

BIOLOGY, BACHELOR OF ARTS (BA)

Program Learning Outcomes

- **Competence in Laboratory and Research Skills:** To conduct, assess, and communicate research investigations using established scientific practices. (SRU UG 1, 2, 3, 4, 5, 7, 10)
- **Core Concepts for Biological Literacy:** (SRU UG 1, 2, 3, 4, 5, 7, 9)
 - Knowledge/Content
 - Evolution
 - Structure and function across all levels of biological organization
 - Diversity and interactions of life
 - Information flow, exchange and storage in biological systems
 - Critical Thinking/Problem Solving
 - Connect information from cognate science courses and liberal arts courses to biological concepts
 - Apply scientific information to current and future societal problems
- **Participation in Diverse, Enriching Scientific Activities:** Apply technical and professional skills in hands-on laboratory, clinical or field experiences. (SRU UG 1, 2, 3, 4, 5, 7, 8, 9)
- **Professional Attitude:** Graduates demonstrate professional attitude, behavior, and ability to interact with people from diverse backgrounds and cultures. (SRU UG 1, 5, 7, 8, 9)

Related Links

Biology, BA Program Page (<https://www.sru.edu/academics/majors-and-minors/biology/>)

Professional Licensure/Certification Page (<https://www.sru.edu/students/student-consumer-information/professional-licensures/>)

Curriculum Guide

GPA Requirement

Major GPA: 2.0 or higher

Overall GPA: 2.0 or higher

Core GPA: 2.0 or higher

Summary*

Code	Title	Hours
	Rock Studies 2 Requirements	45
	Modern Language Requirement	0-9
	Other Basic Requirements	0-3
	Major/Concentration Requirements	42
	Natural Science and Math College-Wide Requirements	12
	Electives	25

* All undergraduate degree programs require a minimum of 120 credits. Some courses meet multiple requirements, but are only counted once toward the 120 credit total required to graduate.

Rock Studies 2 Requirements

Code	Title	Hours
The Rock		
SUBJ 139	Foundations of Academic Discovery ¹	3
ENGL 102	Critical Writing	3
ENGL 104	Critical Reading	3
MATH 125 or MATH 225	Precalculus Calculus I	4
Select one of the following:		3
COMM 200	Civil Discourse: Theory & Practice	
PHIL 110	Ethics and Civil Discourse	
POLS 235	Civil Discourse and Democracy	
Subtotal		16
Integrated Inquiry		
<i>Creative and Aesthetic Inquiry</i>		
Select 3 Credits (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
<i>Humanities Inquiry</i>		
Select 3 Credits (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
<i>Social Science Inquiry</i>		
Select 3 Credits (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
<i>Natural Sciences Inquiry</i>		
CHEM 107	General Chemistry I	3
CHEM 111	General Chemistry I Lab	1
<i>Physical Sciences Inquiry</i>		
PHYS 201 or PHYS 216	Elements of Physics I with Lab University Physics 1 with Lab	4
Subtotal		17
Thematic Thread		
Select 12 Credits (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/) ²		12
Total Hours		45

¹ Course offered in multiple subjects; cannot take course in first major subject.

² One course from each category; six credits must be 300-level or above; no more than 4 credits from one subject area; specific courses required in first major, regardless of prefix of course, cannot be used to satisfy thread requirements; any course with same prefix as first major cannot be used to satisfy thread requirements, even if it is not a course in the first major.

BA Modern Language Requirement

BA degree requires language proficiency at the 103 class level. Exemption by placement or examination is possible.

Code	Title	Hours
Complete 0-9 credits		0-9
Total Hours		0-9

Basic Math Requirement

Check with your adviser or a current degree audit report to see if you have been exempted from this course. The credit earned in this course will not be counted toward the 120 credit hour minimum needed to earn a degree.

