

ECOLOGY, EVOLUTION, AND ORGANISMAL BIOLOGY

Within the Biological Sciences, studies of ecology, evolution, and organismal biology are essential in understanding the complex relationships of life on Planet Earth. Ecology focuses on the interactions among organisms as well as the interactions between organisms and their physical environments. Evolutionary theory addresses the origins and interrelationships of species. Organismal biology studies both the diversity of biological organisms and the structure and function of individual organisms.

Undergraduate Study

The EEOB Department offers several undergraduate majors with other departments. Students interested in the areas of ecology, evolution, and organismal biology should major in Biology, Environmental Science, or Genetics. The Biology Major is administered and offered jointly by the EEOB and GDCB departments. The faculty of EEOB, together with those in GDCB and BBMB, administer and offer the Genetics Major. Faculty in EEOB, in cooperation with faculty from other departments on campus, administer and offer the Environmental Science Major. Each of these majors are available through the College of Liberal Arts and Sciences or through the College of Agriculture and Life Sciences. Faculty in the EEOB Department also teach undergraduate courses at Iowa Lakeside Laboratory (see the Iowa Lakeside Laboratory listing).

The Biology Major, the Environmental Science Major, and the Genetics Major prepare students for a wide range of careers in biological sciences. Some of these careers include conservation of natural resources and biodiversity, human and veterinary medicine, and life science education. These majors are also excellent preparation for graduate study in systematics, ecology, biological diversity, physiology, and related fields. Faculty members in EEOB contribute to the undergraduate courses listed below. The titles and descriptions of these courses are in the Biology section of the catalog.

BIOL 101	Introductory Biology	3
BIOL 110	Biology Major Orientation	1
BIOL 111	Opportunities in Biology	0.5
BIOL 155	Human Biology	3
BIOL 173	Environmental Biology	3
BIOL 204	Biodiversity	2
BIOL 211	Principles of Biology I	3
BIOL 211L	Principles of Biology Laboratory I	1
BIOL 212	Principles of Biology II	3
BIOL 212L	Principles of Biology Laboratory II	1
BIOL 255	Fundamentals of Human Anatomy	3

BIOL 255L	Fundamentals of Human Anatomy Laboratory	1
BIOL 256	Fundamentals of Human Physiology	3
BIOL 256L	Fundamentals of Human Physiology Laboratory	1
BIOL 307	Women in Science and Engineering	3
BIOL 312	Ecology	4
BIOL 313	Principles of Genetics	3
BIOL 313L	Genetics Laboratory	1
BIOL 315	Biological Evolution	3
BIOL 322	Introduction to Bioinformatics and Computational Biology	3
BIOL 335	Principles of Human and Other Animal Physiology	3
BIOL 335L	Principles of Human and Other Animal Physiology Laboratory	1
BIOL 336	Ecological and Evolutionary Animal Physiology	3
BIOL 349	The Genome Perspective in Biology	3
BIOL 351	Comparative Chordate Anatomy	5
BIOL 352	Vertebrate Histology	4
BIOL 353	Introductory Parasitology	3
BIOL 354	Animal Behavior	3
BIOL 355	Plants and People	3
BIOL 356	Dendrology	3
BIOL 357	Biology of Plants	3
BIOL 364	Invertebrate Biology	3-4
BIOL 365	Vertebrate Biology	4
BIOL 366	Plant Systematics	4
BIOL 370	GIS for Ecology and Environmental Science	1-6
BIOL 371	Ecological Methods	3
BIOL 381	Environmental Systems I: Introduction to Environmental Systems	3-4
BIOL 382	Environmental Systems II: Analysis of Environmental Systems	3
BIOL 393	North American Field Trips in Biology	1-4
BIOL 394	International Field Trips in Biology	1-4
BIOL 402	Introduction to Pathology	3
BIOL 414	Life History and Reproductive Strategies	3
BIOL 430	Principles of Plant Physiology	3
BIOL 434	Endocrinology	3
BIOL 451	Plant Evolution and Phylogeny	4
BIOL 454	Plant Anatomy	4
BIOL 455	Bryophyte and Lichen Biodiversity	3
BIOL 456	Principles of Mycology	3
BIOL 457	Herpetology	2
BIOL 458	Ornithology	2

BIOL 458L	Ornithology Laboratory	1
BIOL 459	Mammalogy	2
BIOL 459L	Mammalogy Laboratory	1
BIOL 462	Evolutionary Genetics	3
BIOL 465	Macroevolution	3
BIOL 471	Introductory Conservation Biology	3
BIOL 472	Community Ecology	3
BIOL 474	Plant Ecology	3
BIOL 476	Functional Ecology	3
BIOL 486	Aquatic Ecology	3
BIOL 486L	Aquatic Ecology Laboratory	1
BIOL 487	Microbial Ecology	3
BIOL 488	Identification of Aquatic Organisms	1
BIOL 489	Population Ecology	3
BIOL 490	Independent Study	1
BIOL 491	Undergraduate Teaching Experience	1-2
BIOL 494	Biology Internship	1-3
BIOL 495	Undergraduate Seminar	1-3
BIOL 498	Cooperative Education	R
BIOL 499	Undergraduate Research Experience	1-3

The department and majors require submission of Graduate Record Examination (GRE) aptitude test scores. Subject area GRE scores are recommended. International students whose native language is other than English must also submit TOEFL or IELTS scores with their application.

Students who are enrolled in the interdepartmental graduate majors with EEOB affiliation are required to participate in departmental seminars, to participate in research activities, and to show adequate progress and professional development while pursuing their degree. For both the M.S. and Ph.D. degrees, it is expected that research conducted by the student will culminate in the writing and presentation of a thesis or dissertation. Requirements and guidelines for study are provided by the Graduate College, the EEOB faculty, and the individual student's major professor and Program of Study Committee. General information about graduate study requirements can be found at the web site for the Graduate College and requirements for the interdepartmental majors can be found by following the links from the EEOB web site above. Although not a formal requirement, the EEOB faculty recommends that students pursuing the Ph.D. include teaching experience in their graduate training.

Graduate Study

The department offers graduate work leading to both Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees. EEOB graduate students major in one of several interdepartmental majors including Bioinformatics and Computational Biology, Ecology and Evolutionary Biology, Environmental Science, Genetics, Interdisciplinary Graduate Studies, Neuroscience, and Toxicology. The EEOB faculty members are active in the interdepartmental graduate majors and teach a wide range of graduate courses. Faculty research programs cover a wide range of specializations including physiology and physiological ecology; microbiology; animal behavior; evolutionary genetics of plants and animals; modeling of evolutionary and ecological processes; plant and animal systematics; neurobiology; developmental biology; aquatic and wetland ecology; functional, population, community, landscape, and ecosystem ecology; and conservation biology. For further information on faculty research interests check the EEOB web site (www.eeob.iastate.edu (<http://www.eeob.iastate.edu>)). Some EEOB faculty teach graduate courses at Iowa Lakeside Laboratory, Field Station courses are also available through the Gulf Coast Marine Laboratory and the Organization for Tropical Studies (see the Biology listing).

Prospective graduate students need a sound background in the physical and biological sciences, as well as in mathematics and English. Interested students should check the Graduate Program link from the EEOB web site for specific admission procedures and updates.