

BIOLOGY (BIOL)

- 120-4 General Biology. (3-2)** Detailed study of a typical cell, cell phenomena, mitosis, meiosis, nucleic acids, protein synthesis, basic principles of genetics, photosynthesis, and respiration. A survey of the Plant Kingdom is covered. Much of laboratory is devoted to the anatomy and physiology of flowering plants, while representatives of the lower plant phyla are studied with emphasis on life histories. Substantial microscopic observation required. Lab fee \$10. Course fee \$10.
- 121-4 General Biology. (3-2)** The major animal phyla and vertebrate systems are surveyed, with representative examples and dissection of the frog stressed in the laboratory. Substantial microscopic observation required. Lab fee \$10. Course fee \$10.
- 210-3 Essential Elements of Biology. (2-3)** The study of morphology, anatomy, growth, life cycles, ecology, behavior, classification, and uses of organisms. Human systems and tissues and mechanisms of heredity and metabolism will be introduced. The laboratory will give experience in the use of the microscope, dissecting procedures, and problem solving. Prerequisite: 8 hours laboratory science. Lab fee \$10.
- 219-4 Human Anatomy and Physiology. (3-2)** Basic physiological principles and their applications in the study of the skeletal, muscular, and nervous systems are emphasized. Substantial microscopic observation required. Lab fee \$10.
- 220-4 Human Anatomy and Physiology. (3-2)** A continuation of the integrated study of human anatomy and physiology. Emphasis is on the various organ systems not studied in BIOL 219. Substantial microscopic observation required. Prerequisite: BIOL 219 or approval by the department head. Lab fee \$10.
- 302-4 Histology. (3-3)** Introduction to cellular ultrastructure. Study of vertebrate tissues and their arrangement in various organs. Prerequisites: BIOL 121 or approval by the department head. Lab fee \$10.
- 303-4 Heredity. (3-3)** The fundamental principles of inheritance and their application to plants and animals including humans. Laboratory stresses genetic variables and manipulation of genetic traits. Prerequisite: 12 hours BIOL. Lab fee \$10.
- 304-4 Survey of the Vertebrates. (3-3)** An introduction to the phylogeny, systematics, distribution, ecology, reproduction, and growth of organisms in the classes of vertebrates, emphasizing local and regional forms. Laboratory: identification and methods of collection and preservation of specimens. Prerequisites: BIOL 120, 121. Lab fee \$10.
- 306-4 Comparative Vertebrate Anatomy. (3-4)** The morphology, physiology, and phylogeny of the organ systems of vertebrates. Laboratory study of representative vertebrates. Prerequisite: 8 hours of biology. Lab fee \$10.
- 307-4 Microbiology. (3-4)** Study of micro-organisms; characteristics, physiology, genetics, and their interrelations with humans. Substantial microscopic observation required. Prerequisites: 2 semesters of biology and 1 semester of chemistry or approval by the department head. Lab fee \$15.
- 313-4 Molecular Biology. (3-4)** Fundamentals of gene expression, gene regulation, DNA metabolism and nucleic acid structure, recombinant DNA techniques and protein structure. Prerequisites: BIOL 303 and CHEM 201.
- 315-4 Plant Taxonomy. (3-3)** Principles of plant taxonomy. Field and laboratory studies of common Texas wild flowers and trees with emphasis on identification, collection, and preparation of herbarium specimens.

Prerequisites: 7 hours of BIOL, junior classification, or department head approval. Lab fee \$10.

