

# BIOLOGY - ECOLOGICAL (BIOE)

## **BIOE 172N - Introductory Ecology. 3 Credits.**

Offered spring. An introduction to ecological principles, stressing the structure and function of natural communities and examining human's role in these ecosystems.

Gen Ed Attributes: Natural Science

## **BIOE 342 - Field Ecology. 5 Credits.**

Offered summers only at Flathead Lake Biological Station. Prereq., BIOB 272 and one year of college math, including statistics. The principles and practices of the study of animals and plants in their natural environments, including human influences, with focus on the Crown of the Continent area of the Rock Mountains and taught entirely outdoors.

## **BIOE 370 - General Ecology. 3 Credits.**

Offered autumn. Prereq., BIOB 272. Analysis of the distribution and abundance of plants and animals. Includes individual, population and community-level processes (e.g., population growth and regulation, competition, predation, succession, nutrient cycling, energy flow and community organization).

## **BIOE 371 - General Ecology Lab (equivalent to 271). 2 Credits.**

Offered autumn. Prereq. or Coreq., BIOE 370 and either STAT 216 or WILD 240. Methods of describing and testing alternative explanations for patterns in nature. The use of scientific methodology in ecology.

## **BIOE 394 - Seminar/Workshop. 2 Credits.**

Offered autumn. Preparatory readings and attendance at seminars on a wide variety of ecological and wildlife management topics followed by critiques.

## **BIOE 400 - Aquatic Microbial Ecology. 3 Credits.**

Offered summer only at the Flathead Lake Biological Station. Prereq., BIOB 170N, CHMY 121N, and one year of college math, or consent of instructor. This course is an immersive (2 week) summer class offered to both undergraduate and graduate students with interests in microbiology and ecology. The course includes lectures, laboratories, and several field-based sampling trips. The course provides conceptual foundation and hands-on field and laboratory training in modern methods in aquatic microbial ecology. Level: Undergraduate-Graduate

## **BIOE 403 - Comparative Vertebrate Anatomy. 4 Credits.**

Offered autumn. Prereq., BIOB 260 or BIOB 272. Comparative study of vertebrate morphology using evolutionary transitions among species to explore design and function. Laboratory includes systematic study of organ systems and workshops in the dynamics of biomechanics and functional morphology. Level: Undergraduate-Graduate

## **BIOE 406 - Behavior & Evolution. 3 Credits.**

Offered autumn, odd-numbered years. Prereq., BIOB 272. Diversity of animal behavior in an evolutionary context including inheritance of behavior, diets, avoidance responses, mating systems and sexual selection, parental care, and evolution of animal groups and societies. Level: Undergraduate-Graduate

## **BIOE 409 - Behavior & Evolution Discussion. 1 Credit.**

Offered autumn, odd-numbered years. Co-req., BIOE 406. Diversity of animal behavior in an evolutionary context including inheritance of behavior, diets, avoidance responses, mating systems and sexual selection, parental care, and evolution of animal groups and societies. This discussion course complements the lectures of BIOE 406 by examining both landmark and recent literature. It also includes a written component. Level: Undergraduate-Graduate

## **BIOE 416 - Alpine Ecology. 3 Credits.**

Offered summers only at Flathead Lake Biological Station. Prereq., BIOE 342 or BIOE 370/371. Distribution, abundance and life cycles of plants and animals and their unique ecophysiological adaptations to life in the rigorous environments of the high mountains above the timberline, with emphasis on the Crown of the Continent area. Level: Undergraduate-Graduate

## **BIOE 428 - Freshwater Ecology. 5 Credits.**

Offered spring. Prereq., BIOB 160N. Physical and chemical dynamics of lakes and streams. Diversity, distribution and dynamics of freshwater organisms. Level: Undergraduate-Graduate

## **BIOE 439 - Stream Ecology. 3 Credits.**

Offered summers only at Flathead Lake Biological Station. Prereq., BIOE 342 or BIOE 370/371, CHMY 121N. The biota and biogeochemical processes of running waters with unifying principles and contemporary research approaches. Level: Undergraduate-Graduate

## **BIOE 440 - Conservation Ecology. 3 Credits.**

Offered summers only at Flathead Lake Biological Station. Prereq., BIOE 342 or BIOE 370/371. Concepts and approaches for sustaining biodiversity and other natural goods and services provided by terrestrial and aquatic systems. Level: Undergraduate-Graduate

## **BIOE 447 - Ecosystem Ecology. 3 Credits.**

Offered spring. Prereq., BIOB 160N or BIOB 170N or BIOO 105N or BIOE 172N or consent of instr. Introduction to systems thinking and the ecosystem concept, review of water and energy balances, carbon cycling, nutrient cycling, trophic dynamics, and species effects on ecosystem function across terrestrial and aquatic ecosystems. Level: Undergraduate

## **BIOE 448 - Terrestrial Plant Ecology. 4 Credits.**

Offered intermittently. Prereq. BIOB 272. The interrelationships between plants and plant communities and their natural environment. Level: Undergraduate-Graduate

## **BIOE 451 - Landscape Ecology. 3 Credits.**

Offered summers only at Flathead Lake Biological Station. Prereq., BIOE 342 or BIOE 370/371. Biophysical processes that determine landscape and ecosystem structure and function using remote sensing tools, geographic information systems and dynamic models to demonstrate landscape change. Level: Undergraduate-Graduate

## **BIOE 453 - Lake Ecology. 3 Credits.**

Offered summers only at Flathead Lake Biological Station. Prereq., BIOE 342 or BIOE 370 and BIOE 371, and CHMY 121N and CHMY 123. The physical, chemical and biological characteristics of lake ecosystems with an emphasis on nutrient cycling, food web interactions and water quality. Level: Undergraduate-Graduate

## **BIOE 458 - Forest and Fire Ecology. 3 Credits.**

Offered summers only at Flathead Lake Biological Station. Prereq., BIOE 342, or BIOE 370 and 371, or consent of instructor. Patterns, processes, and disturbances of northern Rocky Mountain forests in the context of principles of population, community, landscape, and ecosystem ecology with particular emphasis given to ecology of wildfire. Level: Undergraduate-Graduate

## **BIOE 485 - Plant Evolution. 3 Credits.**

Offered autumn, even-numbered years. Prereq., BIOB 272 and either BIOO 335 (preferred) or BIOO 320. Lecture, reading and discussion on the evolutionary processes that shape major patterns of plant diversity. Topics include but are not restricted to: local adaptation, floral and mating system evolution, polyploidy, genome evolution, and speciation. Level: Undergraduate-Graduate

**BIOE 490 - Advanced Undergrad Research. 1-10 Credits.**

(R-10) Offered every term. Prereq., junior or senior standing and consent of instr. Independent research under the direction of a faculty member. Graded credit/no credit. Level: Undergraduate

**BIOE 594 - Seminar. 1-4 Credits.**

(R-12) Offered intermittently. Prereq. graduate standing. Presentations by student, faculty, and associates on issues and topics in their field. Level: Graduate