Code	Title	Hours
Complete one of the following:		0-3
Meet required minimum SAT or ACT math score OR		
ESAP 110	Beginning Algebra	
Total Hours		0-3

DIVERSITY, EQUITY, AND INCLUSION REQUIREMENT

Students must take and pass a course with the Diversity, Equity, and Inclusion (DEI) designation prior to graduation. Students can meet this requirement by taking any DEI - designated course in any program at any time during their undergraduate career.

Major/Concentration Requirements

- 20 major credits must be taken at SRU or PASSHE
- 20 major credits must be taken at the 300 level or above
- Students desiring a Biology Major must maintain at least a 2.000 average in Biology.
- Students should complete all 200-level Biology requirements by the end of their sophomore year.
- Student must earn a "C" or better in both Biology I with Lab (BIOL 113) and Biology II with Lab (BIOL 114) before proceeding to their next biology course.
- Students must earn a "C" or better in both Genetics with Lab (BIOL 250) and Biometry with Lab (BIOL 325) prior to graduating.

Code	Title	Hours
Biology Core Requirements		
BIOL 113	Biology I: Foundations of Ecology, Evolution and Diversity with Lab	4
BIOL 114	Biology II: Foundations of Molecules, Genes and Cells with Lab	4
BIOL 250	Genetics with Lab ^{1,4}	4
BIOL 325	Biostatistics and Experimental Design with Lab	3
Subtotal		15
Required Upper-Level Biology		
BIOL 305 or BIOL 306 or BIOL 401	Wetlands and Aquatic Plants/Lab Freshwater Biomonitoring/Lab Ecology with Lab	3
BIOL 310 or BIOL 312 or BIOL 314 or BIOL 330 or BIOL 340 or BIOL 360 or BIOL 410 or BIOL 451	Plant Diversity with Lab Zoology with Lab Parasitology with Lab Microbiology/Lab Vertebrate Anatomy with Lab Field Botany Animal Physiology with Lab Plant Physiology/Lab	3
BIOL 316 or BIOL 335 or BIOL 370	Immunology with Lab Cell Biology Molecular Biology	3
BIOL 350	Evolution	3

BIOL 492	Biology Seminar ¹	1
Subtotal		13
Additional Biology Electives		
Select three credits from courses not chosen above, or any biology elective course listed below. Additional electives may be selected from the Marine Science offerings listed below. PLE courses are only offered during the summer months through our affiliation with Pymatuning Laboratory of Ecology. ²		3
Upper-Level Electives (p. 2)		
Subtotal		3
Related Sciences – Chemistry		
CHEM 108	General Chemistry II ²	3
CHEM 112	General Chemistry II Lab ²	1
CHEM 201	Organic Chemistry I ²	3
CHEM 211	Organic Chemistry Laboratory I ²	1
Subtotal		8
Independent Study/Internship Options		
Select one of the following options:		3
<i>Independent Study or Internship Option</i>		
BIOL 450 or BIOL 490	Biology Internship Independent Study	
<i>Non-Independent Study or Internship Option</i>		
Select 3 credits, not chosen above, from Additional Biology Electives below.		
Total Hours		42

¹ Course counts for 50% of Major and Major GPA

² Course counts for 50% of Major requirements but not for Major GPA

³ Course counts in Core GPA

* Some courses may require pre-requisites. Please see course descriptions to determine if there are any pre-requisites for that specific course.

Natural Science and Math College-Wide Requirements

Code	Title	Hours
CHEM 107	General Chemistry I	3
CHEM 111	General Chemistry I Lab	1
MATH 125 or MATH 225	Precalculus Calculus I	4
PHYS 201 or PHYS 216	Elements of Physics I with Lab University Physics 1 with Lab	4
Total Hours		12

Electives

Code	Title	Hours
Recommended by the Biology Department		
CHEM 202	Organic Chemistry II	3
CHEM 212	Organic Chemistry Laboratory II	1

Upper-Level Biology Electives

Code	Title	Hours
BIOL 209	Human Anatomy and Physiology I	4
BIOL 301	Forest Ecology ¹	3
BIOL 302	Ecology of Amphibians & Reptiles/Lab ¹	3

