Bachelor of Science in Natural Sciences

The Bachelor of Science in Natural Sciences helps you to build a solid foundation in biology, chemistry, physics, mathematics, and earth science. This entirely online science program gives you hands-on, at-home laboratory exercises to complement the concepts covered in the classroom. You'll be taught the history and philosophy of science as well as the scientific method that is essential to research. This online bachelor's degree helps you develop your skills in scientific analysis, research, communication, and documentation, and study the relationship between the human and the natural world. Knowledge gained from this program can be applied to careers as a scientist, biologist, laboratory technician, or manager, or to pursue higher-level graduate study in the natural science fields.

In addition, the B.S. in Natural Science meets all content standards of the National Science Teachers Association (NSTA) for secondary science education. Therefore, upon completion of this program, you will be eligible to pursue teaching certification through a post-baccalaureate program in education if your goal is to become a high school or middle school science teacher. (This is not a teacher-preparation program and does not lead to licensure. It only covers the needed science content.)

This program has specific transfer credit requirements, including time limits on previous courses completed.

Degree Program Objectives

In addition to the institutional and degree level learning objectives, graduates of this program are expected to achieve these learning outcomes:

- Demonstrate a solid foundation in the theory and application of the natural sciences.
- Apply the scientific method and appropriate tools to investigate and solve problems.
- Demonstrate critical thinking skills in assessing and evaluating problems.
- Formulate scientific models and apply them to solve problems or provide insights into complex issues.
- Apply qualitative and quantitative methods from the scientific domains.
- Use quantitative techniques to solve complex problems.
- Effectively communicate scientific findings verbally and in writing, to both scientific and lay audiences.

Degree at a Glance

Code	Title	Semester Hours
General Education Requirements		30
Major Required		36
Select one of the following concentrations:		28
Biology (p. 2)		
Earth Science (p. 3)		
Final Program Requirements		6
Elective Requirements		20
Total Semester Hours		120

Degree Program Requirements

General Education Requirements (30 semester hours)

Code	Title	Semester Hours
Arts and Humanities (6 semester hours)		
PHIL202	Philosophy of Science	3
Select 1 course from the following: [1]		3
ARAB100	Arabic I	
ARAB101	Arabic II	
ARTH200	Art Appreciation	
ARTH241	Film and Literature	
DSIN141	Image Enhancement using Adobe Photoshop	
FREN100	French I	
FREN101	French II	
GERM100	German I	
GERM101	German II	
JAPN100	Introduction to Japanese	
LITR215	Literature of American Encounters, Revolution, and Rebellion	
LITR218	From Abolition to #MeToo: Literature of the American Civil Rights Movement	
LITR222	Pivotal Figures in Early British Literature	
LITR225	British Literature from Wordsworth through the Wasteland	
LITR231	Leadership in World Literature: Antiquity to the Early Modern Period	
LITR233	Literature of the Newly Globalized World: The Individual's Struggle to Adapt	
MUSI200	Music Appreciation	
MUSI250	World Music and Cultures	

PHIL101	Introduction to Philosophy	
PHIL110	Critical Thinking	
PHIL200	Introduction to Ethics	
PORT100	Introduction to Brazilian Portuguese	
RELS201	Introduction to World Religions	
RUSS100	Russian I	
SPAN100	Spanish I	
SPAN101	Spanish II	
STEM270	Thinking and Acting Ethically	
Civics, Political and Social Sciences (6 semester hours)		
Select 2 courses from the following: [1]		6
ANTH100	Introduction to Anthropology	
ANTH202	Introduction to Cultural Anthropology	
CHFD220	Human Sexuality	
COMM211	Social Media and Society	
COMM240	Intercultural Communication	
ECON101	Microeconomics	
ECON102	Macroeconomics	
EDUC200	Humane Education: A Global Interdisciplinary Perspective	
GEOG101	Introduction to Geography	
HOSP110	Practical Food Safety and Awareness	
IRLS210	International Relations I	
LITR212	Forgotten America--Under Represented Cultures in American Literature	
LITR235	Four Points of the Compass: Culture and Society Around the World	
POLS101	Introduction to Political Science	
POLS210	American Government I	
PSYC101	Introduction to Psychology	
SOCI111	Introduction to Sociology	
SOCI212	Social Problems	
SOCI220	American Popular Culture	
STEM280	Exploring Society and Cultures via Science Fiction	
Communication: Writing, Oral, and Multimedia (9 semester hours)		
COMM120	Information and Digital Literacy	3
ENGL110	Making Writing Relevant	3
ENGL221	Scientific Writing	3
History (3 semester hours)		
HIST270	History of Science	3
Mathematics (3 semester hours)		
MATH111	College Trigonometry	3
Natural Sciences (3 semester hours)		
SPST180	Introduction to Astronomy	3
Total Semester Hours		30

[1] All literature courses require successful completion of ENGL101 - Proficiency in Writing or ENGL110 - Making Writing Relevant.

