Biological Sciences (BS)

There are five different avenues to earning a B.S. in Biological Sciences at NC State. Students studying for a degree in Biological Sciences can opt for a general curriculum (BLS) or can choose to focus in a particular area by selecting one of four areas of concentration: Molecular, Cellular, and Developmental Biology (MCD), Integrative Physiology and Neurobiology (IPN), Human Biology (HB), or Ecology, Evolution and Conservation Biology (EEC). All new first-year students interested in the B.S. in Biological Sciences start their studies in the NC State Life Sciences First Year Program.

The MCD curriculum offers students in-depth studies of the molecular and cellular basis of life and the development of multicellular organisms.

The IPN curriculum provides a comprehensive grounding in basic principles of physiology and neuroscience, as well as in-depth exposure to the application of these principles in understanding whole-organism function and the ways in which animals (including humans) cope with challenges presented by their environments.

The HB curriculum allows some flexibility for students to study the biology of humans as well as relevant aspects of the humanities and social sciences, while also requiring those science courses most often required by medical schools. It is designed to provide students with a solid education in the scientific and humanistic concepts that underlie modern health sciences and related areas of scientific research.

The EEC curriculum offers students in-depth studies in areas of biology at the level of the organism, populations and ecosystems. It is designed for students who have an interest in whole organisms and their biodiversity — what maintains it, what environmental changes affect it, and how to protect it in the face of various challenges.

Plan Requirements

Code	Title	Hours			
Exploring the Lif	Exploring the Life Sciences				
LSC 103	Exploring Opportunities in the Life Sciences	1			
Writing					
Advanced Writing	Requirement Elective (p. 2) ¹	3			
Biological Scien	ces				
LSC 101	Critical and Creative Thinking in the Life Science	es 2			
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity ¹	4			
BIO 183	Introductory Biology: Cellular and Molecular Biology ¹	4			
BIO 270	Introduction to Evolution	3			
GN 311	Principles of Genetics ¹	4			
MB 351	General Microbiology ¹	3			
Physiology (p. 2)	1	3			
Physical & Mathe	ematical Sciences				
MA 131	Calculus for Life and Management Sciences A	3			
or MA 141	Calculus I				
MA 231	Calculus for Life and Management Sciences B	3			
or MA 241					
CH 101	Chemistry - A Molecular Science '	3			

CH 102	General Chemistry Laboratory ¹	1		
CH 201	Chemistry - A Quantitative Science ¹	3		
CH 202	Quantitative Chemistry Laboratory ¹	1		
CH 221	Organic Chemistry I ¹	3		
CH 222	Organic Chemistry I Lab ¹	1		
CH 223	Organic Chemistry II ¹	3		
CH 224	Organic Chemistry II Lab ¹	1		
Select one of the	following: ¹	4		
PY 211	College Physics I			
PY 205 & PY 206	Physics for Engineers and Scientists I and Physics for Engineers and Scientists I Laboratory			
Select one of the	following: 1	4		
PY 212	College Physics II			
PY 208 & PY 209	Physics for Engineers and Scientists II and Physics for Engineers and Scientists II Laboratory			
Major Electives				
Select one of the	following Learning Experience Electives:	3		
BIO 269	Research in the Life Sciences II: Guided Research			
BSC 492	Professional Experience			
BSC 493	Research Experience			
BSC 494	Teaching Experience			
BSC 497	Biological Sciences Honors Project Part 1			
Life Science Elec	tives (p. 2)	12		
Lab or Research	Electives (p. 3)	6		
Additional STEM	Electives (p. 3)	9		
GEP Courses				
ENG 101	Academic Writing and Research ¹	4		
GEP Humanities category-requiren	(http://catalog.ncsu.edu/undergraduate/gep- nents/gep-humanities/)	6		
GEP Social Scier category-requiren	nces (http://catalog.ncsu.edu/undergraduate/gep- nents/gep-social-sciences/)	6		
GEP Health and I undergraduate/ge studies/)	Exercise Studies (http://catalog.ncsu.edu/ ep-category-requirements/gep-health-exercise-	2		
GEP Elective (htt requirements/)	p://catalog.ncsu.edu/undergraduate/gep-category-	3		
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/ cundergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)				
GEP Global Knov category-requiren	GEP Global Knowledge (http://catalog.ncsu.edu/undergraduate/gep- category-requirements/gep-global-knowledge/) (verify requirement)			
GEP Foundations of American Democracy (http://catalog.ncsu.edu/ undergraduate/gep-category-requirements/gep-fad/) (verify requirement)				
World Language Proficiency (http://catalog.ncsu.edu/undergraduate/ gep-category-requirements/world-language-proficiency/) (verify requirement)				
Free Electives				
Free Electives (12	2 Hr S/U Lmt)	9		

