

B.S. Biology with Concentration in Integrative Organismal 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 ¹	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	
PHYS 1112 & PHYS 1114	General Physics II and General Physics II Laboratory	
BIOL 4432	Biochemistry	
General Education		24
Total Credits		79

¹ 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 Integrative Organismal Biology (IOB)

The concentration in Integrative Organismal Biology (IOB) focuses on understanding of the key disciplines that serve as the foundation of organismal biology: anatomy, physiology, behavior, and diversity, and electives in a variety of integrative biology courses. Students may select either an animal or a plant focus, or a combination. The IOB concentration prepares students for graduate studies in various fields of organismal biology (physiology, botany, zoology, evolution, ecology, behavior) and for professional schools (veterinary or OT/PT).

In addition to completing the core requirements, students in the IOB concentration have the opportunity to select from a broad range of physiology, anatomy, and diversity courses.

Anatomy, Physiology, and Development Courses:

Select a minimum of 8 credits from the following:

Code	Title	Credits
BIOL 3301 & 3301L	Advanced Human Anatomy and Physiology 1 and Advanced Human Anatomy and Physiology 1 Lab	4
BIOL 3302 & 3302L	Advanced Human Anatomy and Physiology 2 and Advanced Human Anatomy and Physiology 2 Lab	4
BIOL 3304 & 3304L	Comparative Vertebrate Morphology and Physiology and Vertebrate Morphology and Physiology Lab	5
BIOL 3324 & 3324L	Developmental Biology and Developmental Biology Lab	4
BIOL 4404 & 4404L	Plant Physiology and Plant Physiology Lab	4
BIOL 4405 & 4405L	Plant Form and Function and Plant Form and Function Lab	4
BIOL 4419 & 4419L	Mammalian Histology and Mammalian Histology Lab	4
BIOL 4432	Biochemistry	3
BIOL 4443	Endocrinology	3
BIOL 4464	Lectures in Human Physiology	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 4442	Plant Animal Interactions	3
BIOL 4495	Animal Behavior	4

Biology Electives:

Students must fulfill a minimum of an additional 8 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 IOB Concentration Requirements

Code	Title	Credits
	Anatomy, Physiology, or Development courses	8
	Diversity or Evolutionary Courses	8
	Biology Electives	8
	Minimum Total	24
	Core Requirements	79-80
	Total	103-104