BIOLOGY (BIOL)

Courses

BIOL-100 CONCEPTS OF BIOLOGY 4 Credits
This online course will serve as an introductory course for non-science majors. This course will cover the main biological principles and how these relate to daily life. Topics include cell biology, reproduction and genetics, evolution and ecology. Pre-requisite: Level C or higher: Core math ready (excluding 153P and 123P) or core math complete. See Course Placement Chart for equivalent courses and test scores.

BIOL-120 PLANTS AND PEOPLE 4 Credits
Fundamentals of plant growth and development are addressed through the study of useful plants. Current and historical uses of plants by cultures around the world with an emphasis on plant form and function, plant diversity and origin of crops. Pre-requisites: Level C or higher: Core math ready (excluding 153P and 123P) or core math complete. See Course Placement Chart for equivalent courses and test scores.

BIOL-123 BIOLOGY IN FILM 3 Credits
This introductory science course for non-majors will explore the scientific method and biological concepts as they are depicted in popular films. Topics will include genetic diseases, biotechnology, infectious diseases, and bioethics. Requisites: Completion of, or current enrollment in, ENGL-102 or ENGL-109.

BIOL-175 HUMAN BIOLOGY 4 Credits
Form and function of life using the human organism as the specific example. Topics will include: life, evolution, the human organism in the environment, human ecology, human systems including organization, support and movement, processing and transport, integration and coordination, and reproduction and development. Three hours of lecture and one 3-hour laboratory per week. Pre-requisite: MATH-015, MTHPT-010 or MTHPT-012 with a grade of 'C' or better.

BIOL-181 ECOLOGY, EVOLUTION, DIVERSITY OF LIFE 4 Credits
An introductory course for science majors examining organismal biology in an evolutionary context, including biodiversity and ecology, structure and function, reproduction, physiology, and morphology of viruses, bacteria, protists, fungi, plants, and animals. Three hours of lecture and one 3-hour laboratory period per week. Lab fee. Pre-requisite: Level C or higher: Core math ready (excluding 153P and 123P) or core math complete. See Course Placement Chart for equivalent courses and test scores.

BIOL-182 CONCEPTS IN CELLULAR MECHANISMS 4 Credits
An introductory course for science majors with emphases on chemical, physical, and biological characteristics of the living organism and its metabolism. Students will acquire a general understanding of the chemistry of life, basic cell structure and function, metabolism, and genetics. Three hours of lecture and one 3-hour laboratory per week. Pre-requisites: CHEM-111 or CHEM-105 with a grade of C or better.

BIOL-190 DIRECTED STUDY IN BIOLOGY 1-12 Credits

BIOL-192 SPECIAL TOPICS IN BIOLOGY 1-12 Credits

BIOL-195 PRACTICUM IN BIOLOGY 1-12 Credits

BIOL-213 PLANT AND ANIMAL FORM AND FUNCTION 4 Credits
This course examines the comparative anatomy and physiology of animals and plants in an evolutionary context. Pre-requisite: A grade of 'C' or better in BIOL-182 and CHEM-111. Lab fee.

BIOL-216 FIELD EXPERIENCE IN BIOLOGY 4 Credits
This class will teach students field techniques used in population and community ecology. The course includes a mandatory 5-7 day fieldtrip in which students visit different study sites and ecosystems in the inland northwest. Students will learn about the natural history of the study sites, the plant and animal communities present, and how to collect meaningful data from these sites. After the fieldtrip, students will learn how to analyze their data and write a scientific research paper during the classroom portion of the course. Pre-requisite: BIOL-181 with a grade of C or better.

BIOL-227 HUMAN ANATOMY AND PHYSIOLOGY I 4 Credits
The first semester of a two semester sequence in Human Anatomy and Physiology. The course focuses on principles of cytology, biochemistry and histology and the following body systems: integumentary, skeletal, muscular, and nervous. Three hours of lecture and one three-hour laboratory per week. Pre-requisite: Level C or higher: Core math ready (excluding 153P and 123P) or core math complete. See Course Placement Chart for equivalent courses and test scores.

BIOL-228 HUMAN ANATOMY AND PHYSIOLOGY II 4 Credits
The second semester of a two semester sequence in Human Anatomy & Physiology. The course focuses on principles of cytology, biochemistry and histology and the following body systems: endocrine, cardiovascular, immunity, respiratory, digestion, urinary, and reproductive. Three hours of lecture and one three-hour laboratory per week. Pre-requisite: BIOL-227 with a grade of 'C' or better. Co-requisites: CHEM-105 or CHEM-111.

BIOL-250 MICROBIOLOGY FOR HEALTH SCIENCES 4 Credits
A study of microorganisms causing infectious diseases and contamination of foods. Focus will be on general structure and function of microorganisms, growth, and control through sterilization and antimicrobials. Lab will emphasize growth, identification and aseptic technique. Course does not satisfy requirement for Biology major. Four hours of lecture and one 3-hour laboratory period per week. Pre-requisites: CHEM-105 and Math Level C or higher. Core math ready (excluding 153P and 123P) or core math complete. See Course Placement Chart for equivalent courses and test scores.