These electives cannot be taken at an elementary level after you have taken comparable coursework at a more advanced level. Students interested in graduate school or professional school should check the courses required for admission to the programs to which they plan to apply.

Total Hours	

120

¹ A grade of C- or higher is required.

Advanced Writing Requirement Elective

Code	Title	Hours
BIO 267	Research in the Life Sciences I: Research Skills	3
COM 211	Argumentation and Advocacy	3
ENG 214	Introduction to Editing	3
ENG 232	Literature and Medicine	3
ENG 287	Explorations in Creative Writing	3
ENG 288	Fiction Writing	3
ENG 289	Poetry Writing	3
ENG 292	Writing About Film	3
ENG 316	Introduction to News and Article Writing	3
ENG 323	Writing in Rhetorical Traditions	3
ENG 331	Communication for Engineering and Technology	/ 3
ENG 332	Communication for Business and Management	3
ENG 333	Communication for Science and Research	3
ENG 381	Creative Nonfiction Writing Workshop	3
ENG 388	Intermediate Fiction Writing Workshop	3
ENG 389	Intermediate Poetry Writing Workshop	3
ENG 416	Advanced News and Article Writing	3
ENG 417	Editorial and Opinion Writing	3
ENG 422	Writing Theory and the Writing Process	3
ENG 425	Analysis of Scientific and Technical Writing	3
ENG 426	Analyzing Style	3

Physiology

Code	Title	Hours
BIO 240	Principles of Human Anatomy & Physiology (A): Nervous, Skeletal, Muscular, & Digestive System	3 ms
BIO 245	Principles of Human Anatomy & Physiology (B): Endocrine, Cardiovascular, Respiratory & Rena Systems	3
PB 321	Introduction to Whole Plant Physiology	3
PB 421	Plant Physiology	3
ZO 250	Animal Anatomy and Physiology	4

Life Science Electives

Code		Title	
0 - 1		 e	

for	 0	ro

Hours

Select one option from each of the following four Groups for a total of at least 12 credit hours.

Group I: Evolution and Biodiversity		
BIO 315	General Parasitology	3
BIO 330	Evolutionary Biology	3
BIO 432	Evolutionary Medicine	3
BIO 440	The Human Animal: An Evolutionary Perspective	3

MB 451	Microbial Diversity	3
MEA 369	Life on Earth: Principles of Paleontology	3
PB 400	Plant Diversity and Evolution	4
PB 403	Systematic Botany	4
ZO 350	Animal Phylogeny and Diversity	4
ZO 402	Invertebrate Biology	4
70 410	Introduction to Animal Behavior	י ג
Group II: Cellular	r and Molecular Bio	3
	Developmental Biology	3
BIO 416	Cancer Cell Biology	3
BIT 410	Manipulation of Recombinant DNA	З 4
GN 421	Malecular Genetics	4
GN 434	Genes and Development	3
GN 454		с С
GN 451	Bereard Constraint	3
GN 453	Personal Genomics	3
GN 456	Epigenetics, Development, and Disease	3
MB 414	Microbial Metabolic Regulation	3
MB 455	Microbial Biotechnology	3
MB 461	Molecular Virology	3
Group III: Organi	smal Function	3
ANS 225	Principles of Animal Nutrition	3
ANS 230	Animal Nutrition	3
ANS 415/515	Comparative Nutrition	3
BIO 240	Principles of Human Anatomy & Physiology (A): Nervous, Skeletal, Muscular, & Digestive Systems	3
BIO 245	Principles of Human Anatomy & Physiology (B): Endocrine, Cardiovascular, Respiratory & Renal Systems	3
BIO 424	Endocrinology	3
BIO 434	Hormones and Behavior	3
BIO 444	The Biology of Love and Sex	3
BIO 483	Capstone Course in Integrative Physiology and Neurobiology	3
BIO 488/588	Neurobiology	3
BIT 410	Manipulation of Recombinant DNA	4
MB 411	Medical Microbiology	3
MB 441	Immunology	3
MFA 252	Biology of Marine Mammals	3
NTR 415/515	Comparative Nutrition	3
NTR 419	Human Nutrition and Chronic Disease	3
DB 321	Introduction to Whole Plant Physiology	3
PD 321		3
PD 421	Avien Anotomy and Dhysiology	3
		4
PO 415/515		3
20 250	Animal Anatomy and Physiology	4
Group IV: Ecolog	1V	3
AEC 245	Practicing Conservation Ecology	3
AEC/PB 360	Ecology	4
AEC 419/519	Freshwater Ecology	4
AEC 460	Field Ecology and Methods	4
BIO 323	Paleoecology	3
CS 230	Introduction to Agroecology	3
FOR 260	Forest Ecology	4

