Biology: General (BIOB)

BIOB 101. Discover Biology. 4 Credits.
An introduction to biology, including chemical principles; cell structure and function; classification and characteristics of bacteria, protists, fungi, plants, and animals, and such ecological concepts as ecosystems, energy relationships, cycles, succession, and populations. Concurrent enrollment in BIOB 102 Lab is required.

BIOB 102. Discover Biology Laboratory. 0 Credits.
Laboratory for BIOB 101. Concurrent enrollment in BIOB 101 is required. This course taken in conjunction with the lecture portion of the course (BIOB 101) meets the laboratory science requirement.
Course Fees: $10.75

BIOB 160. Principles of Living Systems. 3 Credits.
This course is the introductory course for students enrolled in the Biology Program. Emphasis is on organisms at the cellular and molecular level. Cellular structure and function are discussed in addition to macromolecules, Cellular respiration, and photosynthesis. Cell division and genetics preface an introduction to inheritance. Evolutionary theory is introduced and students explore systematics and classification. Pre-requisites: None Concurrent enrollment in BIOB 161 lab is required.

BIOB 161. Principles Living Systems Lab. 1 Credit.
Laboratory studies in cell structure and function, respiration, photosynthesis, reproduction, genetics, tissues, embryology, and unicellular organisms. Must be taken concurrently with BIOB 160. This course taken in conjunction with the lecture portion of the course (BIOB 160) meets the laboratory science requirement.
Course Fees: $25.00

BIOB 170. Organismal Diversity&Evolution. 3 Credits.
A course for biology majors and minors, as well as students who plan to take additional courses in biology. The study of biodiversity and evolution expands the cellular and molecular knowledge students acquire in the Principles of Living Systems course (BIOB 160/161) to the organismal level. The objective of this course is to introduce students to the diversity of life and how it evolved. It provides students with fundamental knowledge of the structure, function, ecology, population biology, evolution, and diversity of Earth's organisms. Biological processes play key roles in the lives of humans and knowing how organisms are constructed and cope with life on Earth, as well as their relationships, is basic to an understanding of life. The course integrates topics that include anatomical complexity, physiology, development, environmental adaption and the evolutionary history of organisms. Prerequisites: BIOB 160/161: Principles of Living Systems Lecture and Lab. Corequisite: BIOB 171 Organismal Diversity and Evolution Lab.

BIOB 171. Organism Diversi&Evolution Lab. 1 Credit.
A course for biology majors and minors, as well as students who plan to take additional courses in biology. This course accompanies a course for biology majors and minors, as well as students who plan to take additional courses in biology. This course accompanies BIOB 170 Organismal Diversity and Evolution Lecture. The objective of the lab is to introduce students to the diversity of life and how it evolved. It provides students with fundamental knowledge of organismal structure and function of Earth's organisms. Integrated topics include anatomy, physiology, development, and mechanisms of evolution. Prerequisites: BIOB 160/161 Principles of Living Systems Lecture and Lab. Corequisite: BIOB 170 Organismal Diversity and Evolution Lecture.

BIOB 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.

BIOB 272. Genetics & Evolution. 4 Credits.
This course presents an introduction to the principles and mechanisms of inheritance and evolution. It includes analyses of variability at the level of individuals and populations. Included are discussions on changes in chromosomes and how those changes move through generations. Variability in populations, the units of evolution, is examined, especially in light of how differences can lead to molecular evolution, speciation, extinction. Emphasis is on discussions of current and relevant topics and examples. Includes an interactive lab.

BIOB 290. Undergraduate Research. 3 Credits.
Opportunity to perform undergraduate research under the counsel and guidance of departmental staff. Students will summarize research results in scientific papers and oral presentations. Prerequisite: consent of instructor. This course does meet the laboratory science requirement.

BIOB 292. 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.

BIOB 298. Cooperative Education. 1-12 Credits.
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Two semesters of attendance at Montana State University-Northern, approval of advisor, Dean of the College of Education, Arts & Sciences, and Nursing, and cooperative education coordinator. Pass/Fail only. This course does not meet the laboratory science requirement.

BIOB 420. Evolution. 4 Credits.
This integrative capstone course synthesizes principles from molecular, cellular, and organismal biology in an analysis of biological diversity in the context of evolutionary patterns and processes. Considered are the history of evolutionary thought, molecular evolution, population and quantitative genetics, selection and adaptation, as well as speciation. Emphasis is on how scientists' study and document change over time in natural populations, the methods used in testing evolutionary hypotheses, and how discovering evolutionary mechanisms at an organizational level may help illuminate processes in the natural world. Prerequisites: BIOB 485/486 Molecular Biology and Genetics Lecture and Lab.

BIOB 450. Molecular Biology Techniques. 3 Credits.
Introduction to such techniques of molecular biology as electrophoresis and chromatography as these methodologies are employed in the fields of cytology, molecular genetics, and physiology. Graduate credit requirements are described in the course syllabus. Concurrent enrollment in BIOB 451 Lab is required.

BIOB 451. Molecular Biology Technqus Lab. 0 Credits.
Laboratory for BIOB 450. Concurrent enrollment in BIOB 450 is required. This course taken in conjunction with the lecture portion of the course (BIOB 450) meets the laboratory science requirement.

BIOB 485. Molecular Biology and Genetics. 4 Credits.
Structure and function of cells emphasizing molecular aspects at cellular, organelle, and physiological levels. Molecular composition of cell organelles, structure of eukaryotic genomes including chromosomes, recombination, gene structure and transcription, gene control during development, hormonal influence on gene expression, chemical synthesis, and factors influencing inheritance patterns. Emphasis is on animal cells. Prerequisite: BIOB 160 or equivalent: one semester of college chemistry. Concurrent enrollment in BIOB 486 is required. If this class is taken at the 500 level, it is a graduate course and expectations for student performance are at an advanced level. Evaluation of course requirements is more rigorous than at the lower division section of this course.

BIOB 486. Molecular Biology Genetics Lab. 0 Credits.
Laboratory for BIOB 485. Concurrent enrollment in BIOB 485 is required. This course taken in conjunction with the lecture portion of the course (BIOB 485) meets the laboratory science requirement.
Course Fees: $40.00

BIOB 492. Independent Study. 3-4 Credits.
Provides an opportunity for students to engage in directed research and study on an individual basis rather than in a formal class environment.

BIOB 498. Cooperative Education. 1-12 Credits.
A planned and supervised work-learning experience in industry, business, government, or community service agencies related to the University program of study. Prerequisites: Cooperative Education 298 or Junior standing and approval of advisor, Dean of the College of Education, Arts & Sciences and Nursing, and cooperative education coordinator. Pass/Fail only. This course does not meet the laboratory science requirement.