

BIOLOGY-GENERAL (BIOB)

BIOB 101N - Discover Biology. 3.000 Credits.

Offered every term. Offered on Mountain Campus and at Missoula College. Contemporary exploration of the organization and complexity of living organisms and the systems in which they live. The central question of biology—relationship between form and function, acquisition and use of energy, and continuity between generations will be addressed through lectures and laboratory investigations. Credit not allowed toward a major in biology. Credit not allowed for both BIOB 101N and BIOB 160N. Gen Ed Attributes: Natural Science Lab Course (N)
Gen Ed Attributes: Natural Science Course (N)

BIOB 130N - Evolution and Society. 3 Credits.

Offered intermittently. A focus on relationships between evolutionary biology and important social issues, including the evolution of drug-resistant diseases, the construction and use of genetically-modified organism, human evolutionary biology, and experimental laboratory evolution.
Gen Ed Attributes: Natural Science Course (N)

BIOB 160N - Principles of Living Systems. 3 Credits.

Offered autumn and summer. Unifying principles of biological structure-function relationships at different levels of organization and complexity. Consideration of reproduction, genetics, development, evolution, ecosystems, as well as the inter-relationships of the human species to the rest of life. Students requiring a laboratory should also register for BIOB 161N. Credit not allowed for both BIOB 101N and 160N.
Gen Ed Attributes: Natural Science Course (N)

BIOB 161N - Princpls of Living Systems Lab. 1 Credit.

Offered autumn and summer. Prereq., or Coreq., BIOB 160N. Lab experiences illustrate biological principles underlying growth, reproduction, development, genetics and physiology, and are designed to give students practice in scientific methods of description, development of hypotheses, and testing. Gen Ed Attributes: Natural Science Lab Course (N)
Gen Ed Attributes: Natural Science Course (N)

BIOB 170N - Princpls Biological Diversity. 3 Credits.

Offered spring and summer. Survey of the diversity, evolution and ecology of life including prokaryotes, viruses, protista, fungi, plants and animals.
Gen Ed Attributes: Natural Science Course (N)

BIOB 171N - Princpls Biological Dvrsty Lab. 2 Credits.

Offered spring and summer. Coreq., BIOB 170N. The diversity of life including prokaryotes, viruses, protista, fungi, plants and animals including structure and evolutionary relationships. Gen Ed Attributes: Natural Science Lab Course (N)
Gen Ed Attributes: Natural Science Course (N)

BIOB 191 - Special Topics. 1-6 Credits.

Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

BIOB 191N - Special Topics. 1-6 Credits.

(R-6) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

BIOB 198 - Internship. 1-6 Credits.

Prereq., consent of Division. Extended classroom experience that provides practical application of learning during placement off campus. Prior approval must be obtained from the faculty supervisor and the Internship Services office. A maximum of 6 credits of Internship (198, 298, 398, 498) may count toward graduation.

BIOB 226N - Gen Science: Earth & Life Sci. 5.000 Credits.

Offered spring. Prereq., or coreq M 132 or M 135. Integrated lectures, laboratory exercises, and field trips on topics in earth and biological science for prospective elementary school teachers and the non-scientist. 2, two-hour laboratory sessions are required each week. Gen Ed Attributes: Natural Science Lab Course (N)
Gen Ed Attributes: Natural Science Course (N)

BIOB 260 - Cellular and Molecular Biology. 4.000 Credits.

Offered autumn and summer. Prereq. BIOB 160N (preferred) or BCH 110/111 (preferred) or B- or higher in BIOH 112; and either CHMY 123 or CHMY 143. Analytical exploration of the structure and function of the cell, the fundamental unit of life, with an emphasis on energy transformations and information flow. Topics include molecular building blocks, membranes, organelles, and mechanisms of replication, gene expression, metabolism, signal transduction, cell birth, cell death, and cell differentiation.

BIOB 272 - Genetics and Evolution. 4.000 Credits.

Offered spring. Prereq., either (BIOB 260) OR (both BIOB 160N and BIOB 170N) OR (just BIOB 160N with a B- or better); AND one of M 121, 122, 151, 162, or 171. Principles and mechanisms of inheritance and evolution. Population genetics, fossil record, macroevolution, speciation, extinction, systematics, molecular evolution.

BIOB 291 - Special Topics. 1-6 Credits.

(R-6) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

BIOB 295 - Student Teaching. 1-6 Credits.

(R-6) Offered intermittently. Offered at Missoula College. Organized student teaching.

BIOB 298 - Internship. 1-6 Credits.

Offered intermittently. Prereq., consent of Division. Extended classroom experience that provides practical application of learning during placement off campus. Prior approval must be obtained from the faculty supervisor and the Internship Services office. A maximum of 6 credits of Internship (198, 298, 398, 498) may count toward graduation.

BIOB 301 - Developmental Biology. 3 Credits.

