

# ECOLOGY AND EVOLUTIONARY BIOLOGY

## Interdepartmental Graduate Major

The Ecology and Evolutionary Biology (EEB) interdepartmental major is offered through ten departments -- Agronomy; Ecology, Evolution and Organismal Biology; Entomology; Genetics, Development and Cell Biology; Geological and Atmospheric Sciences; Horticulture; Mathematics; Natural Resource Ecology and Management; Plant Pathology; Statistics, and World Languages and Cultures. Faculty in these departments cooperate to offer courses and direct research leading to M.S. and Ph.D. degrees with a major in Ecology and Evolutionary Biology.

The EEB major is designed for students interested in the study of mechanisms controlling the composition, structure, and functional processes of ecological systems and the mechanisms that regulate the pattern and rate of evolutionary change within and among species. Applicants should have completed an undergraduate or master of science or arts degree in one of the biological, physical, or mathematical sciences. Applicants also should have taken undergraduate courses in both basic ecology and evolution.

The EEB curriculum includes a core course, seminar courses, and an extended field trip. Cooperating departments provide courses and research opportunities in the following areas:

- Conservation and Restoration Ecology;
- Environmental Statistics, Stochastic Modeling, and Quantitative Ecology and Evolution;
- Evolutionary Ecology;
- Landscape Ecology, Modeling, and Spatial Dynamics;
- Natural Resources Ecology and Management;
- Physiological and Behavioral Ecology;
- Population, Community, and Ecosystems Ecology;
- Population, Quantitative, and Evolutionary Genetics; and
- Systematics, biodiversity, and biogeography.

In addition, offerings are available in the ethics and practice of research in the biological sciences as well as in science communication (both written and oral).

Students majoring in EEB are trained for careers focused on basic or applied ecology and evolutionary biology in a variety of settings, including academia, government, industry, and private organizations. Graduates have a broad understanding of ecology and evolutionary biology, experience designing and conducting research, writing grant

proposals, and communicating effectively with scientific colleagues at meetings and through publications.

Information on admission procedures (<https://eeb.iastate.edu/admissions/>), academic requirements (<https://eeb.iastate.edu/academics/>), and faculty research areas (<https://www.eeb.iastate.edu/people/faculty/>) is available on the EEB website (<http://www.eeb.iastate.edu/>).

### Courses primarily for graduate students, open to qualified undergraduates:

#### EEB 5110: Conceptual Foundations in Ecology and Evolutionary Biology

Credits: 4.

Introduction to key figures and ideas that have shaped the development of ecology and evolutionary biology. Covers major developments in ecology and evolutionary biology at five levels of biological organization: Genome, Organism, Population, Community, and Ecosystem. Impacts of these developments on current approaches to investigation and argument formulation. Effects of technological advances on the direction of scientific investigations. Introduction to analytical skills important for critical thinking in ecology and evolutionary biology and the impact of accepted lines of scientific reasoning on the objectives and conduct of research, such as explanation and prediction, design of studies as experimentation, and structured or unstructured observation. (Typically Offered: Fall)

#### EEB 5850A: Extended Field Trip: Pre-Trip Lecture

Credits: 1. Contact Hours: Lecture 1.

Repeatable.

Extended field trip to study major terrestrial and aquatic ecosystems. Location and duration vary. Report required. (Typically Offered: Fall, Spring, Summer)

#### EEB 5850B: Extended Field Trip: Travel

Credits: 1. Repeatable.

Extended field trip to study major terrestrial and aquatic ecosystems. Location and duration vary. Report required. (Typically Offered: Fall, Spring, Summer)

#### EEB 5900: Special Topics

Credits: 1-3. Repeatable.

*Prereq: Instructor Permission for Course*

For students wishing to conduct in-depth study of a particular topic in ecology and evolutionary biology. (Typically Offered: Fall, Spring, Summer)

### Courses for graduate students:

**EEB 6980: Seminar**

Credits: 1. Contact Hours: Lecture 1.

Repeatable.

Reports and discussion of recent research and literature. (Typically

Offered: Fall, Spring)

**EEB 6990: Research**

Credits: 1-30. Repeatable.

*Prereq: Instructor Permission for Course*

Thesis and dissertation research. (Typically Offered: Fall, Spring, Summer)