behavioral Sciences		
						A3. Humanities		<u> </u>
						A4. Arts & Design		
						COMPETENCIES		<u> </u>
						B1. Write effectively		
						B2. Communicate effectively		
						B3. Mathematical, statistical, or		
						computational strategies		
						B4. Information literacy		
						RESPONSIBILITIES		
						C1. Civic knowledge &		
			Total Gen			responsibilities		
			Ed Credits			C2. Global responsibilities		
						C3. Diversity & Inclusion		
IOTE: BECAU	SE MOST CO	OURSES MEET	MORE THAN ON	E OUTCOM	IE. YOUR	INTEGRATE & APPLY		
			ED BEFORE YOU		-	D1. Ability to synthesize		
	VEVER, YOU	MUST STILL (COMPLETE 40 CR	EDITS OF G	ENERAL	GRAND CHALLENGE		
DUCATION						G. At least one course of your 40		
course fulfi	lls general	education a	nd a major req	uirement		credits is an approved "G" course		
	J		, .					1
he require	ment for	transfer to	CELS from Ur	niversity (College f	or Academic Success is:		
-			num cumulativ	-	_			
Advising No								
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Effective: 2022-2023

B.S. Cell & Molecular Biology - Bioinformatics Option Sample 4 Year Plan - Effective Fall 2022 College of the Environment & Life Sciences

Freshman Year Fall Semester Freshman Year Spring Semester

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

	, ,	
Course Code	Description	Cr
MTH/STA	2nd Required MTH/STA course	3-4
*BIO 102/104	Principles of Biology II/Lab	4
*CHM 112/114	General Chemistry II/Lab	4
*CSC 201	Introduction to Computer Programming	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

Course Code	Description	Cr
*CMB 211	Integrative Microbiology	4
CSC 211	Object-Oriented Programming	4
*PHY 111/185	General Physics I/Lab	4
	*General Education	3-4
		15-17

Sophmore Year Spring Semester

Course Code	Description	Cr
CHM 227	Organic Chemistry I	3
CSC 212	Data Structures and Abstractions	4
*PHY 112/186	General Physics II/Lab	4
	*General Education	3-4
		15-17

Year 2 Milestones: Complete CMB 211 and CSC 201. Begin Organic Chemistry sequence. Begin computer science core courses. 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
CMB 352	General Genetics	4
CMB 311	Intro Biochemistry Lecture	3
CHM 226	Organic Chemistry Lab	2
CHM 228	Organic Chemistry II	3
	*General Education	3-4
•	·	15-17

Junior Year Spring Semester

	<u> </u>	
Course Code	Description	Cr
CMB 320	Intro Computational Biology	3
CMB	CMB Required Lab Course	1
	Professional Elective	3-4
	Professional Elective	3-4
	*General Education/Free Elective	3-4
-	·	15-17

Year 3 Milestones: Complete CMB 311, 352, 320 (320 is only taught in the spring semester), CSC 211. Complete Organic Chemistry sequence. Meet with a CMB and CSC Faculty advisors to plan year 3 and 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 450	Practical Tools for Molecular Sequence and Anaylsis	3
	Professional Elective	3-4
	*General Education/Free Elective	3-4
	·	15-17

	Senior Year <i>Spring</i> Semester	
Course Code	Description	Cr
	Professional Elective	3-4
	Professional Elective	3-4
	Free Elective	3-4
	*General Education/Free Elective	3-4
	*General Education/Free Elective	3-4
•	_	15-17

Year 4 Milestones: Complete CMB 450, 495 (450 is only taught in the fall semester), CSC 212. Earn total 120 credits with a cumulative GPA of 2.0 or higher. Minimum 2.0 cumulative GPA in CMB concentration courses.