

BIOLOGICAL SCIENCES

Programs Offered

- Biological Sciences (MS) (<https://catalog.uwp.edu/graduate-programs-policies/biological-sciences/biological-sciences-ms/>)

BIOS 503 | Microbiology | 4 cr

Advanced treatment of the structure, growth, and activities of microorganisms including medical microbiology, microbial pathogenesis and environmental microbiology. Three hour lecture; three-hour lab. Multi-career cross-listing: BIOS 303.

Prerequisites: BIOS 260.

Offered: Spring.

BIOS 505 | Principles of Ecology | 4 cr

Introduces the relations of plants and animals to their organic and inorganic environments emphasizing phenomena and causes of distribution and abundance at the population and community levels. Includes a field-oriented laboratory. Three-hour lecture; three-hour lab; field trips. Requires lab fees. Multi-career cross-listing: BIOS 305.

Prerequisites: BIOS 101, BIOS 102 and BIOS 210.

Offered: Fall (odd years).

BIOS 509 | Molecular Biology | 3 cr

Regulation of DNA, RNA, and protein synthesis and the control of the synthesis of other macromolecules. Three-hour lecture/discussion. Multi-career cross-listing: BIOS 309.

Prerequisites: BIOS 260; CHEM 322 and consent of instructor.

Offered: Spring.

BIOS 510 | Freshwater Ecology | 4 cr

Examines fundamental concepts in freshwater ecology, including the physical and chemical aspects of water and the significance of these properties for plants and animals at the individual, population and community levels. Includes experimental research and field surveys. Three-hour lecture; three-hour lab. Multi-career cross-listing: BIOS 310.

Prerequisites: BIOS 101, BIOS 102, BIOS 210 (concurrent enrollment) or equivalent, or consent of instructor.

Offered: Fall (even years).

BIOS 514 | Evolutionary Biology | 3 cr

Introduces basic mechanisms of evolutionary change including population genetics and speciation. Considers evolutionary history including phylogenetic estimation, the fossil record, and biogeography. Three-hour lecture. Multi-career cross-listing: BIOS 314.

Prerequisites: BIOS 101, BIOS 102, BIOS 260.

Offered: Spring.

BIOS 536 | Conservation Ecology | 3 cr

Examines the fundamental ecological and cultural drivers of the biodiversity crisis emphasizing proven strategies for maintaining and improving ecological diversity in our local and regional ecosystems. Three-hour lecture. Multi-career cross-listing: BIOS 336.

Prerequisites: BIOS 101, BIOS 102, and BIOS 210.

Offered: Spring (odd years).

BIOS 611 | Microbial Physiology and Diversity | 3 cr

Explores diverse molecular mechanisms of microbial physiology. Topics include microbial regulation of gene expression, metabolism, behavior, symbiosis, and applications to biotechnology. Three-hour lecture/discussion. Multi-career cross-listing: BIOS 411.

Prerequisites: BIOS 303 or consent of instructor.

BIOS 612 | Biometry | 4 cr

Covers statistical methods for ecological and evolutionary studies. Three-hour lecture; three-hour lab.

Prerequisites: BIOS 210 or equivalent; and consent of instructor.

Offered: Spring.

BIOS 614 | Molecular Evolution | 3 cr

Examines the evolution of nucleic acids and proteins. Five major topics: genetic variability; the causes of molecular evolution and the neutral theory; methods of detecting genetic variability; the use of molecular markers for estimating phylogeny; and the evolution of genome structure. Three-hour lecture/discussion. Multi-career cross-listing: BIOS 414.

Prerequisites: BIOS 309 or BIOS 314, or consent of instructor.

Offered: Occasionally.

BIOS 635 | Experimental Methods/Biochemistry Laboratory | 2 cr

Familiarizes students with the use of scientific instruments and techniques, and developing proficiency in the process of scientific investigation. Includes methods for analysis of biological macromolecules. Four-hour lab. Requires Fees. Multi-career cross-listing: BIOS 435, CHEM 308.

Prerequisites: CHEM 322 and consent of instructor.

Offered: Fall, Spring.

BIOS 636 | Conservation Ecology Lab | 2 cr

Provides practical experience applying the theories from general ecology and conservation ecology toward developing strategies for protecting and enhancing ecological diversity. Emphasizes mastering the multi-dimensional methods, tools and skills needed by modern conservation professionals. Multi-career cross-listing: BIOS 436.

Prerequisites: BIOS 305 or 336 or concurrent registration; or consent of instructor.

Offered: Spring (odd years).

BIOS 645 | Research Methods in Ecology and Evolution | 2 cr

Provides a capstone experience in applied field and laboratory research. Includes sampling natural and experimental populations and ecological communities coupled with multivariate statistical and analytical methods commonly used in ecology and evolutionary biology. One-hour lecture; three-hour lab. Requires lab fees. Multi-career cross-listing: BIOS 445.

Prerequisites: BIOS 305, BIOS 310 or BIOS 314 (or concurrent enrollment), and consent of instructor.

Offered: Fall.

BIOS 675 | Advanced Molecular Biology | 3 cr

In-depth coverage of selected research topics in molecular biology, including DNA replication, transcription, translation, and other current topics. Three-hour lecture.

Prerequisites: BIOS 260, BIOS 309 or BIOS 509, and consent of instructor.

Offered: Yearly.

BIOS 680 | Bioinformatics Programming | 3 cr

Provides practical experience in use of computer programming for development of relevant bioinformatics applications. Multi-career cross-listing: BIOS 480.

Prerequisites: BIOS 260 and consent of instructor.

Offered: Spring.

BIOS 685 | Advanced Molecular Techniques | 3 cr

Covers advanced molecular biology methods for the extraction/isolation and analysis of protein and nucleic acids. One-hour lecture; four-hours lab. Requires fees. Multi-career cross-listing: BIOS 485.

Prerequisites: BIOS 435; or concurrent registration and consent of instructor.

Offered: Fall.

BIOS 690 | Advanced Topics in Molecular Biology | 1-4 cr

Selected advanced topics in the molecular biology.

Prerequisites: BIOS 260, BIOS 309 or BIOS 509; and consent of instructor.

Offered: Occasionally.

BIOS 699 | Independent Study | 1-6 cr

Advanced study performed under the supervision of a regular faculty member. Suitability as an elective for the masters of applied molecular biology is determined on a case-by-case basis by the MAMB program committee.

Prerequisites: Consent of instructor and department chair.

Offered: Fall, Spring.