

BIOLOGICAL SCIENCES, B.S.

Majoring in biological sciences provides students with the foundation for a wide range of careers, including jobs in medicine* and allied fields, education, biotechnology, environmental agencies and NGOs, science writing, forensic science, research, law, marine biology and more. Because our department offers a wide range of upper-level courses, students can explore a variety of fields of interest or focus on a specific area for a target career.

The B.S. concentration offers an inclusive range of courses designed to develop a solid foundation in biological principles, as well as specialization in areas such as integrative, plant, cancer, molecular, cellular and developmental biology. Additionally, students may take advantage of experiential learning courses with opportunities for undergraduate research and teaching. Majors prepare for future graduate studies or to enter their career field while honing their investigative and research skills, improving analytical and communication abilities and learning how to identify and solve problems using critical reasoning.

*Pre-health students may especially benefit from the interdisciplinary neuroscience degrees offered at the university.

Learning Outcomes

1. Students will demonstrate a solid base of knowledge in Biology. Subjects such as cell and molecular biology, genetics, ecology and evolution, plant biology, and physiology are all crucial areas that will be mastered.
2. Students will analyze qualitative and quantitative data, assess validity of work and identify gaps in knowledge, and evaluate the results of analyses and experiments and decide on next steps.
3. Students will identify assumptions, create and evaluate hypotheses, and design relevant experiments.
4. Students will be trained to locate sources of information and to evaluate the quality of the information needed to make decisions. Students will be trained to critically read and discuss primary literature and evaluate its validity (on an appropriate level).
5. Students will demonstrate the ability to learn independently and then share that knowledge with others as well as to work collaboratively.

Progression Requirement

Biological sciences majors may enroll in a biological sciences major course a maximum of twice to earn the required grade of C or higher. For the purposes of this standard of progression, withdrawal with a W does not constitute enrollment.

Transfer Requirement

Any student applying for transfer to the biological sciences major from other programs within the University, or from other accredited colleges and universities, is required to have a minimum overall grade point average of 2.50 on a 4.00 scale.

Admissions

Entrance Requirements

New freshmen who meet University admissions standards are eligible for admission to degree programs offered by the college. A student who wishes to enter the College of Arts and Sciences from another college on the Columbia campus must be in good standing and have a cumulative

GPA of 2.00 or higher. A student who wishes to enter the College of Arts and Sciences from another USC campus must fulfill one of the following requirements:

1. Be in good standing, meet the admission requirements for a baccalaureate degree on the Columbia campus, and have a cumulative GPA of 2.00 or higher.
2. Be in good standing and have completed 30 semester hours with a GPA of 2.00 or higher on a USC campus.

Some programs in the College of Arts and Sciences have special admission requirements established by the department or committee that supervises the specific degree program, for example, Cardiovascular Technology, Biological Sciences, Chemistry, Biochemistry and Molecular Biology, Economics, Environmental Science, the Bachelor of Arts in Interdisciplinary Studies, and the Bachelor of Science in Interdisciplinary Studies. These requirements are listed in the sections of this bulletin that describe department and special degree programs.

Degree Requirements (120 hours)

Program of Study

Requirements	Credit Hours
1. Carolina Core	32-44
2. College Requirements	15-18
3. Program Requirements	30-45
4. Major Requirements	28

Founding Documents Requirement

All undergraduate students must take a 3-credit course or its equivalent with a passing grade in the subject areas of History, Political Science, or African American Studies that covers the founding documents including the United State Constitution, the Declaration of Independence, the Emancipation Proclamation and one or more documents that are foundational to the African American Freedom struggle, and a minimum of five essays from the Federalist papers. This course may count as a requirement in any part of the program of study including the Carolina Core, the major, minor or cognate, or as a general elective. Courses that meet this requirement are listed here (<https://academicbulletins.sc.edu/undergraduate/founding-document-courses/>).

1. Carolina Core Requirements (32-44 hours)

CMW – Effective, Engaged, and Persuasive Communication: Written (6 hours)

Must be passed with a grade of C or higher.

- any CC-CMW courses (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

ARP – Analytical Reasoning and Problem Solving (6-8 hours)

- MATH 122* or MATH 141*
- MATH 142* or MATH 170* or MATH 172*

Note: MATH 141 & MATH 142 are recommended. However, successful completion of MATH 122 and MATH 170, or MATH 172 may be substituted.

SCI – Scientific Literacy (8 hours)

Must be passed with a grade of C or higher.

- BIOL 101* & BIOL 101L*
- BIOL 102* & BIOL 102L*

GFL – Global Citizenship and Multicultural Understanding: Foreign Language (0-6 hours)

Demonstration of proficiency in one foreign language equivalent to the minimal passing grade on the exit examination in the 122 course is required. Students can demonstrate this proficiency by successfully completing Phase II of the Proficiency Test or by successfully completing the 122 course, including the exit exam administered as part of that course.

- CC-GFL courses (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

It is strongly recommended that students continuing the study of a foreign language begin college-level study of that language in their first semester and continue in that language until their particular foreign language requirement is completed.

GHS – Global Citizenship and Multicultural Understanding: Historical Thinking (3 hours)

- any CC-GHS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

GSS – Global Citizenship and Multicultural Understanding: Social Sciences (3 hours)

- any CC-GSS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

AIU – Aesthetic and Interpretive Understanding (3 hours)

- any CC-AIU course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

CMS – Effective, Engaged, and Persuasive Communication: Spoken Component ¹ (3 hours)

- any overlay or stand-alone CC-CMS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

INF – Information Literacy ¹ (0-3 hours)

- any overlay or stand-alone CC-INF course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

VSR – Values, Ethics, and Social Responsibility (3 hours)

- any overlay or stand-alone CC-VSR course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

¹ **Carolina Core Stand Alone or Overlay Eligible Requirements** – Overlay-approved courses offer students the option of meeting two Carolina Core components in a single course. A maximum of two overlays is allowed. The total Carolina Core credit hours must add up to a minimum of 31 hours. Some programs may have a higher number of minimum Carolina Core hours due to specified requirements.

