

B.S. IN BIOLOGY - CELL AND MOLECULAR CONCENTRATION

College of the Sciences and Mathematics

Curriculum

Code	Title	Credits
GENERAL EDUCATION REQUIREMENTS (http://catalog.wcupa.edu/undergraduate/general-education-requirements/)		
Academic Foundations		
First Year Experience requirement		4
English Composition requirement		6-7
Mathematics requirement		3-4
MAT 121	Introduction to Statistics I	
or MAT 125	Introduction to Statistics and Probability	
Interdisciplinary requirement		3
Diverse Communities requirement		3
Ethics requirement		3
Distributed Disciplinary Foundations		
Science requirement		6-8
CHE 103	General Chemistry I	
PHY 130	General Physics I	
Behavioral & Social Science requirement		6
Humanities requirement		6
Arts requirement		3
ADDITIONAL BACCALAUREATE REQUIREMENTS (http://catalog.wcupa.edu/undergraduate/general-education-requirements/)		
University Requirements		
Writing Emphasis requirement		9
Speaking Emphasis requirement		9
Degree Requirements		
Capstone requirement		1-15
MAJOR REQUIREMENTS		
Core Courses		
BIO 110	General Biology I ¹	4
BIO 111	General Biology II ¹	4
BIO 210	Genetics ¹	3
BIO 210L	Genetics Lab ¹	1
BIO 211	Cell Biology ¹	4
CHE 103	General Chemistry I	3
CRL 103	General Chemistry I Lab	1
CHE 104	General Chemistry II	3
CRL 104	General Chemistry II Lab	1
CHE 231	Organic Chemistry I	4
CRL 231	Organic Chemistry I Lab	2
CHE 232	Organic Chemistry II	3
PHY 130	General Physics I ²	4
or PHY 170	Physics I	
PHY 140	General Physics II ²	4
or PHY 180	Physics II	
MAT 121	Introduction to Statistics I	3
or MAT 125	Introduction to Statistics and Probability	
Select one semester of calculus		3-4
Other Required Courses		
BIO 214	General Microbiology ¹	4

BIO 421	Cellular and Molecular Biology ¹	4
BIO 431	Molecular Genetics	3
BIO 333	Molecular Biology Techniques	2
CHE 476	Biochemistry I	3

Biology or Chemistry Electives ³

Select 10 semester hours from courses at or above the 300 level

Capstone Requirement

Select one of the following: ¹

BIO 490	Capstone: Seminar in Biology ⁴	3
BIO 491	Capstone: Independent Research in Biology ^{4,5}	
BIO 492	Capstone: Professional Development in Biology ⁴	

Total Minimum Credits Required **120**

¹ Courses must be passed with a grade of C- (70%) or better.

² The recommended Physics sequence is PHY 130 & PHY 140. Students may substitute the PHY 170 & PHY 180 sequence, but PHY 130 may not be used as a prerequisite for PHY 180 and PHY 170 may not be used as a prerequisite for PHY 140.

³ Selected from Biology or Chemistry courses at or above the 300 level. Because of content overlap, students may take either BIO 468 or BIO 469 as an elective, but not both. A maximum of 3 credits of BIO 391 plus BIO 392 can be applied as BIO elective credit.

⁴ This course fulfills the Capstone requirement.

⁵ Under advisement, students may also substitute CHE 491 for BIO 491.

Sample Course Plan

To track their individual degree progress, students are advised to access their Degree Progress Report (DPR) via myWCU regularly. For more information, visit wcupa.edu/DegreeProgressReport (<http://wcupa.edu/degreeprogressreport/>).

The following is a sample suggested course sequence for this program; course offerings and availability are not guaranteed. Students should consult their academic advisor with any questions.

Course	Title	Credits
Year One		
Semester One		
BIO 110	General Biology I	4
CHE 103	General Chemistry I	4
& CRL 103	and General Chemistry I Lab	
WRT 120	Effective Writing I	3
FYE 100X	First Year Experience	4
Credits		15
Semester Two		
BIO 111	General Biology II	4
CHE 104	General Chemistry II	4
& CRL 104	and General Chemistry II Lab	
MAT 121	Introduction to Statistics I ¹	3
or	or Introduction to Statistics and	
MAT 125	Probability	
WRT 2XX	200-Level WRT Course	3
Behavioral & Social Science Gen Ed		3
Credits		17
Year Two		
Semester Three		
BIO 210	Genetics	4
& 210L	and Genetics Lab ²	

CHE 231	Organic Chemistry I	6
& CRL 231	and Organic Chemistry I Lab	
Humanities & Ethics Gen Ed		3
Arts Gen Ed		3
Credits		16
Semester Four		
BIO 211	Cell Biology ²	4
BIO 214	General Microbiology ²	4
CHE 232	Organic Chemistry II ³	3
MAT 145	Calculus for the Life Sciences	3-4
or	or Brief Calculus	
MAT 143	or Calculus I	
or		
MAT 161		
Behavioral & Social Science Gen Ed		3
Credits		17-18
Year Three		
Semester Five		
BIO 333	Molecular Biology Techniques	2
PHY 130	General Physics I	4
Diverse Communities Gen Ed		3
Directed Elective		3
Directive Elective		3
Credits		15
Semester Six		
CHE 476	Biochemistry I	3
PHY 140	General Physics II	4
BIO/CHE XXX	Biology or Chemistry Elective	3
Interdisciplinary Gen Ed		3
Speaking Emphasis Gen Ed		3
Credits		16
Year Four		
Semester Seven		
BIO 431	Molecular Genetics	3
BIO/CHE XXX	Biology or Chemistry Elective	3
BIO/CHE XXX	Biology or Chemistry Elective	3
Humanities Gen Ed		3
Upper-Level Directed Elective		3
Credits		15
Semester Eight		
BIO 421	Cellular and Molecular Biology	4
BIO 490	Capstone: Seminar in Biology	3
or	or Capstone: Independent Research in	
BIO 491	Biology	
or	or Capstone: Professional	
BIO 492	Development in Biology	
BIO/CHE XXX	Biology or Chemistry Elective	3
Credits		10
Total Credits		121-122

³ CRL 232 is recommended but not required for any student considering professional training. It is required for graduate training following completion of their degree.

¹ Students should take statistics (MAT 121 or MAT 125) in the first year.

² All required 200-level biology courses should be completed by the end of Semester #5.