MEA 250	Introduction to Coastal Environments	2
& MEA 251	and Introduction to Coastal Environments	
	Laboratory	

Additional STEM Electives

Code

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Title
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Hours

Take any courses at the 200 level and higher from the following prefixes: AEC, ANS, BCH, BEC, BIO, BIT, BSC, CH, DSC, ES, FW, GN, GPH, MA, MB, MEA, NTR, PB, PY, ST, TOX, ZO

Lab or Research Electives

Title Code

Hours

A total of 6 credit hours required. In some cases, a 1 credit lab component in another course (e.g., from Life Science Electives) can be applied to this requirement -- talk to your advisor if this applies to you.

BIO 242	Human Anatomy and Physiology Laboratory	2
BIO 325	Paleontological Field Methods	4
BIO 418	Cell Biology Research Lab	2
BIT 463	Fermentation of Recombinant Microorganisms	2
BIT 465	Real-time PCR Techniques	2
BIT 466	Animal Cell Culture Techniques	2
BIT 467	PCR and DNA Fingerprinting	2
BIT 471	RNA Interference and Model Organisms	2
BIT 473	Protein Interactions	2
BIT 474	Plant Genetic Engineering	2
BIT 476	Applied Bioinformatics	2
BIT 477	Metagenomics	2
BIT 479	High-Throughput Discovery	2
BIT 480	Yeast Metabolic Engineering	2
BIT 481	Plant Tissue Culture and Transformation	2
BIT 482	Virus Biotechnology: Pathogens to Therapeutics	2
BSC 493	Research Experience	1-3
BSC 498	Biological Sciences Honors Project Part 2	3
GN 312	Elementary Genetics Laboratory	1
GN 425	Advanced Genetics Laboratory	2
MB 352	General Microbiology Laboratory	1
or MB 354	Inquiry-Guided Microbiology Lab	
MB 360	Scientific Inquiry in Microbiology: At the Bench	3
MB 406	Food Microbiology Lab	1
MB 412	Medical Microbiology Laboratory	1
MB 420	Fundamentals of Microbial Cell Biotransformations	2
MB 452	Microbial Diversity Lab	2
ZO 334	Captive Animal Biology Field Laboratory	2

Semester Sequence

This is a sample.

First Year		
Fall Semester		Hours
LSC 101	Critical and Creative Thinking in the Life Sciences ¹	2
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4

CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory	4
MA 131	Calculus for Life and Management	3
	Sciences A ¹	
LSC 103	Exploring Opportunities in the Life Sciences	1
GEP Health and Exe undergraduate/gep-o studies/)	ercise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise-	1
	Hours	15
Spring Semester		
BIO 183	Introductory Biology: Cellular and Molecular Biology ¹	4
CH 221	Organic Chemistry I	4
& CH 222	and Organic Chemistry I Lab	
ENG 101	Academic Writing and Research ¹	4
MA 231	Calculus for Life and Management Sciences B ¹	3
	Hours	15
Second Year		
Fall Semester		
BIO 270	Introduction to Evolution	3
Physiology Requirer	nent (p. 2)	3
CH 223	Organic Chemistry II	4
& CH 224	and Organic Chemistry II Lab	
GEP Social Science	s (http://catalog.ncsu.edu/undergraduate/	3
gep-category-require	ements/gep-social-sciences/)	4
GEP Health and Exe	ercise Studies (http://catalog.ncsu.edu/	1
GEP Health and Exe undergraduate/gep-o studies/)	ercise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise-	1
GEP Health and Exe undergraduate/gep-o studies/)	ercise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise-	14
GEP Health and Exe undergraduate/gep-o studies/) Spring Semester	ercise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours	14
GEP Health and Exe undergraduate/gep-o studies/) Spring Semester Lab or Research Ele	ercise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours ectives (p. 3)	14 2
GEP Health and Exe undergraduate/gep-o studies/) Spring Semester Lab or Research Ele Life Science Elective	Hours Hours Hours Hours	1 14 2 3
GEP Health and Exe undergraduate/gep-o studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours Actives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science	1 14 2 3 4
GEP Health and Exe undergraduate/gep-o studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202	Hours Hours (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹	1 14 2 3 4
GEP Health and Exe undergraduate/gep-o studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep-o perspectives/)	Hours Ho	1 14 2 3 4 3
GEP Health and Exe undergraduate/gep-o studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep-o perspectives/) GEP Humanities (htt category-requiremer	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours Actives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- nts/gep-humanities/)	1 14 2 3 4 3 3 3
GEP Health and Exe undergraduate/gep-o studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinar undergraduate/gep-o perspectives/) GEP Humanities (htt category-requiremen	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours Actives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- nts/gep-humanities/) Hours	14 2 3 4 3 3 3 15
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GEP Health and Exe undergraduate/gep- studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinar undergraduate/gep- perspectives/) GEP Humanities (htt category-requirement Third Year Fall Semester	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours actives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- nts/gep-humanities/) Hours	1 14 2 3 4 3 3 3 15
GEP Health and Exe undergraduate/gep-o studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep-o perspectives/) GEP Humanities (htt category-requiremer Third Year Fall Semester PY 211	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours Actives (p. 3) (e (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- nts/gep-humanities/) Hours College Physics I ¹	1 14 2 3 4 3 3 3 15 4
GEP Health and Exe undergraduate/gep- studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep- perspectives/) GEP Humanities (htt category-requirement Third Year Fall Semester PY 211 MB 351	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours ectives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- nts/gep-humanities/) Hours College Physics I ¹ General Microbiology ¹	1 14 2 3 4 3 3 3 15 4 3
GEP Health and Exe undergraduate/gep- studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep- perspectives/) GEP Humanities (htt category-requirement Third Year Fall Semester PY 211 MB 351 Lab or Research Ele	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours ectives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- nts/gep-humanities/) Hours College Physics I ¹ General Microbiology ¹ ectives (p. 3)	1 14 2 3 4 3 3 3 15 4 3 2
GEP Health and Exe undergraduate/gep- studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep- perspectives/) GEP Humanities (htt category-requiremer Third Year Fall Semester PY 211 MB 351 Lab or Research Ele Advanced Writing Re	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours Actives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- hts/gep-humanities/) Hours College Physics I ¹ General Microbiology ¹ Actives (p. 3) equirement (p. 2) ¹	1 14 2 3 4 3 3 3 15 4 3 2 3
GEP Health and Exe undergraduate/gep- studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep- perspectives/) GEP Humanities (htt category-requiremer Third Year Fall Semester PY 211 MB 351 Lab or Research Ele Advanced Writing Re Learning Experience	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours Actives (p. 3) (e (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- nts/gep-humanities/) Hours College Physics I ¹ General Microbiology ¹ Actives (p. 3) equirement (p. 2) ¹ Actives (p. 1)	1 14 2 3 4 3 3 3 15 4 3 2 4 3 2 3 3 3
GEP Health and Exe undergraduate/gep- studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep- perspectives/) GEP Humanities (htt category-requirement Third Year Fall Semester PY 211 MB 351 Lab or Research Ele Advanced Writing Re	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours Actives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- nts/gep-humanities/) Hours College Physics I ¹ General Microbiology ¹ Actives (p. 3) equirement (p. 2) ¹ Actives (p. 1) Hours	1 14 2 3 4 3 3 3 15 4 3 2 3 3 3 15
GEP Health and Exe undergraduate/gep- studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep- perspectives/) GEP Humanities (htt category-requiremer Third Year Fall Semester PY 211 MB 351 Lab or Research Ele Advanced Writing Re Learning Experience	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours Actives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- hts/gep-humanities/) Hours College Physics I ¹ General Microbiology ¹ Actives (p. 3) equirement (p. 2) ¹ Elective (p. 1) Hours	1 14 2 3 4 3 3 15 4 3 2 3 3 3 3 15
GEP Health and Exe undergraduate/gep- studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep- perspectives/) GEP Humanities (htt category-requiremer Third Year Fall Semester PY 211 MB 351 Lab or Research Ele Advanced Writing R Learning Experience Spring Semester PY 212	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours Actives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- hts/gep-humanities/) Hours College Physics I ¹ General Microbiology ¹ Actives (p. 3) equirement (p. 2) ¹ Elective (p. 1) Hours College Physics II ¹	1 14 2 3 4 3 3 3 15 4 3 3 3 15 4
GEP Health and Exe undergraduate/gep- studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep- perspectives/) GEP Humanities (htt category-requiremer Third Year Fall Semester PY 211 MB 351 Lab or Research Ele Advanced Writing Re Learning Experience Spring Semester PY 212 GEP Social Science	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours Actives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- nts/gep-humanities/) Hours College Physics I ¹ General Microbiology ¹ ectives (p. 3) equirement (p. 2) ¹ Elective (p. 1) Hours College Physics II ¹ s (http://catalog.ncsu.edu/undergraduate/	1 14 2 3 4 3 3 3 15 4 3 3 3 15 4 3 3
GEP Health and Exe undergraduate/gep- studies/) Spring Semester Lab or Research Ele Life Science Elective CH 201 & CH 202 GEP Interdisciplinary undergraduate/gep- perspectives/) GEP Humanities (htt category-requiremer Third Year Fall Semester PY 211 MB 351 Lab or Research Ele Advanced Writing Re Learning Experience Spring Semester PY 212 GEP Social Science gep-category-require	Arcise Studies (http://catalog.ncsu.edu/ category-requirements/gep-health-exercise- Hours Actives (p. 3) (p. 2) ¹ Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory ¹ y Perspectives (http://catalog.ncsu.edu/ category-requirements/gep-interdisciplinary- tp://catalog.ncsu.edu/undergraduate/gep- hts/gep-humanities/) Hours College Physics I ¹ General Microbiology ¹ Actives (p. 3) equirement (p. 2) ¹ Elective (p. 1) Hours College Physics II ¹ s (http://catalog.ncsu.edu/undergraduate/ ements/gep-social-sciences/)	14 2 3 4 3 3 15 4 3 3 3 15 4 3 3 3 5 4 3

