

BIOLOGY, B.S.

The Bachelor of Science degree in Biology provides a broad-based education in modern life science while offering the opportunity for students to concentrate their efforts within various biological disciplines. Through consultation with a professional advisor, students may select elective courses that focus on cell and molecular biology, biomedical sciences, organismal biology, or environmental studies. The Bachelor of Science curriculum includes a strong background in the supporting sciences: Chemistry, Physics, Mathematics and Computers. The Bachelor of Science in Biology prepares students for admission to graduate, medical, dental, and other professional schools; for careers in academic and industrial research; teaching; and for various careers in the publishing, pharmaceutical, biomedical and biotechnology industries.

Code	Title	Credits
Required Biology Courses:		21
BIOL 130	Principles Biology I	4
BIOL 131	Principles Biology II	4
BIOL 230	Cell Biology	4
BIOL 304	Genetics	4
BIOL 402	Ecology	4
or BIOL 332	Field Ecology	
BIOL 440	Biology Seminar	1
Elective Biology Courses:		15
Select 15 credits from Biology courses numbered higher than BIOL 230		
Required Chemistry Courses:		18
CHEM 105	General Chemistry I Lecture	3
CHEM 1105	General Chemistry I Recitation/Laboratory	2
CHEM 106	General Chemistry II Lecture	3
CHEM 1106	General Chemistry II Recitation/Laboratory	2
CHEM 207	Organic Chemistry I	3
CHEM 2207	Organic Chemistry I Laboratory	1
CHEM 208	Organic Chemistry II	3
CHEM 2208	Organic Chemistry II Laboratory	1
or CHEM 205	Analytical Chemistry Lec	
or CHEM 307	Biochemistry I	
or BIOL 4XX BIC		
Required Physics Course:		8
PHYS 130	College Physics I (Lecture)	3
or PHYS 140	Principles of Physics I - Lecture	
PHYS 1130	Physics I Recitation & Laboratory	1
or PHYS 1140	Principles of Physics I - Laboratory and recitation	
PHYS 131	Physics II (Lecture)	3
or PHYS 141	Principles of Physics II - Lecture	
PHYS 1131	Physics II Recitation & Laboratory	1
or PHYS 1141	Principles of Physics II - Laboratory and Recitation	
Required Math and Computer Science Courses:		11
MATH 192	Calculus and Analytic Geometry I	4
INTD 180	Computers Tools for Science and Math	3
or MATH 140	Statistics I	

or PSYC 230 Statistics for Social Sciences

Total Credits: 73

1. Students must successfully complete a minimum of 5 Biology major courses at NJCU.
2. Credits earned for Biology courses more than 10 years ago may not satisfy department requirements.
3. A minimum grade of "C" is required in each Biology, Chemistry, Physics and Mathematics course in order to receive the BS in Biology.
4. Students must achieve an average of "C" (2.0) or better in Principles of Biology I & II before enrolling in higher-level Biology courses.
5. Students must successfully complete each required course within three attempts to remain in the BS in Biology program.
6. Students must successfully complete both Anatomy & Physiology I and II to earn Biology elective credits for Principles of Anatomy II.
7. Students may not apply credits from Anatomy and Physiology I toward the BS in Biology.
8. Students may apply up to 6 credits of Biology Research or Coop Education toward the BS in Biology requirements.
9. Biology electives should be selected from courses numbered higher than BIOL 230.

Freshman

Semester 1		Credits
ENGL 101	English Composition I	4
or ESL 101	or English Composition I for English as a Second Language Students	
BIOL 130	Principles Biology I	4
MATH 192	Calculus and Analytic Geometry I	4
or MATH 175	or Enhanced Precalculus	
General Education Tier I Course		3
INTD 101	Orientation to College *First time Freshmen Only	1
Credits		16

Semester 2

ENGL 102	English Composition II	4
or ESL 102	or	
BIOL 131	Principles Biology II	4
MATH 193	Calculus and Analytic Geometry II	4
or MATH 192	or Calculus and Analytic Geometry I	
General Education Tier II Course		3
Credits		15

Sophomore

Semester 1

BIOL 230	Cell Biology	4
CHEM 105	General Chemistry I Lecture	3
CHEM 1105	General Chemistry I Recitation/Laboratory	2
INTD 180	Computers Tools for Science and Math	3
or MATH 140	or Statistics I	
or PSYC 230	or Statistics for Social Sciences	
General Education Tier II Course		3-4
Credits		15-16

Semester 2

BIOL 304	Genetics	4
CHEM 106	General Chemistry II Lecture	3
CHEM 1106	General Chemistry II Recitation/Laboratory	2

General Education Tier II Course	3
General Education Tier II Course	3
Credits	15

Junior**Semester 1**

Biology Elective 2xx (above BIOL 230)	4
CHEM 207 Organic Chemistry I	3
CHEM 2207 Organic Chemistry I Laboratory	1
General Education Tier II	3
General Education Tier II	3
Credits	14

Semester 2

Biology Elective 2xx (above BIOL 230)	4
CHEM 208 Organic Chemistry II	3
CHEM 2208 Organic Chemistry II Laboratory	1
General Education Tier III	3
Minor or Elective OR General Education Tier II Course	3
Minor or Elective Course	3
Credits	17

Senior**Semester 1**

BIOL 402 Ecology or BIOL 332 or Field Ecology	4
Biology Elective 2xx (above BIOL 230)	3-4
PHYS 130 College Physics I (Lecture) or PHYS 140 or Principles of Physics I - Lecture	3
PHYS 1130 Physics I Recitation & Laboratory (or PHYS 1140 or Principles of Physics I - Laboratory and recitation	1
Minor or Elective Course	3
Credits	14-15

Semester 2

BIOL 440 Biology Seminar	1
Biology Elective 2XX (above BIOL 230)	4
PHYS 131 Physics II (Lecture) (or PHYS 141 or Principles of Physics II - Lecture	3
PHYS 1131 Physics II Recitation & Laboratory (or PHYS 141 or Principles of Physics II - Lecture	1
Minor or Elective Course	3
Minor or Elective Course	3
Credits	15

Total Credits **121-123**

4. Demonstrate knowledge of basic principles of chemistry and their application to understanding living systems.
5. Communicate scientific information in written and/or oral formats.

Student Learning Outcomes

Upon completion of the Biology BS program, students will be able to:

1. Demonstrate knowledge of the factual and theoretical basis of biology including mechanisms on the molecular, cellular, organismal, and systems levels.
2. Demonstrate understanding of scientific inquiry and explain how scientific inquiry and explain how scientific knowledge is discovered and validated.
3. Apply quantitative knowledge and reasoning to describe or explain phenomena in the natural world.