Offered autumn. Prereq., BIOB 260; BIOB 272 recommended. An analysis of the origin and development of form and patterns in organisms, stressing the processes of growth and differentiation in plants and animals. Graded traditional letter grade only.

BIOB 375 - General Genetics. 3 Credits.

Offered spring. Prereq., BIOB 260 and 272. This course will focus on the molecular genetics of eukaryotes, with special emphasis on transmission genetics and gene structure and regulation.

BIOB 390 - Undergrad Research. 1-10 Credits.

(R-10) Offered every term. Prereq., consent of instr. Independent research under the direction of a faculty member. Graded credit/no credit.

BIOB 391 - Special Topics. 1-10 Credits.

(R-10) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

BIOB 392 - Independent Study. 1-10 Credits.

(R-10) Offered every term. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

BIOB 395 - Practicum. 1-12 Credits.**BIOB 398 - Internship. 1-6 Credits.**

Offered every term. Prereq., consent of the Division. Extended classroom experience that provides practical application of learning during placement off campus. Prior approval must be obtained from the faculty supervisor and the Internship Services office. A maximum of 6 credits of Internship (198, 298, 398, 498) may count toward graduation.

BIOB 410 - Immunology. 3 Credits.

Offered autumn. Prereq., BIOB 260. Current concepts and methods in Immunology.

BIOB 411 - Immunology Laboratory. 2 Credits.

Offered autumn. Prereq., or Coreq., BIOB 410. Modern techniques for analysis of immune responses.

BIOB 425 - Adv Cell & Molecular Biology. 3 Credits.

Offered spring. Prereq., BIOB 260 and 272; BCH 380 strongly recommended. Cell structure and function, cell cycle, cellular signaling, molecular basis of cancer, regulated cell death, membrane transport, organelle dynamics, cytoskeleton, cell adhesion, and the molecular basis of learning and memory.

BIOB 440 - Biological Electron Microscopy. 2 Credits.

Offered spring. Prereq., senior standing or consent of instr. Theory of electron microscopy, recent developments in transmission and scanning electron microscopy. Limited experience with the instruments.

BIOB 468 - Endocrinology. 3 Credits.

Offered alternate years. Prereq., BIOB 260 and 272. Integration of fundamental concepts of endocrinology (such as hormone release, hormone transport and receptor activation) into complex systems (such as reproduction).

BIOB 480 - Conservation Genetics. 3 Credits.

Offered intermittently. Prereq., BIOB 272. Genetic basis for solving biological problems in conservation including the genetics of small populations, the application of molecular genetic techniques to conservation biology and case studies of the application of genetics to conservation problems.

BIOB 483 - Phylogenetics and Evolution. 3 Credits.

Offered alternating spring semesters. Prereq., BIOB 260 and BIOB 272. Phylogenies, or evolutionary trees, provide insights into the history of life on Earth, including our own origins. This course focuses on the theoretical foundations of popular methods of reconstructing phylogenies from molecular sequence data and how to implement these methods with computational software for real data sets. Other current methods for testing evolutionary hypotheses with sequence data will also be introduced.

BIOB 486 - Genomics. 3 Credits.

Offered autumn. Prereq., BIOB 272. Principles and mechanisms of genome biology of animals and microbes, including genome function, evolution, and basic molecular and computational methodology used in genome biology.

BIOB 488 - Programming for Biology. 3 Credits.

Offered spring. Prereq., BIOB 486 or A- or higher in BIOB 272. An introduction to computer programming using genomic and evolutionary examples. No prior programming experience expected or required.

BIOB 490 - Adv 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.

BIOB 491 - Special Topics. 1-10 Credits.

(R-10) Offered intermittently. Prereq., consent of instr. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

BIOB 492 - Independent Study. 1-10 Credits.

Offered every term. Prereq., consent of instr. Independent work under the University omnibus option. See index.

BIOB 494 - Seminar in Biology. 1 Credit.

(R-3) Offered intermittently. Prereq., consent of instr. A review and discussion of current research. Topics vary.

BIOB 495 - Practicum. 1-12 Credits.**BIOB 498 - Internship. 1-6 Credits.**

Offered every term. Prereq., consent of the Division. Extended classroom experience that provides practical application of learning during placement off campus. Prior approval must be obtained from the faculty supervisor and the Internship Services office. A maximum of 6 credits of Internship (198, 298, 398, 498) may count toward graduation.

BIOB 499 - Undergraduate Thesis. 3-6 Credits.

(R-6) Offered every term. Prereq., senior standing and consent of instr. Preparation of a thesis or manuscript based on undergraduate research for presentation and/or publication. Student must give oral or poster presentation at the Biological Sciences Undergraduate Research Symposium or a scientific meeting. Graded credit/no credit.

BIOB 505 - OBE Core Course - Genetics and Evolution. 4 Credits.

