

# B.S. Biology with Concentration in Ecology and Conservation Biology

## Bachelor of Science in Biology

The purpose of the B.S. in Biology is to serve students who have a broad interest in the biological sciences and who seek substantial flexibility in the development of their own programs. This degree fosters, in students, knowledge and understanding of major concepts in the discipline as well as the processes of scientific investigation. Students served by this Major are those interested in preparing for a career in biology, ecology, conservation or natural history, entering a health-related professional program (i.e., physician assistant, occupational therapist, medical doctor, etc.), certifying to teach in public schools, or developing a variety of laboratory skills. The B.S. in Biology requires significant exposure to biological sciences, as well as concepts in math and the physical sciences, while providing a large number of electives. The consequence is an understanding of the biological sciences and the flexibility and opportunity to specialize in areas of interest to students. Up to 8 credits of Independent Problems and/or Mentored Research (AMOEBA) can be applied to the student's undergraduate degree.

### Core Requirements

Students pursuing the B.S. degree must satisfy 8 of the 9 General Education Objectives (a minimum of 36 credits--see the General Education Requirements (<http://coursecat.isu.edu/undergraduate/academicinformation/generaleducation/>) described in the Academic Information section of this catalog). Students must also satisfy the core requirements listed below and the requirements of one of the concentrations in biology. All graduates of this degree program will earn a B.S. in Biology, regardless of the concentration selected.

### Required Courses:

Code	Title	Credits
BIOL 1101 & 1101L	Biology I and Biology I Lab	4
BIOL 1102 & 1102L	Biology II and Biology II Lab	4
BIOL 2206 & BIOL 2207	Cell Biology and Cell Biology Laboratory <sup>1</sup>	4
BIOL 2209 & 2209L	General Ecology and General Ecology Laboratory	4
BIOL 3316	Biometry Laboratory	1
BIOL 3358	Genetics	3
BIOL 4417	Organic Evolution	3
BIOL 4491 & BIOL 4492	Seminar and Seminar	2
MATH 1160	Survey of Calculus	3
MATH 3350	Statistical Methods	3
CHEM 1111 & 1111L	General Chemistry I and General Chemistry I Lab	5
CHEM 1112 & 1112L	General Chemistry II and General Chemistry II Lab	4
CHEM 3301 & CHEM 3303	Organic Chemistry I and Organic Chemistry Laboratory I	4
PHYS 1111 & PHYS 1113	General Physics I and General Physics I Laboratory	4

Select two of the following:

CHEM 3302 & CHEM 3304	Organic Chemistry II and Organic Chemistry Laboratory II	7
PHYS 1112 & PHYS 1114	General Physics II and General Physics II Laboratory	
BIOL 4432	Biochemistry	
General Education		24
Total Credits		79

<sup>1</sup> BIOL 2235, BIOL 2235L, General Microbiology and Lab, may substitute for BIOL 2206, BIOL 2207 in the ECB and IOB concentrations, but not in the BMS concentration. Students in the BMS concentration must take BIOL 2206, BIOL 2207.

### Concentration in Ecology and Conservation Biology (ECB)

The concentration in Ecology and Conservation Biology (ECB) is for students who seek to understand the fundamental principles of ecology and their applications, with an emphasis on field studies. The ECB concentration prepares students for graduate studies in ecology or applied ecology, and careers in land and resource management (e.g., Bureau of Land Management, US Forest Service, Idaho Department of Fish and Game), environmental studies (e.g., Environmental Protection Agency, US Geological Survey, Department of Environmental Quality), and positions with conservation organizations (e.g., The Nature Conservancy, US Fish and Wildlife Service, World Wildlife Federation). The concentration allows students to select a variety of courses in plant and animal diversity, field biology, and evolution.

In addition to completing the core requirements, students in the ECB concentration have the opportunity to select from a broad range of ecology, diversity, and evolution courses. The concentration requires taxonomic breadth including at least 6 credits of plant biology and 6 credits of animal biology emphasis courses.

### Ecology and Conservation Biology Concentration Requirements

#### Field Research:

Code	Title	Credits
BIOL 4489 or BIOL 4493	Field Ecology Senior Thesis	4

#### Ecology Courses:

Select a minimum of 8 credits from the following:

Code	Title	Credits
BIOL 1192	Careers in Ecology and Conservation Biology	1
BIOL 3337	Conservation Biology	3
BIOL 4408 & 4408L	Plant Ecology and Plant Ecology Lab	4
BIOL 4416 & 4416L	Population Ecology and Population Ecology Lab	4
BIOL 4418	Ecological Topics	1

BIOL 4442	Plant Animal Interactions	3
BIOL 4459 & 4459L	Fish Ecology and Fish Ecology Laboratory	4
BIOL 4462 & 4462L	Freshwater Ecology and Freshwater Ecology Lab	4
BIOL/GEOL 4490	Ecosystem Ecology and Global Changes	4

**Diversity or Evolutionary Courses:**

Select a minimum of 8 credits from the following:

Code	Title	Credits
BIOL 2213	Fall Flora	2
BIOL 2214	Spring Flora	2
BIOL 3310 & 3310L	Invertebrate Zoology and Invertebrate Zoology Lab	4
BIOL 4406 & 4406L	Plant Diversity and Evolution and Plant Diversity and Evolution Lab	4
BIOL 4412 & 4412L	Systematic Botany and Systematic Botany Lab	4
BIOL 4423	General Parasitology	3
BIOL 4426 & 4426L	Herpetology and Herpetology Lab	4
BIOL 4427 & 4427L	Ichthyology and Ichthyology Lab	4
BIOL 4431 & 4431L	General Entomology and General Entomology Lab	4
BIOL 4434 & 4434L	Microbial Diversity and Microbial Diversity Lab	4
BIOL 4438	Ornithology	4
BIOL 4441 & 4441L	Mammalogy and Mammalogy Lab	4
BIOL 4495	Animal Behavior	4

**Biology Electives:**

Students must fulfill a minimum of an additional 3 credits of biology electives for which they can select any course in Biology (except BIOL 1100), including Independent Problems (BIOL 4481 and/or BIOL 4482) and AMOEBA (Mentored Research Alliance, BIOL 2280 and/or BIOL 4480).

**Total ECB Concentration Requirements**

Code	Title	Credits
	Field Research Experience	4
	Ecology Courses	8
	Diversity or Evolutionary Courses	8
	Biology Electives	3
	Minimum Total	23
	Core Requirements	79-80
	Total	102-103