BIOL-280 PRE-MEDICAL SEMINAR 1 Credit
A seminar-based course designed to introduce students to the various graduate medical programs, including: physician (MD and DO), dentistry, veterinary, podiatry, optometry, pharmacy, physical and occupational therapy, and physician assistant. Students will discuss current healthcare issues, explore health programs and institutions, and be provided formal assistance as they prepare for programs in medicine. Students will develop strategies for admission, writing personal statements, participating in mock interviews, determining plans for letters of recommendation, and discussing individual credentials for these programs. One hour lecture per week with additional time to be determined by individual needs. Pre-requisites: A grade of 'C' or better in ENGL-101 or satisfactory placement and Math Level C or higher: Core math ready (excluding 153P and 123P) or core math complete. See Course Placement Chart for equivalent courses and test scores. Graded P/F only.

BIOL-290 DIRECTED STUDY IN BIOLOGY 1-4 Credits

BIOL-291 WORKSHOP IN BIOLOGY 1-4 Credits

BIOL-292 SPECIAL TOPICS IN BIOLOGY 1-4 Credits

BIOL-295 PRACTICUM IN BIOLOGY 1-2 Credits

BIOL-299 RESEARCH ASSISTANTSHIP 1-12 Credits

BIOL-312 PATHOPHYSIOLOGY 3 Credits
The physiological basis of disease. Three hours of lecture per week. Pre-requisites: A grade of 'C' or better in the BIOL-228 or instructor's approval. Recommended Co-requisite: BIOL-314.

BIOL-314 PATHOPHYSIOLOGY RECITATION 1 Credit
Designed to grow student learning and increase proficiency at critical thinking and problem solving. Concurrent enrollment in BIOL-312 is required. Graded P/F only.

BIOL-331 ECOLOGY 3 Credits
This class will cover ecological principles as they relate to both plant and animal systems. Topics include the physiological adaptations of organisms to their environment, population ecology and the evolution of different life history strategies, and ecological principles related to species interactions and community dynamics. Three hours of lecture per week. Pre-requisites: BIOL-181 and BIOL-182 with a grade of C or better.

BIOL-341 GENETICS 4 Credits
An introduction to genetic mechanisms in animals, plants and microorganisms. Areas covered include transmission genetics and molecular genetics. Three hours of lecture and one 3-hour lab per week. This course is writing integrated. Pre-requisites: BIOL-182 and CHEM-112 with a grade of C or better.

BIOL-355 GENERAL MICROBIOLOGY 4 Credits
The structure, physiology, genetics, and metabolism of microorganisms with emphasis on their diversity and ecology. Microorganisms and their relationship to industry, environment, and disease. Lab will emphasize growth, identification, and laboratory design. Three hours of lecture and one 3-hour laboratory per week. Pre-requisite: BIOL-182 with a grade of 'C' or better.

BIOL-362 CELLULAR AND MOLECULAR BIOLOGY 4 Credits
A comprehensive study of cell structure and function with emphasis on cell organelles and the cellular membrane. Included in this course is a detailed examination of cellular metabolism, the cell cycle, regulation of cell growth and division, cell signaling, and gene expression. Recitation includes a thorough survey of cellular and molecular techniques along with a weekly literature review exploring the use of these techniques. Three hours of lecture and one 3-hour recitation per week. Prerequisite: BIOL-182 with a grade of 'C' or better.

BIOL-372 COMPUTATIONAL BIOSTATISTICS 4 Credits
An integrative biology course that incorporates aspects of biology, statistics, and bioinformatics. The course is designed to familiarize students with experimental design and applied biological statistics using the R statistical environment and other freely available analysis packages. Students will apply parametric and non-parametric analytical methods to various forms of biological data, including phenotypic and sequence data. Three hours of lecture and one three-hour laboratory per week. Pre-requisite: BIOL-182 with a grade of 'C' or better.

BIOL-390 DIRECTED STUDY IN BIOLOGY 1-4 Credits

BIOL-392 SPECIAL TOPICS IN BIOLOGY 1-4 Credits

BIOL-394 INTERNSHIP IN BIOLOGY 1-12 Credits

BIOL-395 PRACTICUM IN BIOLOGY 1-12 Credits

BIOL-399 RESEARCH ASSISTANTSHIP 1-12 Credits

BIOL-401 MAMMALOGY 4 Credits
The study of mammals, their evolution, natural history, identification of regional mammals, and field techniques for scientific study. The course includes anatomy, phylogenetics, systematics, ecology, practical field and laboratory techniques. Three hours of lecture and one 3-hour laboratory period per week. There will be at least one weekend field trip. Pre-requisite: BIOL-181 and BIOL-182, with a grade of C or better.

BIOL-402 ORNITHOLOGY 4 Credits
The study of birds, their evolution, natural history, identification of regional birds by sight and sound, and field techniques for scientific study. The course includes anatomy, phylogenetics, systematics, ecology, practical field and laboratory techniques. Three hours of lecture and one 3-hour laboratory period per week. There will be at least one weekend field trip. Pre-requisite: BIOL-181 and BIOL-182 with a grade of C or better.

