

BIOLOGY, BS

The Bachelor of Science (BS) degree in Biology has been designed in consultation with Georgia employers to fit present and emerging needs in the State of Georgia.

This curriculum will prepare students for the following professional programs:

- medical school,
- dental school,
- veterinary school,
- physical therapy, and
- physician assistant programs.

This curriculum is also designed to prepare students for the following graduate programs:

- biomedical,
- public health,
- environmental science,
- forensic science, and
- ecology and evolution.

Program Learning Outcomes

Graduates of this program will be able to:

- Identify and/or describe the biological core concepts: evolution; structure and function; information flow, exchange and storage; pathways and transformations of energy and matter; and systems.
- Formulate hypotheses and collect, evaluate and interpret scientific data to solve problems in biological science and supporting fields.
- Apply quantitative reasoning, modelling and simulations, and laboratory skills to answer questions in the biological sciences.
- Relate knowledge of the other sciences, including computer and social sciences, to biological concepts and skills.
- Effectively communicate scientific ideas to others inside and outside the biology discipline.
- Identify and describe the impact of biological science on the environment and society.
- Collaborate with other students inside and outside the biology discipline.

Program Requirements

Code	Title	Credit Hours
Core IMPACTS		42
All core curriculum recommendations are shown under the Core IMPACTS section of the Undergraduate Graduation Requirements. (https://nextcatalog.clayton.edu/graduation-requirements/undergraduate-graduation-requirements/core-curriculum/#nonsciencemajorstext)		
Field of Study - Biology		18
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Lab I	4
BIOL 1108 & 1108L	Principles of Biology II and Principles of Biology Lab II	4
SCI 2900	Scientific Inquiry	2

CHEM 2411 & 2411L	Organic Chemistry I and Organic Chemistry Laboratory I	4
PHYS 1111 & 1111L	Introductory Physics I and Introductory Physics Lab I	4
or PHYS 2211 & 2211L	Principles of Physics I and Principles of Physics Lab I	
General Biology Track Requirements		60
Total Credit Hours		120

General Biology Track Requirements

Code	Title	Credit Hours
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No more than two grades of D in upper-division courses are allowed in the General Biology Track of the Biology major. Upper-division courses are all courses other than those in Core IMPACTS and Field of Study. 1000- or 2000-level courses used in the upper division are included in this restriction.

Upper Division Biology Major Core Requirements		
BIOL 3201	Genetics	3
BIOL 3380	Evolution	3
BIOL 3500 & 3500L	Ecology and Ecology Laboratory	4
<i>Physiology Course/Lab</i>		4
BIOL 4100 & 4100L	Animal Physiology and Animal Physiology Lab	4
or BIOL 3700 & 3700L	Plant Physiology and Plant Physiology Lab	
<i>Cellular Course/Lab</i>		4
BIOL 3200 & 3200L	Cell and Molecular Biology and Cell and Molecular Biology Lab	4
or BIOL 3250 & 3250L	Introductory Microbiology and Introductory Microbiology Lab	
<i>Organismal Course/Lab</i>		4
BIOL 3760 & 3760L	Plant Biology and Plant Biology Lab ²	4
or BIOL 3650 & 3650L	Comparative Vertebrate Anatomy Laboratory and Comparative Vert Anatomy Lab	
or BIOL 3320 & 3320L	Invertebrate Biology and Invertebrate Biology Lab	
<i>Experiential Learning Course</i>		3
BIOL 3210	Off-Campus Internship	3
or BIOL 3211	Off-Campus Internship	
or BIOL 3220	On-Campus Internship I	
or BIOL 3221	On-Campus Internship II	
or BIOL 3230	Introductory Research I	
or BIOL 3231	Introductory Research II	
or BIOL 4230	Biology Research Practicum I	
or BIOL 4231	Biology Research Practicum II	
BIOL 4500	Biology Seminar I	1
BIOL 4999A	Senior Evaluation	0
or BIOL 4999B	Senior Evaluation	
<i>Biology and Other Science Electives (min. of 22 hours)</i>		

(Any lecture or lab course with a BIOL, CHEM, CSCI, FOSC, MATH, or PHYS prefix. These courses cannot be used for credit in any other area. At least 16 hours must be 3000-4000 level courses. Lower division courses can be used as long as student has a minimum of 42 hours of upper division (3000-4000 level) courses in their degree program. The following courses are not allowed in this area: Any MATH course that is below MATH 1501, any course that is allowed in area D for non-science majors, and BIOL 2260/L)

Free Electives (max. of 12 hours)

