BIOLOGY, B.S.

The Bachelor of Science degree is offered for those students aspiring to a professional career in biology, and for those students with particularly strong interests in the discipline. See also Preprofessional Programs. A student pursuing the Bachelor of Science is expected to develop a stronger background in mathematics and related sciences and to attain a greater understanding of biology than will a student pursuing a Bachelor of Arts degree. Bachelor of Science students will also be strongly encouraged to undertake an individual research project with a faculty member during their junior and/or senior year.

The B.S. in Biology offers three concentrations for students to choose from.

Biotechnology Concentration
The concentration in biotechnology is designed for students with a strong interest in molecular biology and genetics. Courses will prepare students in both conceptual aspects of molecular biology and their practical application in biotechnology and genetic engineering.

Environmental Biology Concentration
This concentration is designed for students with a strong interest in environmental biology. The concentration provides students with a breadth and depth of environmental awareness, rigorously prepares them for advanced studies in environmental biology and trains them for environmentally-oriented professions.

Human Biology Concentration
This concentration is designed for biology majors who want to develop the ability to integrate biological knowledge as it relates to human beings. The study of human biology requires fundamental knowledge of basic life science, since humans and other animals share a large number of structural, chemical, and control mechanisms. Moreover, human behavior occurs within a specific evolutionary and ecological setting, just as it does in other animals. Our complex brains, our communication and conceptual abilities, and our social structures, can be more fully understood by those who complete this concentration.

Overall Requirements

- 120 credit hours, to include at least 36 credits at or above the 300 course level.
- Students must have a grade point average of at least 2.0 in Biology courses completed at UNC Greensboro.
- A minimum of 30 credits of Biology courses above the 100 level.
- BIO 280/BIO 280L will not be counted towards the major; instead BIO majors should take BIO 481/BIO 481L.

Degree Program Requirements

Code	Title	Credit Hours
University Requirements (https://catalog.uncg.edu/academic-regulations-policies/undergraduate-requirements/undergraduate-degrees-and-degree-requirements/)		
General Education Requirements (MAC) (https://catalog.uncg.edu/academic-regulations-policies/undergraduate-requirements/general-education-program/#generaleducationcorerequirementstext)		
College of Arts and Sciences Additional Requirements (CIC) (https://catalog.uncg.edu/arts-sciences/#additionalundergraduaterequirementstext)		

Major Requirements

Code	Title	Credit Hours
Program Qualifications *		**8**
BIO 111 & 111L	Principles of Biology I and Principles of Biology I Laboratory	
BIO 112 & 112L	Principles of Biology II and Principles of Biology II Laboratory	
B.S. in Biology Core Courses		**16**
BIO 301	Principles of Ecology	
BIO 355	Cell Biology	
BIO 392	Genetics	
BIO 330	Evolution	
BIO 315	Ecology and Evolution Laboratory	
BIO 375	Cell Biology and Genetics Laboratory	
Related Area Requirements		**22-27**
CHE 111	General Chemistry I	
or CHE 103 & CHE 104	General Descriptive Chemistry I and General Descriptive Chemistry II	
CHE 112	General Chemistry I Laboratory	
or CHE 110	Introductory Chemistry Laboratory	
CHE 114 & CHE 115	General Chemistry II and General Chemistry II Laboratory	
CHE 351	Organic Chemistry I	
Select one of the following:		
MAT 184	Calculus for the Life Sciences	
or MAT 196	Calculus A	
or MAT 191	Calculus I	
or MAT 296	Calculus B	
or MAT 292	Calculus II	
or STA 271	Fundamental Concepts of Statistics	
Select one of the following:		
PHY 211	General Physics I	
or PHY 291	General Physics I with Calculus	
Select one of the following if not completed above:		
CHE 352 & CHE 354	Organic Chemistry II and Organic Chemistry Laboratory	
or PHY 212	General Physics II	
or PHY 291	General Physics I with Calculus	
or MAT 184	Calculus for the Life Sciences	
or MAT 196	Calculus A	
or MAT 191	Calculus I	
or MAT 296	Calculus B	
or MAT 292	Calculus II	
or STA 271	Fundamental Concepts of Statistics	

* *Students are strongly encouraged to take* BIO 100.

Optional Concentrations

Any of the optional concentrations as detailed following the major requirements may be added, but a concentration is not required.