Hours	15
STEM Elective (p. 3)	3
Lab or Research Elective (p. 3)	1

Fourth Year

Total Hours	120
Hours	15
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep- category-requirements/gep-humanities/)	
GEP Elective (http://catalog.ncsu.edu/undergraduate/gep- category-requirements/)	
Free Elective	3
STEM Elective (p. 3)	
Life Science Elective (p. 2) ¹	
Hours Spring Semester	16
Free Elective	3
Free Elective	
Lab or Research Elective (p. 3)	
STEM Elective (p. 3)	
Life Science Elective (p. 2) ¹	
Life Science Elective (p. 2) ¹	
Fall Semester	

¹ A grade of C- or higher is required.

Career Opportunities

Many students majoring in the Department of Biological Sciences take advantage of scholarship and honors programs available at NC State, including the University Honors Program and the University Scholars Program. In addition, we offer a discipline-based Undergraduate Honors Program in Biological Sciences (DBS Honors Program). The DBS Honors Program requires students to design a challenging program of advanced study, including eight credits of honors coursework in biology and at least two semesters of research or teaching scholarship.

Participants write an honors thesis and are required to present their scholarly work at a local, regional, or national meeting. Invitations to join the DBS Honors Program are sent in the first three weeks of the Fall and Spring semesters. Students in any major in the Department of Biological Sciences who have earned an overall GPA of 3.60 after completing 30-65 credit hours at NC State will receive an invitation to join the DBS Honors Program; transfer students in any of our majors who have earned an overall GPA of 3.60 in 15 credit hours at NC State also will receive an invitation.