BIOL 303	Behavioral Ecology/Lab ¹	3	MARS 300	Behavior of Marine Organisms ¹	3
BIOL 305	Wetlands and Aquatic Plants/Lab ¹	3	MARS 310	The Mammals of Coastal Ecosystems ¹	3
BIOL 306	Freshwater Biomonitoring/Lab ¹	3	MARS 320	Marine Microbiology ¹	3
BIOL 307	Vertebrate Ecology/Lab ¹	3	MARS 330	Tropical Invertebrates ¹	3
BIOL 308	Aquatic Ecosystem Management / Lab ¹	3	MARS 342	Marine Botany ¹	3
BIOL 309	Human Anatomy and Physiology II	4	MARS 343	Marine Ichthyology ¹	3
BIOL 310	Plant Diversity with Lab ¹	3	MARS 344	Anatomy of Marine Chordates ¹	3
BIOL 311	Entomology/Lab ¹	3	MARS 345	Ornithology ¹	3
BIOL 313	Herpetology/Lab ¹	3	MARS 350	Physiology of Marine Invertebrates ¹	3
BIOL 314	Parasitology with Lab ¹	3	MARS 398	Selected Topics ¹	3
BIOL 316	Immunology with Lab ¹	3	MARS 420	Marine Micropaleontology ¹	3
BIOL 317	Ecology and Fungi ¹	3	MARS 431	Ecology of Marine Plankton ¹	3
BIOL 320	Ornithology/Lab ¹	3	MARS 458	Exploration Methods in Marine Geology ¹	3
BIOL 321	Wildlife Management/Lab ¹	3	MARS 490	Independent Study ¹	3
BIOL 322	Conservation Biology/Lab ¹	3	MARS 491	Coral Reef Ecology ¹	3
BIOL 323	Stream Ecology/Lab ¹	3	MARS 492	Marine Mammals ¹	3
BIOL 325	Biostatistics and Experimental Design with Lab ¹	3	MARS 498	Selected Topics ¹	3
BIOL 326	Field Methods in Biogeography/Lab ¹	3	MARS 500	Problems in Marine Science ¹	3
BIOL 327	Limnology/Lab ¹	3			
BIOL 330	Microbiology/Lab ¹	3			
BIOL 331	Mammalogy/Lab ¹	3			
BIOL 343	Embryology with Lab ¹	3			
BIOL 350	Evolution ¹	3			
BIOL 356	Field Ecology / Lab ¹	3			
BIOL 357	Environmental Microbiology with Lab ¹	4			
BIOL 360	Field Botany ¹	3			
BIOL 361	Flora of Western Pennsylvania ¹	3			
BIOL 370	Molecular Biology ¹	3			
BIOL 371	Vertebrate Field Zoology ¹	3			
BIOL 373	Ichthyology/Lab ¹	3			
BIOL 375	Ecology of Fish / Lab ¹	3			
BIOL 380	Endocrinology	3			
BIOL 400	Disease Ecology ¹	3			
BIOL 401	Ecology with Lab ¹	3			
BIOL 402	Biogeography/Lab ¹	3			
BIOL 405	Animal Physiological Ecology with Lab ¹	4			
BIOL 409	Pathophysiology	3			
BIOL 410	Animal Physiology with Lab ¹	3			
BIOL 412	Population Biology ¹	3			
BIOL 430	Pathogenic Microbiology ¹	3			
BIOL 435	Cellular and Molecular Analysis Laboratory	3			
BIOL 450	Biology Internship ¹	3			
BIOL 451	Plant Physiology/Lab ¹	3			
BIOL 470	Histology with Lab ¹	3			
BIOL 498	Selected Topics ¹	3			
MARS 221	Marine Invertebrates ¹	3			
MARS 241	Marine Biology ¹	3			
MARS 250	Wetland Ecology ¹	3			
MARS 260	Marine Ecology ¹	3			
MARS 270	Coastal Vegetation ¹	3			
MARS 298	Selected Topics	3			