BIOL-404 ENTOMOLOGY 4 Credits
The study of insects, their evolution, natural history, identification of dominant insects and field techniques for scientific study. Includes anatomy, physiology, phylogenetics, systematics, ecology, practical field and laboratory techniques. Three hours of lecture and one 3-hour laboratory period per week. Pre-requisite: BIOL-181 and BIOL-182 with a grade of C or better.

BIOL-420 HUMAN DISSECTION 2 Credits
Students dissect and identify gross anatomy of human cadavers under the supervision of the instructor. Pre-requisite: a grade of 'C' or better in BIOL-228.

BIOL-430 HUMAN ANATOMY AND DISSECTION 3 Credits
Exploration of advanced concepts of human anatomy through instruction, dissection, and demonstration. Learning outcomes will include dissection techniques, human organ system anatomy, and effective teaching skills. Course includes one hour of lecture/demonstration per week as well as 5 to 6 hours of individualized lab time throughout the week. Pre-requisite: 'C' or better in BIOL-228.

BIOL-443 IMMUNOLOGY 3 Credits
Survey of Immunology and Immunological principles. Concepts include development of the immune system, innate versus acquired immunity, immunoglobulin structure and genetics, antigen-antibody reactions, the major histocompatibility complex and antigen presentation, T cell receptors (genetics, structure, selection), T- and B-cell activation and effector functions, cytokines, adhesion molecules, phagocytic cell function, immune responses to infectious organisms and tumors, autoimmune diseases, and immunodeficiency. Three hours of lecture per week. Pre-requisite: BIOL-228, BIOL-250, BIOL-355, or BIOL-362 with a grade of C or better.

BIOL-450 FIELD BOTANY 4 Credits
This class will use the fields of plant systematics and ecology to examine our regional flora. Within the field of plant systematics, we will survey the plant kingdom, from non-vascular plants to angiosperms, with an emphasis on evolutionary relationships and identification of regional plants. Ecological issues related to our regional plant communities will be examined through readings and discussions of the primary literature. There will be one or two required all day field trips. Pre-requisite: BIOL-181 and BIOL-182 with a grade of C or better.

BIOL-455 MEDICAL MICROBIOLOGY 3 Credits
Course applies basic principles of Microbiology to aspects of infectious disease. Topics include etiology, epidemiology, pathogenesis, and symptomology of bacterial, fungal, and viral diseases of humans as well as treatment and prevention. A survey of bacterial, viral, and fungal pathogens serves as the foundation for the course. Pre-requisite: BIOL-355 with a grade of C or better.

BIOL-460 EVOLUTION 4 Credits
Every area of biological investigation, from the study of biodiversity and consequences of environmental change to the origin and diversification of protein coding genes and variation in developmental processes, is informed by the principles of evolutionary biology. The field of evolutionary biology is one of the most dynamic areas in biology with application to understanding disease dynamics, human biology, agriculture, and the conservation of biological diversity. The study of evolution encompasses both the description and analysis of historical patterns in the biological diversity of life as well as the conceptual and mathematical frameworks that describes the processes causing evolutionary change through time. In this course, we develop the basic mathematical frameworks for population and quantitative genetics and examine evolution at the molecular and phenotypic levels. Throughout the course we draw extensively from the primary literature to illustrate the amazing diversity of life around us and the evolutionary processes that have shaped this diversity over hundreds of millions of years. There will be approximately 3 hours of lecture and 1 hour of literature review per week. Prerequisite: BIOL-341 or instructor's consent.

BIOL-480 PRE-MEDICAL SEMINAR 2 Credits
A seminar-based course designed to continue the work done in BIOL 280. This course will emphasize a preparation for applications to medical programs and resulting interviews. Students will continue to explore current events in health care and/or medical science. Discussion of individual credentials for medical programs, planning for letters of recommendation, and self-directed professional job shadowing will be included. One hour lecture per week with additional time to be determined by individual needs. Course does not meet senior elective requirement. Pre-requisite: Successful completion of BIOL-280. Graded P/F only.

BIOL-485 TEACHING ASSISTANT IN BIOLOGY 1-2 Credits
Students will learn to organize and prepare laboratory sessions to be taught in biology courses. Students may also gain experience teaching laboratory concepts to biology students.

BIOL-490 DIRECTED STUDY IN BIOLOGY 1-4 Credits

BIOL-491 WORKSHOP IN BIOLOGY 1-4 Credits

BIOL-492 SPECIAL TOPICS IN BIOLOGY 1-4 Credits

BIOL-494 INTERNSHIP IN BIOLOGY 1-12 Credits

BIOL-495 PRACTICUM IN BIOLOGY 1-2 Credits

BIOL-499 SENIOR PROJECT AND SEMINAR IN BIOLOGY 1-3 Credits
Students will conduct and communicate the results of a research project in the Natural Sciences Division. Topics may include the historical, philosophical, cultural and environmental aspects, and the processes of natural science. Requirements of students include satisfactory oral presentation and defense of their research and submission of a written report approved by their advisor to the Natural Sciences Division. Pre-requisite: NS-398.