- Biotechnology
- Environmental Biology
- Human Biology

Electives

Electives sufficient to complete the 120 credit hours required for the degree.

Biotechnology Concentration Requirements

Code	Title	Credit Hours
Required		**12-13**
BIO 481 & 481L	General Microbiology and General Microbiology Laboratory	
BIO 482	Molecular Biological Approaches in Research	
Select one of the following options:		
BIO 424 & 424L	Plant Physiology and Biotechnology and Plant Physiology and Biotechnology Lab	
BIO 494 & 494L	Introduction to Biotechnology and Introduction to Biotechnology Laboratory	
Select one course (minimum of 3 credits) from the following:		
BIO 424 & 424L	Plant Physiology and Biotechnology and Plant Physiology and Biotechnology Lab *	
BIO 435	Biochem:Metabolic Regulation	
BIO 442	GEnes and Signals	
BIO 478	Hormones in Action	
BIO 479 & 479L	Neurobiology and Neurobiology Laboratory	
BIO 485	Virology	
BIO 486	Cell Cycle and Cancer	
BIO 487	Epigenetics	
BIO 494 & 494L	Introduction to Biotechnology and Introduction to Biotechnology Laboratory *	
BIO 495	Advanced Genetics	
BIO 497	Internship in Biology	
BIO 499	Undergraduate Research	

* *If not selected above.*

Environmental Biology Concentration Requirements

Code	Title	Credit Hours
Required		**12-15**
Select one of the following courses:		
BIO 431	The Biosphere	
BIO 456	Global Change	
Select 3 courses (minimum of 9 credits) from the following:		
BIO 361	Biology and Conservation of Sea Turtles	
BIO 422 & 422L	Plant Diversity and Plant Diversity Lab	
BIO 424 & 424L	Plant Physiology and Biotechnology and Plant Physiology and Biotechnology Lab	
BIO 426	Conservation Biology	
BIO 427 & 427L	Landscape Ecology and Landscape Ecology Laboratory	
BIO 429	Aquatic Ecology	
BIO 431	The Biosphere *	
BIO 437	Human Evolutionary Genetics	
BIO 445	Disease Ecology	
BIO 451 & 451L	Vascular Plant Systematics and Vascular Plant Systematics Lab	
BIO 456	Global Change *	
BIO 460	Symbiosis	
BIO 476	Pop Genetics / Molecular Evol	
BIO 481 & 481L	General Microbiology and General Microbiology Laboratory	
BIO 497	Internship in Biology	
BIO 499	Undergraduate Research	

* *If not selected above.*

Human Biology Concentration Requirements

Code	Title	Credit Hours
Required		**13-15**
Select one of the following:		
BIO 271 & 271L	Human Anatomy and Human Anatomy Laboratory	
BIO 277 & 277L	Human Physiology and Human Physiology Laboratory	
Select 3 courses (minimum of 9 credits) from the following:		
ATY 153	The Human Species	
ATY 350	Human Origins and Evolution	
ATY 359	Forensic Anthropology	
ATY 453	Human Osteology	
BIO 425	Biological Clocks	
BIO 435	Biochem:Metabolic Regulation	
BIO 445	Disease Ecology	
BIO 464	Developmental Biology	
BIO 478	Hormones in Action	
BIO 481 & 481L	General Microbiology and General Microbiology Laboratory	
BIO 485	Virology	
BIO 488	Essentials of Toxicology	
PSY 230	Biological Psychology	

Disciplinary Honors in Biology

Requirements

- A minimum of 18 credit hours as defined below.
- UNC Greensboro cumulative GPA of 3.30 or better or, for transfer students, cumulative GPA of 3.30 or better from all prior institutions.
- A grade of B or higher in all course work used to satisfy the Honors requirements in Biology.

Code	Title	Credit Hours
Required		**6-9**
HSS 490	Senior Honors Project	
BIO 493	Honors Work *	
Select two 400-level Biology courses completed with Honors Contracts		**6**
Select a third Honors Contract course in Biology at the 300 or 400 level		**3**
Any of the Department's journal clubs		**1**

Oral presentation of Honors Thesis to a committee of three Biology Faculty or public presentation of research at a local, regional, or national meeting is required.