Major Required (36 semester hours)

Code	Title	Semester Hours
BIOL133	General Biology I with Lab	4
CHEM133	General Chemistry I with Lab	4
GEOG103	Physical Geography	3
BIOL134	General Biology II with Lab	4
CHEM134	General Chemistry II with Lab	4
MATH225	Calculus	3
Select 1 course from the following:		4
PHYS133	Elements of Physics I with Lab	
SCIN233	Physics I with Lab	
MATH226	Calculus II	3
Select 1 course from the following:		4
PHYS134	Elements of Physics II with Lab	
SCIN234	Physics II with Lab	
MATH302	Statistics	3
Total Semester Hours		36

Students must choose a concentration for this degree program and may select from the Concentration in Biology or Concentration in Earth Science.

Concentration in Biology (28 semester hours)

In addition to the general biology courses required in this major, this concentration offers advanced courses to enable you to study biology at a deeper level across multiple scales. The concentration investigates the principles of genetics, heredity, and biological evolution, as well as the structure and function of organisms from the single cell to the complex mammals.

Objectives

Upon successful completion of this concentration, the student will be able to:

- Describe the organization, functions, and biochemical pathways required for life at the cellular level.
- Integrate the laws of chemistry and physics with the principles of cell biology.

- Relate the structures and functions of multicellular organisms with the maintenance of homeostasis.
- Integrate the principles of genetics, heredity, and biological evolution.
- Relate the survival of individual organisms with the principles of population biology, the environment, and biological evolution.
- Describe common research methods in biology.

Concentration Requirements (28 semester hours)

Code	Title	Semester Hours
BIOL240	Elements of Biological Chemistry	3
BIOL241	Cell Biology	3
SCIN211	Principles of Genetics with Lab	4
BIOL242	Evolutionary Biology	3
EVSP416	General Ecology	3
Select 4 courses from the following:		12
BIOL301	Molecular Biology	
GEOG200	Fundamentals of Geographic Information Systems I	
SCIN202	Introduction to Microbiology	
SCIN206	Marine Biology	
SCIN311	Fishery Biology	
EVSP342	Population Ecology	
EVSP417	Conservation Biology	
SCIN314	Botany	
SCIN316	Plant Identification, Taxonomy, and Systematics	
SCIN401	Mammalogy	
SCIN402	Ornithology	
SPST200	Introduction to Space Studies	
SPST306	Human Space Flight	
Total Semester Hours		28

Concentration in Earth Science (28 semester hours)

In this concentration, you will study the relationship between the physical, chemical, and biological processes operating in and on the Earth. You will learn about the history of the Earth and the evolution of systems such as the oceans and atmosphere, as well as detailed information about soils, streams, weather, and climate. The relationship between humans and the Earth is examined from multiple perspectives.

Objectives

Upon successful completion of this concentration, the student will be able to:

- Use the scientific method and scientific tools to solve programs related to the Earth.
- Demonstrate a comprehensive understanding of the interrelated physical, chemical, and biological processes operating in the Earth system.
- Identify the process and features associated with the Earth's interior, landscapes, oceans, and atmosphere.
- Construct a history of the Earth, focusing on physical, chemical, and biological changes.
- Present earth science information clearly, in multiple formats (written, oral, graphically).
- Integrate knowledge of earth science into an understanding of societal issues and problems.
- Demonstrate good scientific ethics.
- Identify different earth materials, including those of economic value.

Concentration Requirements (28 semester hours)

Code	Title	Semester Hours
ERSC181	Introduction to Geology	3
GEOG200	Fundamentals of Geographic Information Systems I	3
ERSC204	Earth System History	3
ERSC206	Weather and Climate	3
SCIN261	Introduction to Planetary Science with Lab	4
ERSC305	Ocean and Atmospheric Dynamics	3
Select 3 courses from the following:		9
ERSC302	Geomorphology	
ERSC303	Conservation of Natural Resources	
ERSC401	Natural Hazards and Society	
EVSP310	Water Science	
EVSP311	Soil Science	
EVSP414	Air Quality Management	
EVSP416	General Ecology	
GEOG201	Fundamentals of Geographic Information Systems II	
SPST200	Introduction to Space Studies	
SPST435	Planetary and Space Exploration	
SPST465	Space Weather	
Total Semester Hours		28

Final Program Requirements (6 semester hours)

Code	Title	Semester Hours
SCIN400	Research Methods in Natural Sciences	3
Select 1 course from the following:		3
SCIN490	Independent Study - Natural Sciences (to be taken as the last course before graduation) [1]	
SCIN499	Senior Seminar in Natural Sciences (to be taken as the last course before graduation) [1]	
Total Semester Hours		6

[1] Prerequisite: SCIN400 - Research Methods in Natural Sciences and senior standing and completion of all major courses prior to enrollment.

Elective Requirements (20 semester hours)

Code	Title	Semester Hours
Select any courses not already taken to fulfill the requirements listed above. Credits applied toward a minor or certificate in an unrelated field may be used to fulfill elective credit for the major. Students in the Biology concentration are encouraged to consider the 4 semester hour courses BIOL201 - Principles of Anatomy and Physiology with Lab, BIOL202 - Principles of Microbiology with Lab, or the Human Anatomy and Physiology with Lab sequence (BIOL250 and BIOL251) as part of their elective choices.		20
Total Semester Hours		20