

B.S. IN BIOLOGY - MICROBIOLOGY CONCENTRATION

Curriculum

Code	Title	Credits
GENERAL EDUCATION REQUIREMENTS (https://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 (https://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 464	Microbial Physiology ¹	4
BIO 465	Immunology ¹	4

Microbiology Electives

Select 12 semester hours under advisement from the following: 12

BIO 314	Pathogenic Microbiology	
BIO 333	Molecular Biology Techniques	
BIO 334	Microbial Genetics	
or BIO 431	Molecular Genetics	
BIO 414	Applied and Industrial Microbiology	
BIO 452	Parasitology	
BIO 454	Mycology	
BIO 456	Virology	
BIO 474	Microbial Ecology	
BIO 480	Light Microscopy and the Living Cell	
BIO 484	Epidemiology	
BIO 391	Research in Biology ³	
BIO 392	Internship in Biology ³	

Capstone Requirement

Select one of the following:¹ 3

BIO 490	Capstone: Seminar in Biology ⁴	
BIO 491	Capstone: Independent Research in Biology ⁴	
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 A maximum of 3 combined credits of BIO 391 and BIO 392 can be used towards biology electives. Projects are required to have a microbiology focus and must be approved by the department.

⁴ This course fulfills the Capstone requirement.

Sample Course Plan

To track their individual degree progress, students are advised to access their Degree Audit via RamPortal regularly. For more information, visit the Degree Audit FAQ webpage (<https://www.wcupa.edu/academicEnterpriseSystems/student-system-modernization/degree-audit-faqs.aspx>).

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 & CRL 103	General Chemistry I and General Chemistry I Lab	4
WRT 120	Effective Writing I	3
FYE 100X	First Year Experience	4
Credits		15
Semester Two		
BIO 111	General Biology II	4
CHE 104 & CRL 104	General Chemistry II and General Chemistry II Lab	4

MAT 121	Introduction to Statistics I ¹	3
or MAT 125	or Introduction to Statistics and Probability	
WRT 2XX	200-Level WRT Course	3
Behavioral/Social Science Gen Ed		3
Credits		17
Year Two		
Semester Three		
BIO 210 & 210L	Genetics and Genetics Lab ²	4
CHE 231 & CRL 231	Organic Chemistry I and Organic Chemistry I Lab	6
Arts Gen Ed		3
Humanities & Ethics 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
MAT 145	Calculus for the Life Sciences	3-4
or MAT 143	or Brief Calculus or Calculus I	
or MAT 161		
Behavioral & Social Science Gen Ed		3
Credits		17-18
Year Three		
Semester Five		
PHY 130	General Physics I	4
BIO XXX	Biology Elective	3
Diverse Communities Gen Ed		3
Directed Elective		3
Directed Elective		3
Credits		16
Semester Six		
PHY 140	General Physics II	4
BIO XXX	Biology Elective	3
Interdisciplinary Gen Ed		3
Speaking Emphasis Gen Ed		3
Credits		13
Year Four		
Semester Seven		
BIO 465	Immunology	4
BIO XXX	Biology Elective	3
Humanities Gen Ed		3
Upper-Level Directed Elective		3
Credits		13
Semester Eight		
BIO 464	Microbial Physiology	4
BIO 490	Capstone: Seminar in Biology	3
or BIO 491	or Capstone: Independent Research in Biology	
or BIO 492	or Capstone: Professional Development in Biology	
BIO XXX	Biology Elective	3
Directed Elective (if needed)		3

Additional Directed Elective (if needed)

Credits**13****Total Credits****120-121**

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.