* *Only 6 credits may be counted toward the 30 credit minimum in the Biology major*

Recognition

Receive a Certificate of Disciplinary Honors in Biology; have that accomplishment, along with the title of the Senior Honors Project, noted on the official transcript; and be recognized at a banquet held at the end of the spring semester.

Honors Advisor

Contact John Lepri at jjlepri@uncg.edu for further information and guidance about Honors in Biology. To apply: https://honorscollege.uncg.edu/disciplinary-honors/disciplinary-honors-admissions/

Application and Admission

UNC Greensboro undergraduate students who are pursuing a B.A. or B.S. in Biology may apply for admission to the Accelerated Master's Program (AMP) in Biology. Students may apply for admission to the AMP after the completion of 60 credit hours, with at least 30 credits completed at UNCG. Applicants must have a cumulative undergraduate GPA of at least 3.5 at UNCG. All applicants must complete the AMP information when applying for admission to the M.S. in Biology. The standard application requirements for the M.S. in Biology also apply to the AMP.

Undergraduate UNCG students may apply for admission to the AMP after the completion of 60 credit hours, with at least 30 credits completed at UNCG. Applicants must have a cumulative undergraduate GPA of at least 3.5 at UNCG.

Courses

Students admitted to the AMP may apply up to, but not more than, 12 credits of graduate-level course work toward completion of both the undergraduate and graduate degree, provided that they earn a grade of B (3.0) or better in the course and fulfill graduate-level requirements. The graduate courses the students will take in the Accelerated Master's Program in Biology must be approved by the Graduate Program Director. Some biology classes are cross-listed as undergraduate and graduate.

For those cross-listed courses offered to both undergraduate and graduate students, a student may not receive graduate credit for corresponding courses previously taken at the undergraduate level.

The following courses may be counted towards both the B.S. or B.A. and the M.S. degrees:

Code	Title	Credit Hours
BIO 601	Seminar in Animal Ecology	3
BIO 605	Seminar in Ecology	3
BIO 609	Seminar in Molecular Cell Biology	3
BIO 610	Seminar in Molecular Genetics	3
BIO 611	Advanced Topics in Animal Ecology	3
BIO 614	Prenatal Development: Embryology and Teratology	3
BIO 615	Advanced Topics in Animal Physiology	3
BIO 617	Advanced Topics in Genetics	3
BIO 618	Computational Biology	3
BIO 619	Plant Physiology	3
BIO 620	Ecosystem Ecology and Biogeochemistry	3
BIO 624	Advanced Topics in Microbiology	3
BIO 626	Conservation Biology	3
BIO 627	Landscape Ecology	3
BIO 628	Microbial Ecology	3
BIO 629	Aquatic Ecology	3
BIO 630	Advanced Topics in Plant Ecology	3
BIO 635	Molecular Toxicology	3
BIO 636	Ecotoxicology	3
BIO 637	Human Evolutionary Genetics	3
BIO 639	Biochemistry: Metabolic Regulation in Health and Disease	3
BIO 640	Biology of Aging	3
BIO 641	Stream Ecology	3
BIO 642	Genes and Signals	3
BIO 644	Entomology	3
BIO 645 & 645L	Disease Ecology and Disease Ecology Laboratory	4
BIO 646	Advanced Topics in Neurobiology	3
BIO 648	Current Topics in Biology	1-3
BIO 651 & 651L	Vascular Plant Systematics and Vascular Plant Systematics Laboratory	4
BIO 652	Metamorphosis	3
BIO 655	Vertebrate Reproduction	3
BIO 656	Global Change	3
BIO 660	Symbiosis	3
BIO 673	Drugs and the Brain	3
BIO 676	Population Genetics and Molecular Evolution	3
BIO 678	Hormones in Action	3
BIO 680	Environmental Physiology	3
BIO 685	Virology	3
BIO 686	Cell Cycle and Cancer	3
BIO 687	Epigenetics	3
BIO 691	Genetics of Complex Traits	3
BIO 694	Advanced Genetics	3

Students must have completed the appropriate prerequisites required for listed courses or have permission of the department. All courses that lead to the completion of the M.S. in Biology must be approved by the Graduate Program Director. Please consult with an undergraduate advisor to determine how courses taken at the graduate level will meet

requirements in the bachelor's degree program. All degree requirements for the M.S. in Biology remain the same.