(Any course that is not used for credit in any other area can be used here. The total degree requirements must be 120; therefore, free elective hours can be reduced if more hours are used in other areas of the curriculum. Lower division courses can be used as long as student has a minimum of 42 hours of upper division (3000-4000 level) courses. The following courses are not allowed in this area: Any MATH course that is below MATH 1501, any course that is allowed in area D for non-science majors, and BIOL 2260/L, if student is using BIOL 3250/L for credit)

Total Credit Hours 60

IMPORTANT NOTES CONCERNING COURSES:

- A total maximum of three experiential learning courses can be counted in the Biology program. Experiential learning courses include:

Code	Title	Credit Hours
Experiential learning courses include the following:		
BIOL/CHEM 3210	Off-Campus Internship	3
BIOL/CHEM 3211	Off-Campus Internship	3
BIOL/CHEM/PHYS 3220	On-Campus Internship I	3
BIOL/CHEM/PHYS 3221	On-Campus Internship II	3
BIOL/CHEM/PHYS 3230	Introductory Research I	3
BIOL/CHEM/PHYS 3231	Introductory Research II	3
BIOL/CHEM/PHYS 4230	Biology Research Practicum I	3
BIOL/CHEM/PHYS 4231	Biology Research Practicum II	3
BIOL/CHEM 4232	Biology Research Practicum III	3

- If MATH 1501 is used in Core IMPACTS, one hour of credit may be applied to the free electives area.
- If PHYS 2211/PHYS 2211L is used to satisfy Core IMPACTS, then PHYS 1111/PHYS 1111L and PHYS 1112/PHYS 1112L cannot be used to satisfy the Lower Division Major Requirements.
- Students should select courses that will help them advance their career goals or that can be applied to a minor.

Suggested Course Sequence

Please Note: This is a suggested course sequence and assumes a starting freshman with no prior college credit who intends to complete their degree in four years. Students should consult with their academic advisor and review the course prerequisites and minimum grade requirements as seen in the Academic Catalog.

Course	Title	Credit Hours
First Year		
First Semester		
MATH 1112	College Trigonometry	3
BIOL 1108 & 1108L	Principles of Biology II and Principles of Biology Lab II	4
ENGL 1101	English Composition I	3
PSYC 1101	Intro to General Psychology	3
COMM 1001	Principles of Public Speaking	1
Credit Hours		14
Second Semester		
ENGL 1102	English Composition II	3
CHEM 1211 & 1211L	Principles of Chemistry I and Principles of Chemistry Lab I	4
ENGL 2131	American Literature I	3
MATH 1231 - Introductory Statistics		3
ART 2301	Art of the Pre-Modern World	3
Credit Hours		16
Second Year		
First Semester		
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Lab I	4
CHEM 1212 & 1212L	Principles of Chemistry II and Principles of Chemistry Lab II	4
CRIT 1101	Critical Thinking	3
SCI 2900	Scientific Inquiry	2
HIST 1111	Survey-PreModern World History	3
Credit Hours		16
Second Semester		
BIOL 3500 & 3500L	Ecology and Ecology Laboratory	4
BIOL 3201	Genetics	3
CHEM 2411 & 2411L	Organic Chemistry I and Organic Chemistry Laboratory I	4
POLS 1101	American Government	3
Credit Hours		14
Third Year		
First Semester		
PHYS 1111 & 1111L	Introductory Physics I and Introductory Physics Lab I	4
CHEM 2412 & 2412L	Organic Chemistry II and Organic Chemistry Lab II	4
BIOL 3380	Evolution	3
BIOL 3650 & 3650L	Comparative Vertebrate Anatomy and Comparative Vert Anatomy Lab	4
Credit Hours		15
Second Semester		
PHYS 1112 & 1112L	Introductory Physics II and Introductory Physics Lab II	4
BIOL 3250 & 3250L	Introductory Microbiology and Introductory Microbiology Lab	4
BIOL 4100 & 4100L	Animal Physiology and Animal Physiology Lab	4
BIOL 3230	Introductory Research I	3
Credit Hours		15

Fourth Year**First Semester**

HIST 2111	Survey of US History to 1877	3
BIOL 4230	Biol Research Pract I	3
CHEM 4200	Biochemistry I	3
BIOL 3200 & 3200L	Cell and Molecular Biology and Cell and Molecular Biology Lab	4
BIOL 4500	Biology Seminar I	1
CHEM 4402L	Advanced Lab II: Biochemistry	2
Credit Hours		16

Second Semester

BIOL 4900	Biocomputing	3
BIOL 3320 & 3320L	Invertebrate Biology and Invertebrate Biology Lab	4
CHEM 4205	Medicinal Chemistry	3
CHEM 4203 & 4203L	Biochemistry II and Biochemistry Laboratory II	4
Credit Hours		14
Total Credit Hours		120