BIOLOGY WITH ECOLOGY EMPHASIS (BS)

The growing significance of environmental issues to the overall health of our world in the new century requires more individuals who are scientifically trained to contribute to solving environmental problems.

The BS in Biology with Ecology emphasis is designed to provide in-depth training for students planning to do research in various areas of environmental sciences as either graduate students or employees of environmental agencies and companies. The curriculum includes the same foundational lecture and laboratory courses in the areas of cell biology, genetics, and ecology taken by general biology majors. Additional coursework focuses specifically on topics related to ecology.

Curriculum

This specialized biology major requires 37 credit hours including 9 required courses (21 credit hours) and elective courses (16 credit hours). This track allows students to acquire a strong background in fundamental biology with a specialization in the basic science of ecology and evolution. Students will follow the program outlined below

Code	Title	Hours
Biology Courses: Required		
21 credit hours plus cognate requirements		
BIOL 101	General Biology I	3
BIOL 111	General Biology I Lab	1
BIOL 102	General Biology II	3
BIOL 112	General Biology II Lab	1
BIOL 251	Cell Biology	3
BIOL 265	Ecology	3
BIOL 266	Ecology Laboratory	1
BIOL 282	Genetics	3
BIOL 319	Evolution	3
Electives [1]		
Select 16 credit hours from a combination of the following:		16
Select a minimum of two electives from the following:		
BIOL 205	Plant Biology Lec/Lab	
BIOL 215	Ornithology	
BIOL 296	Introduction to Research [2]	
BIOL 316	Limnology Lec/Lab	
BIOL 320	Animal Behavior	
BIOL 325	Primatology-Behavior & Ecology	
BIOL 327	Wetland Ecology	
BIOL 328	Conservation Biology	
BIOL 330	Global Change Biology	
BIOL 335	Intro to Biostatistics	
BIOL 360	Field Biology	
BIOL 363	Entomology Lec/Lab	
BIOL 368	Plant Ecology Lec/Lab	
BIOL 369	Invertebrate Biology	
BIOL 370	Ichthyology Lec/Lab	
BIOL 375	Aquatic Insects Lecture & Laboratory	
BIOL 395	Special Topics in Biology [2]	
BIOL 395L	Special Topics Laboratory [2]	
Select one of the following:		
BIOL 396	Research [2]	
BIOL 398	Internship in Biology [2]	
Chemistry		
CHEM 160	Chemical Structure and Properties	3
or CHEM 101	General Chemistry A Lecture/Discussion	
or CHEM 105	Chemical Principles	
CHEM 161	Chemical Structure and Properties Laboratory	1
or CHEM 105	Chemical Principles	
or CHEM 111	General Chemistry Lab A	
CHEM 180	Chemical Reactivity I	3
or CHEM 221	Organic Chemistry I Lec/Disc	
or CHEM 223	Organic Chemistry A Lec/Disc	
CHEM 181	Chemical Reactivity I Lab	3
or CHEM 221	Organic Chemistry I Lec/Disc	
or CHEM 225	Organic Chemistry Lab A	
CHEM 240	Chemical Reactivity II	3
or CHEM 222	Organic Chemistry II Lec/Disc	
or CHEM 224	Organic Chemistry B Lec/Disc	
CHEM 241	Chemical Reactivity II Laboratory	1
or CHEM 222	Organic Chemistry II Lec/Disc	
or CHEM 226	Organic Chemistry Lab B	
CHEM 260	Quantitative Methods in Chemistry	3
or CHEM 102	General Chemistry B Lecture/Discussion	
or CHEM 106	Basic Inorganic Chemistry	
CHEM 261	Quantitative Methods in Chemistry Laboratory	1
or CHEM 106	Basic Inorganic Chemistry	
or CHEM 112	General Chemistry Lab B	
Mathematics		
MATH 131	Applied Calculus I	3-4
or MATH 161	Calculus I	
MATH 132	Applied Calculus II	3-4
or MATH 162	Calculus II	
Physics		
PHYS 111	College Physics I Lec / Dis	3
or PHYS 121	College Physics I Lec/Dis	
or PHYS 125	General Physics I Lec/Dis	
PHYS 111L	College Physics Laboratory I	1
PHYS 112	College Physics II Lec/Disc	3
or PHYS 122	College Physics II Lec/Dis	
or PHYS 126	General Physics II Lec/Dis	
PHYS 112L	College Physics Lab II	1
Total Hours		**69**

[1] The remaining credits may come from this list or from other electives offered in Biology. A minimum of (any) two electives must have laboratory components.