¹ Course counts for 50% of Major requirements and Major GPA

Co-curricular and Experiential Learning

Students are encouraged to explore additional curricular and co-curricular opportunities. There is a strong correlation between long-term student success and participation in the following types of programs and activities:

1. Student-faculty research
2. Internships
3. Volunteering
4. Job Shadowing

Important Curriculum Guide Notes

This Curriculum Guide is provided to help SRU students and prospective students better understand their intended major curriculum. Enrolled SRU students should note that the My Rock Audit may place already-earned and/or in progress courses in different, yet valid, curriculum categories. Enrolled SRU students should use the My Rock Audit Report and materials and information provided by their faculty advisers to ensure accurate progress towards degree completion. *The information on this guide is current as of the date listed. Students are responsible for curriculum requirements at the time of enrollment at the University.*

PASSHE - Pennsylvania State System of Higher Education Institutions

BIOLOGY - BA (6 08)

This program is effective as of Summer 2023

Revised 07.10.2023

UCC 02.14.2023

Recommended Four-Year Plan

Course	Title	Hours
First Year		
Fall		
ENGL 102	Critical Writing	3
BIOL 113	Biology I: Foundations of Ecology, Evolution and Diversity with Lab	4

CHEM 107	General Chemistry I	3
CHEM 111	General Chemistry I Lab	1
ESAP 101	FYRST Seminar *	1
SUBJ 139	Foundations of Academic Discovery ¹	3

Hours **15**

Spring

ENGL 104	Critical Reading	3
CHEM 108	General Chemistry II	3
CHEM 112	General Chemistry II Lab	1
BIOL 114	Biology II: Foundations of Molecules, Genes and Cells with Lab	4

Creative & Aesthetic Inquiry (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Hours **14**

Second Year**Fall**

Select one of the following: 3

COMM 200	Civil Discourse: Theory & Practice	
PHIL 110	Ethics and Civil Discourse	
POLS 235	Civil Discourse and Democracy	

BIOL 250 Genetics with Lab 4

CHEM 201 Organic Chemistry I 3

CHEM 211 Organic Chemistry Laboratory I 1

Humanities Inquiry (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Declare a Thematic Thread ² 14

Hours **14**

Spring

BIOL 325 Biostatistics and Experimental Design with Lab 3

BIOL 330 Microbiology/Lab 3

Language 101 3

Social Science Inquiry (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Thematic Thread Requirement (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Hours **15**

Third Year**Fall**

BIOL 370 Molecular Biology 3

BIOL 401 Ecology with Lab 3

Language 102 3

Thematic Thread Requirement (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Thematic Thread Requirement (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Hours **15**

Spring

Elective 3

MATH 225 Calculus I 4
or MATH 125 or Precalculus

BIOL 330 Microbiology/Lab 3

Language 103 3

Elective with DEI attribute 3

Hours **16**

Fourth Year**Fall**

BIOL 401 Ecology with Lab 3

BIOL 300+ Upper Level BIOL Elective 3

PHYS 201 Elements of Physics I with Lab 4
or PHYS 216 or University Physics 1 with Lab

Elective 3

Elective 2

Hours **15**

Spring

BIOL 350 Evolution 3

BIOL 492 Biology Seminar 1

Thematic Thread Requirement (<https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/>) 3

Select one of the following: 3

BIOL 450 Biology Internship

BIOL 490 Independent Study

BIOL 300+ Upper Level BIOL Elective

Free Elective 3

Free Elective 3

Hours **16**

Total Hours** **120**

¹ Course offered in multiple subjects; cannot take course in first major subject.

² Work with your Academic Adviser to declare a Thematic Thread by the end of your fall semester in your second year.

* Students are encouraged to take ESAP 101 as a Free Elective.

** This document is meant to serve as a guide. Some planners may show more than 120 credits because faculty have created flexibility in choosing courses. However, only 120 credits are required to obtain a degree. Please consult with your academic adviser and refer to your curriculum guide prior to registering for courses. This plan should be reviewed, and verified, by you and your academic adviser at least once each academic year.

Major Code: 6 08

Revised date: 05.16.2023