

Biology: Ecological (BIOE)

BIOE 110. Intro to Environmental Health. 3 Credits.

n orientation to the field of environmental health and human interactions with the environment, including a survey of topics of environmental protection, food and water, wastewater processes, solid waste disposal, living and working environments, epidemiology of environmentally associated diseases, and pollution control policy. Current federal and state regulations are reviewed. This course does not meet the laboratory science requirement.

BIOE 192. Independent Study. 3 Credits.

Provides an opportunity for students to engage in directed research and study on an individual basis rather than in a formal class environment.

BIOE 370. General Ecology. 4 Credits.

Integrated principles of ecology with special emphasis on terrestrial ecosystems. Some attention directed to selected ecological methods and statistical evaluations via laboratory activities. Prerequisites: BIOB 160 or BIOB 101 and 102, or BIOO 220 and 221. Concurrent enrollment in BIOE 371 Lab is required.

BIOE 371. General Ecology Lab. 0 Credits.

Laboratory for BIOE 370. Laboratory exercises that include selected ecological methods and statistical evaluations. Concurrent enrollment in BIOE 370 is required. This course taken in conjunction with the lecture portion of the course (BIOE 370) meets the laboratory science requirement.

Course Fees: \$40.00

BIOE 410. Field Biology Methods. 4 Credits.

This course provides experience in using various ecological techniques to measure certain parameters of populations of organisms found in Montana. The course emphasizes careful observation and measurement and allows students to develop an understanding of using statistical methods and demographic data to interpret biological processes and population trends. The course will include such topics as using taxonomic keys, reviewing and evaluating technical literature, habitat surveys, population census methods and others. Prerequisite: BIOB 101 and 102 or BIOE 370 and 371 or BIOB 380 or consent of the instructor. Concurrent enrollment in BIOE 411 Lab is required.

BIOE 411. Field Biology Methods Lab. 0 Credits.

Laboratory for BIOE 410. Concurrent enrollment in BIOE 410 is required. This course taken in conjunction with the lecture portion of the course (BIOE 410) meets the laboratory science requirement.

BIOE 417. Ecological Methods. 3 Credits.

Study of methodologies used by ecologists to examine the environment. Laboratory and field procedures are stressed, together with review of associated ecological concepts. Prerequisite: Basic ecology course. Concurrent enrollment in BIOE 418 is required.

BIOE 418. Ecological Methods Lab. 0 Credits.

Laboratory for BIOE 417. Laboratory and field procedures provide practical experiences in applying ecological concepts to study of the environment. Concurrent enrollment in BIOE 417 is required. This course taken in conjunction with the lecture portion of the course (BIOE 417) meets the laboratory science requirement.

BIOE 428. Freshwater Ecology. 4 Credits.

This course will demonstrate and provide an opportunity for students to develop skills in selected techniques used in the examination, identification and classification of a wide variety of the freshwater organisms that live in Montana's aquatic systems. Extensive laboratory work and field trips are required. Prerequisites: BIOB 160 and 161 or BIOB 101 and 102 or approval of instructor. Concurrent enrollment in BIOE 429 is required.

BIOE 429. Freshwater Ecology Lab. 0 Credits.

Laboratory for BIOE 428. Concurrent enrollment in BIOE 428 is required. This course taken in conjunction with the lecture portion of the course (BIOE 428) meets the laboratory science requirement.

BIOE 440. Conservation Ecology. 3 Credits.

A course for biology majors and students who plan to take additional courses in biology. The objective of this course is to introduce students to the principles and concepts of conservation biology with emphases on biodiversity management (including genetic diversity), ecosystems, and populations. Socio-economic and political factors related to conservation are discussed as well. Prerequisite: BIOE 370/371 General Ecology Lecture and Lab.

BIOE 443. Restoration Ecology. 3 Credits.

A course for biology majors and students who plan to take additional courses in biology. The study of restoration ecology is the description and quantification of departures from characteristic ecosystem states. The science seeks to identify drivers of the system and to move those systems back to a less disturbed condition. As an integrated subject, restoration ecology includes related disciplines. The course examines restoration in light of ecological theories such as metapopulation sustainability, assemblage groups, community heterogeneity, and nutrient cycling. In addition, both spatial and temporal dimensions are covered and the impact of climate variability on restoration efforts is addressed. Prerequisites: BIOE 370/371 General Ecology Lecture and Lab.

BIOE 451. Landscape Ecology- Principles. 3 Credits.

A course for biology majors and students who plan to take additional courses in biology. The study of landscape ecology expands on student knowledge acquired in the General Ecology course. The objective of this course is to introduce students to the transformative era of landscape ecology, including the Anthropocene. Students gain fundamental knowledge of landscapes as examined across spatial and temporal scales. Ecological dynamics such as disturbance, connectivity, range shifts, and epidemiology are examined in relation to the key roles they play in species richness and extinction, community structure, persistence at the landscape scale, and the spread of disease. The human effects on meta-ecosystems and its consequence on landscape function is explored. Included are discussions that focus on adaptation and future directions in the rapidly changing content that currently exists. Prerequisite: BIOE 370/371 General Ecology Lecture and Lab.

BIOE 491. Special Topic. 3 Credits.

Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number.

BIOE 492. Independent Study. 3 Credits.

Provides an opportunity for students to engage in directed research and study on an individual basis rather than in a formal class environment.