[2] Courses must be taken in an Ecology related topic.

Suggested Course Sequence

The below sequence of courses is meant to be used as a suggested path for completing coursework. An individual student's completion of

requirements depends on course offerings in a given term as well as the start term for a major or graduate study. Students should consult their advisor for assistance with course selection.

The biology department recommends that students pursuing the BS in Biology with Ecology Emphasis complete their required classes in the following sequence. Requirements include courses in Biology (BIOL), Chemistry (CHEM), Mathematics (MATH) and Physics (PHYS):

Course	Title	Hours
First Semester		
BIOL 101	General Biology I	3
BIOL 111	General Biology I Lab	1
CHEM 160	Chemical Structure and Properties	3
CHEM 161	Chemical Structure and Properties Laboratory	1
MATH 131	Applied Calculus I	3
	Hours	**11**
Second Semester		
BIOL 102	General Biology II	3
BIOL 112	General Biology II Lab	1
CHEM 180	Chemical Reactivity I	3
CHEM 181	Chemical Reactivity I Lab	1
MATH 132	Applied Calculus II	3
	Hours	**11**
Third Semester		
BIOL 265	Ecology	3
BIOL 266	Ecology Laboratory	1
CHEM 240	Chemical Reactivity II	3
CHEM 241	Chemical Reactivity II Laboratory	1
	Hours	**8**
Fourth Semester		
BIOL 282	Genetics	3
CHEM 260	Quantitative Methods in Chemistry	3
CHEM 261	Quantitative Methods in Chemistry Laboratory	1
	Hours	**7**
Fifth Semester		
BIOL 251	Cell Biology	3
PHYS 111	College Physics I Lec / Dis	3
PHYS 111L	College Physics Laboratory I	1
	Hours	**7**
Sixth Semester		
BIOL 319	Evolution	3
PHYS 112	College Physics II Lec/Disc	3
PHYS 112L	College Physics Lab II	1
BIOL Elective (Ecology)		3
	Hours	**10**
Seventh Semester		
BIOL Elective (Ecology)		4
	Hours	**4**
Eighth Semester		
BIOL Electives		8
	Hours	**8**
	Total Hours	**66**

College of Arts and Sciences Graduation Requirements

All Undergraduate students in the College of Arts and Sciences are required to take two Writing Intensive courses (6 credit hours) as well as complete a foreign language requirement at 102-level or higher (3 credit hours) or a language competency test. More information can be found here (https://www.luc.edu/cas/college-requirements/).

Additional Undergraduate Graduation Requirements

All Undergraduate students are required to complete the University Core, at least one Engaged Learning course, and UNIV 101. SCPS students are not required to take UNIV 101. Nursing students in the Accelerated BSN program are not required to take core or UNIV 101. You can find more information in the University Requirements (https://catalog.luc.edu/undergraduate/university-requirements/) area.

At the completion of the Undergraduate Biology with Ecology Emphasis Major:

- Students will demonstrate developing mastery of the following Vision and Change core concepts and their related principals as they relate to population ecology, community ecology, and ecosystem-level concepts: evolution (the diversity of life-forms that have evolved over time through mutations, selection and genetic change; structure and function (the basic units of biological structures that define the functions of all living things); information flow, exchange and storage (the influence of genetics on the control of the growth and behavior of organisms); pathways and transformations of energy and matter (the ways in which chemical transformation pathways and the laws of thermodynamics govern the growth and change of biological systems); and systems (the ways in which living things are interconnected and interact with one another).
- Students will be able to retrieve, synthesize, and critically evaluate scientific literature.
- Students will be able to communicate (orally and in writing) results and interpretation of scientific research.
- Students will be able to design and implement experiments that test predictive hypotheses, analyze data, report results, and interpret the significance of these experiments to enhance their understanding of ecological systems.