Students who graduate from the Department of Biological Sciences are well prepared for employment in various government agencies and private industries. Graduates may continue their education with studies leading to advanced degrees in many areas of the biological sciences, including cell biology, ecology, microbiology, genetics, zoology, neurobiology, and biomedical disciplines. Many choose to seek advanced degrees in medicine, dentistry, optometry, veterinary medicine, public health, and other health-related fields. Students who plan to seek certification for pre-college teaching may want to pursue a second major in the Department of Science, Technology, Engineering & Mathematics Education.

Career Titles

- Agricultural Sciences Professor
- Agronomist
- · Allergists and Immunologists
- Anesthesiologist (MD)
- Anesthesiologist Assistants
- Animal Breeder
- Animal Scientist
- Aquaculture Specialist
- Aquarium Curator
- Biochemist
- Biological Technician
- Biologist
- Biology Professor
- Biomedical Engineer
- Biophysicist
- Biopsychologist
- Botanist
- Cardiologist (MD)
- Clinical Dietitian
- Dentist (DDS)
- Dietitian and Nutritionist
- Environmental Disease Analyst
- Environmental Engineer
- Environmental Research Analyst
- Epidemiologists
- Family Practitioner (MD)
- Fish and Game Warden
- Fish Hatchery Specialist
- Food & Drug Inspector
- Food Science Technicians
- Food Technologist
- Forensic Science Technicians
- General Internists (MD)
- Genetic Counselors
- Geneticist
- Gynecologist (MD)
- · Hazardous Waste Management Analyst
- Horticulturist
- Hospitalists
- Industrial Hygienist
- · Industrial Waste Inspector
- Low Vision Therapists, Orientation and Mobility Specialists, and Vision Rehabilitation Therapists
- Marine and Aquatic Biologist
- Medical and Scientific Illustrator
- Medical Equipment Technician
- Medical Technologist
- Microbiologist
- Obstetrician (MD)
- · Occupational Health and Safety Technicians
- Occupational Physician (MD)

- Oceanographer
- Optometrist
- Park Naturalist
- Pathologist (MD)
- Pediatrician (MD)
- Pharmacist
- Pharmacologist
- Phlebotomist
- Physical Medicine and Rehabilitation Physicians
- Physician Assistant (PA)
- Radiologist (MD)
- Sales Representative (Chemicals & Drugs)
- Soil Conservationist
- Soil Scientist
- Sports Physician (Orthopedist)
- Surgeons (MD)
- Toxicologist
- Urologists
- Veterinarian (VMD)
- Water Pollution Control Inspector
- Wildlife Biologist
- Wildlife Control Agent
- Winemaker / Vinter
- Zoologist

Learn More About Careers

NCcareers.org (https://nccareers.org/)

Explore North Carolina's central online resource for students, parents, educators, job seekers and career counselors looking for high quality job and career information.

Occupational Outlook Handbook (https://www.bls.gov/ooh/) Browse the Occupational Outlook Handbook published by the Bureau of Labor Statistics to view state and area employment and wage statistics. You can also identify and compare similar occupations based on your interests.

Career One Stop Videos (https://www.careeronestop.org/) View videos that provide career details and information on wages, employment trends, skills needed, and more for any occupation. Sponsored by the U.S. Department of Labor.

Focus 2 Career Assessment (https://careers.dasa.ncsu.edu/explorecareers/career-assessments/) (NC State student email address required) This career, major and education planning system is available to current NC State students to learn about how your values, interests, competencies, and personality fit into the NC State majors and your future career. An NC State email address is required to create an account. Make an appointment with your career counselor (https:// careers.dasa.ncsu.edu/about/hours-appointments/) to discuss the results.

Focus 2 Apply Assessment (https://www.focus2career.com/Portal/ Register.cfm?SID=1929) (Available to prospective students) A career assessment tool designed to support prospective students in exploring and choosing the right major and career path based on your unique personality, interests, skills and values. Get started with Focus 2 Apply and see how it can guide your journey at NC State.

Bio Careers (http://biocareers.weebly.com/)

American Institute of Biological Sciences (https://www.aibs.org/) Federation of American Societies for Experimental Biology (https:// www.faseb.org/)