Offered every other autumn. Prereq., graduate standing. Exploration of the fundamental concepts and approaches in evolutionary biology, functional biology and evolutionary genetics with evolutionary ecology woven throughout. Lectures and discussions, with an emphasis on primary literature, classic and contemporary. Level: Graduate

BIOB 506 - OBE Core Course - Ecology. 4 Credits.

Offered alternate years. Prereq., graduate standing. Broad overview of population and community ecology. Lectures and discussions, introducing theoretic foundations and exploring classic and more recent empirical tests of ecological theory with relevant topics in evolutionary ecology and functional biology woven throughout. Level: Graduate

BIOB 513 - Community Ecology. 3 Credits.

Offered alternate years. Prereq., BIOE 370 or equiv., consent of instr. Current concepts of species interactions, succession, food webs, temporal and spatial patterns and quantitative characterization of community structure. Level: Graduate

BIOB 518 - Plant-Consumer Interactions. 3 Credits.

Offered alternate years. Prereq., BIOE 370 or equiv. Ecology and evolution of plant-consumer interactions. Review of classic and contemporary literature on plant-consumer interactions. Level: Graduate

BIOB 522 - Rdgs Morph, Phys, and Zool. 1 Credit.

(R-8) Prereq., graduate standing and consent of instr. Review and discussion of current literature in the fields of morphology, physiology, and ecology. Level: Graduate

BIOB 524 - Physiological Plant Ecology. 3 Credits.

Offered alternate years. Prereq., BIOE 370 and BIOO 433. The physiological basis of plant adaptation and response to the environment. Level: Graduate

BIOB 541 - Electron Microscopy Lab. 1-6 Credits.

(R-6) Prereq. or coreq., BIOB 440 or equiv. Practical laboratory experience in the preparation of various samples and hands-on operation of the transmission and/or scanning electron microscopes. Level: Graduate

BIOB 547 - Exptl Mol/Cell/Chem Biol. 1 Credit.

(R-8) Offered every term. Prereq., graduate standing or consent of instr. Focus on experimental design, methods, and presentation of experimental results for graduate students in laboratories with a molecular, cellular or chemical biological focus. Level: Graduate

BIOB 551 - Environmental Field Study. 1-3 Credits.

(R-3) Prereq. or coreq., ENSC 540 or ENST 560. Same as ENSC 551. Designing, executing, and interpreting environmental studies. Project oriented. Level: Graduate

BIOB 561 - Population Genetics Seminar. 1-2 Credits.

(R-12) Prereq., consent of instr. or graduate standing. Current topics in population genetics, evolutionary biology, molecular evolution and related topics. Level: Graduate

BIOB 565 - Membrane Dynamics Res Sem. 1 Credit.

(R-8) Offered every term. Prereq., graduate standing or consent of instr. Focus on experimental design, methods, and presentation of experimental results for students conducting research in membrane cell biology, including membrane trafficking and intracellular signaling. Level: Graduate

BIOB 567 - Molecular Analysis of Development. 2 Credits.

(R-12) Offered alternate spring (UM campus, face-to-face). Prereq. Consent of Instructor. This course covers key topics in developmental biology through the detailed study of the primary literature. Seminar topics are updated for each year the course is offered and listed in syllabus. With help of the instructor, the students present each topic and lead a discussion each class period based on the assigned research paper and one or two review articles to provide background on the topic. CR/NCR only (no letter grade). Level: Graduate

BIOB 594 - Seminar in Biology. 1 Credit.

(R-6) Prereq., graduate standing or consent of instr. A review and discussion of current research in biology. Topics vary. Level: Graduate

BIOB 595 - Special Topics. 1-4 Credits.

(R-22) Prereq., graduate standing and consent of instr. Experimental offering of new courses by resident or visiting faculty. Level: Graduate

BIOB 596 - Independent Study. 1-8 Credits.

(R-8) Prereq., consent of instr. Credit for independent research project unrelated to thesis or dissertation. Level: Graduate

BIOB 597 - Research. 1-8 Credits.

(R-12) Prereq., consent of instr. Library work involved with preparation of a thesis or dissertation proposal. Level: Graduate

BIOB 598 - Internship. 1-8 Credits.

(R-8) Prereq., consent of the Division, graduate standing. Extended classroom experience that provides practical application of learning during placement off campus. Prior approval must be obtained from the faculty supervisor and the Internship Services office. Level: Graduate

BIOB 599 - Thesis. 1-10 Credits.

(R-10) Prereq., masters student in biology. Field and laboratory research on, and writing of, a student's master's thesis. Level: Graduate

BIOB 695 - Special Topics. 10 Credits.

(R-10) Prereq., graduate standing and consent of instr. Experimental offering of new courses by resident or visiting faculty. Level: Graduate

BIOB 699 - Dissertation. 1-10 Credits.

(R-20) Prereq., doctoral student in biology. Credit for field and laboratory research on, and writing of, a student's doctoral dissertation. Level: Graduate