2. College Requirements (15-18 hours)**Foreign Language (0-3 hours)**

- only if needed to meet 122-level proficiency

Analytical Reasoning (6 hours)

- STAT 205*
- CSCE 102*

History (3 hours)

The College of Arts and Sciences requires one additional GHS course beyond the Carolina Core GHS requirement.

- If the Carolina Core GHS requirement is fulfilled by a **U.S. history** course, the College of Arts and Sciences history requirement must be fulfilled by a **non-U.S. history** course.
- If the Carolina Core GHS requirement is fulfilled by a **non-U.S. history** course, the College of Arts and Sciences history requirement must be fulfilled by a **U.S. history** course.

Please select the College of Arts and Sciences history requirement from the approved list of U.S. and non-U.S. history courses (<https://academicbulletins.sc.edu/undergraduate/arts-sciences/history-requirement/>).

Social Science and Fine Arts or Humanities (6 hours)

- **Social Science (3 hours)**
 - The College of Arts and Science requires one 3- hour Social Science Course (<https://academicbulletins.sc.edu/undergraduate/arts-sciences/courses-acceptable-social-science/>)
- **Fine Arts/Humanities (3 Hours)**
 - A Bachelor of Science from the College of Arts and Sciences requires one 3-hour Fine Arts/Humanities Course (<https://academicbulletins.sc.edu/undergraduate/arts-sciences/courses-acceptable-fine-arts-humanities/>)

3. Program Requirements (30-45 hours)**Supporting Courses (12 hours)**

Course	Title	Credits
CHEM 111	General Chemistry I (*)	3
CHEM 111L	General Chemistry I Lab (*)	1
CHEM 112	General Chemistry II (*)	3
CHEM 112L	General Chemistry II Lab (*)	1
CHEM 333	Organic Chemistry I (*)	3
CHEM 331L	Essentials of Organic Chemistry Laboratory I (*)	1
Total Credit Hours		12

Note: PHYS 201 and PHYS 202 are recommended in addition to the above required courses.

Minor (18 hours) optional

Biological Sciences major may choose a minor consisting of at least 18 credit hours of prescribed courses. (Some minors in the sciences require a minimum of 16 hours.) The subject area of the minor may be related to the major. Students pursuing interdisciplinary minors who wish to use courses in their major department for minor credit must petition the

College Committee on Scholastic Standards and Petitions for permission to do so.

The minor is intended to develop a coherent basic preparation in a second area of study. Interdisciplinary minors can be designed with the approval of the assistant dean for academic affairs and advising.

Courses applied toward general education requirements cannot be counted toward the minor. No course may satisfy both major and minor requirements. **All minor courses must be passed with a grade of C or higher.** At least half of the courses in the minor must be completed in residence at the University

A list of minor programs of study can be found at Programs A-Z (<https://academicbulletins.sc.edu/undergraduate/programs-az/>).

Electives (0-33 hours)

120 (or 128) degree applicable credits are required to complete any degree at UofSC. After the cognate, minor or second major is complete, any additional credits needed to reach 120 (or 128) total credits can be fulfilled by electives. No courses of a remedial, developmental, skill-acquiring, or vocational nature may apply as credit toward degrees in the College of Arts and Sciences. The College of Arts and Sciences allows the use of the Pass-Fail option on elective courses. Further clarification on inapplicable courses can be obtained from the College of Arts and Sciences.

4. Major Requirements (28 hours)

A minimum grade of C is required in all major courses.

Major Courses (9 hours)

Course	Title	Credits
BIOL 301	Ecology and Evolution	3
BIOL 302	Cell and Molecular Biology	3
BIOL 303	Fundamental Genetics	3
Total Credit Hours		9

Major Electives (19 hours)

Course	Title	Credits
Select one Physiology course from the following:		3
BIOL 425	Plant Form and Function (optional lab available) ¹	
BIOL 460	Advanced Human Physiology (optional lab available)	
BIOL 465	Domestic Animal Nutrition	
BIOL 543	Comparative Physiology (optional lab available)	
BIOL 549	Plant Physiology ¹	
BIOL 635	Neurophysiology	
Select one Plant Biology course from the following:		3
BIOL 420	Survey of the Plant Kingdom (optional lab available)	
BIOL 423	Medicinal Botany	
BIOL 425	Plant Form and Function (optional lab available) ¹	
BIOL 523	Plant Development (optional lab available)	
BIOL 524	Mycology	
BIOL 525	Marine Plants	
BIOL 526	The Fall Flora	
	or BIOL 527 The Spring Flora	

or BIOL 528 The Summer Flora

BIOL 549	Plant Physiology ¹	
BIOL 670	Plant Ecology (optional lab available)	
BIOL 671	Plant Responses to the Environment	
13 hours of biological sciences majors courses 300 or higher		13
Total Credit Hours		19

¹ BIOL 425 and BIOL 549 may only be used for either the Physiology or Plant credit, **not** both.

Note: At least three courses applied toward the major must have an associated laboratory. No more than three credits of 398/399 may be applied toward the major. Two of 301, 301, or 303 must be completed to advance to 400-600 level courses. **At least twelve credits of major courses must be at the 400-699 level.**

Major Map

A major map is a layout of required courses in a given program of study, including critical courses and suggested course sequences to ensure a clear path to graduation.

Major maps are only a suggested or recommended sequence of courses required in a program of study. Please contact your academic advisor for assistance in the application of specific coursework to a program of study and course selection and planning for upcoming semesters.

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