- 320-4 Plant Pathology. (3-3)** Study of the various types of plant diseases and specific examples of each type. Emphasis upon identification, host-parasite interactions, pathogen dissemination, and control methods. Prerequisites: BIOL 120, 307 or approval by department head. Lab fee \$10.
- 336-4 Plant Physiology. (3-3)** A study of physiology of green plants with emphasis on nitrogen metabolism, respiration, mineral nutrition, photosynthesis, and growth. Prerequisites: 1 semester of BIOL with plant emphasis and one semester of organic chemistry. Lab fee \$10.
- 340-3 Introduction to Marine Biology. (3-0)** General considerations of the marine environment including habitats, biota, zoogeography, and humans' impact. Prerequisites: BIOL 120, 121.
- 349-4 Invertebrate Zoology. (3-3)** The study of the morphology, taxonomy, biology, and phylogeny of the invertebrate animals, exclusive of the Insecta. Prerequisites: 12 hours of BIOL or approval by the department head. Lab fee \$10.
- 385-4 Immunology. (3-3)** Emphasis on the basic concepts of humoral and cell-mediated immunity. Laboratory: current techniques in experimental immunology and serology. Prerequisites: BIOL 307 and one year of CHEM or approval by the department head. Lab fee \$10.
- 395-4 Pathogenic Microbiology. (3-3)** A study of the disease-producing capacities of various microorganisms with emphasis on the diagnostic procedure of isolation and identification. Prerequisite: BIOL 307 with minimum grade of "C" or approval by the department head. Lab fee \$10.
- 401-4 Ecology. (3-3)** Plants and animals in relation to their environment. Prerequisites: 2 semesters of BIOL or approval by the department head. Lab fee \$10.
- 441-4 Limnology. (3-3)** A study of aquatic communities and the physiochemical factors affecting the productivity of ponds, reservoirs, and streams. Experience in hydrographic survey morphometry. Prerequisites: 1 year of CHEM and 12 hours of BIOL, including BIOL 120, 121. Lab fee \$10.
- 442-3 Marine Ecology. (3-0)** Study of marine ecosystems including physical, chemical, and biological factors which influence the distribution of marine organisms. Prerequisites: BIOL 120, 121, 401 or approval by the department head.
- 445-4 Parasitology. (3-3)** A survey of the various invertebrate parasites of medical importance with particular reference to epidemiology and the host-parasite relationship. Prerequisites: 12 hours of BIOL or approval by the department head. Lab fee \$10.
- 460-4/ 461-4 Animal Physiology. (3-3)** Basic principles of life processes and how they apply to the integrated functions of organ systems. Functions of the various organ systems of animals are studied. Prerequisites: 12 hours of BIOL and one semester of organic chemistry with laboratory. Lab fee \$10 per course.
- 470-3 Analysis of Biological Principles. (2-4)** The comparative study of the morphology, anatomy, genetics, metabolism, reproduction, and the phylogenetic and ecological relationships of organisms. Prerequisite: 8 hours advanced BIOL or approval of department head. Lab fee \$10.
- 474-3 Biochemistry I. (3-0)** An introduction to the basic principles of biological chemistry and to fundamental processes of plants, animals and microorganisms. Credit for both BIOL 474 and CHEM 474 will not be awarded. Prerequisite: 1 semester of organic chemistry (2 semesters

recommended) and 8 hours of biological science or approval of department head.

- 475-3 Biochemistry II. (3-0)** A detailed survey of intermediary metabolism. The metabolism of carbohydrates, lipids, proteins and nucleic acids, and the regulation of metabolism are emphasized. Credit for both BIOL 475 and CHEM 475 will not be awarded. Prerequisites: BIOL/CHEM 474, or approval of department head.
- 478-3 Biochemistry Lab. (1-5)** Principles and applications of basic methodology for the isolation, purification, characterization, and quantitative determination of biologically important compounds. Credit for both BIOL 478 and CHEM 478 will not be awarded. Prerequisite: BIOL 474 or CHEM 474 or concurrent enrollment, or approval of department head. Lab fee, \$15.
- 485-v Seminar. (Credit variable)** Survey of biological literature, biological instrumentation, history of biology, and current trends in biological sciences. Grading in this course is satisfactory/unsatisfactory. Prerequisite: 12 hours BIOL and approval of department head.
- 486-v Biology Problems. (Credit variable)** A course open by invitation to capable juniors and seniors wishing to pursue a biological problem. Students are permitted and encouraged to work independently under the guidance of an instructor. May be repeated for credit, subject to the approval by the department head. Prerequisites: 2 years of BIOL, the ability to do independent work, and approval of department head. Lab fee \$10.
- 490-v Special Topics. (Credit variable)** Deals with selected topics in biology. May be repeated for credit when topics vary. Prerequisite: approval of department head.
- 502-3 Ecological Plant Physiology. (3-0)** The interrelations of plants and their environments with emphasis on those which are subject to manipulation. Critical processes such as dormancy, photosynthesis, nutrition, reproduction, and water relations and their interactions in survival and biomass production. Prerequisite: BIOL 336 or approval by the department head.
- 509-3 Cellular Biology. (3-0)** A study of cellular morphology and function at the ultrastructural and molecular level. Prerequisites: Organic chemistry and 18 hours of BIOL or approval by the department head.
- 510-3 Epidemiology of Zoonoses. (3-0)** The study of infections or infectious diseases transmissible under natural conditions between animals and humans. Prerequisites: BIOL 307 and 445 or approval by the department head.
- 520-3 Environmental Biology. (3-0)** Study of humans' interactions with plants and animals within ecosystems to include environmental issues; conservation, utilization, and wise management of natural resources.
- 521-3 The Aquatic Environment. (3-0)** A study of the basic principles involved in the ecology of the aquatic community including biotic and abiotic relationships. Emphasis placed on the sources of water contamination to include the effects of the contamination upon the changes in water chemistry and their possible biological implication. Prerequisite: 18 hours of BIOL and 2 semesters of CHEM or approval by the department head.
- 530-3 Development of Modern Biological Concepts. (3-0)** A study of the development of biological concepts and their impact upon science and society. Biographical as well as contemporary readings will be involved. Prerequisite: Graduate classification or approval by the department head.
- 531-3 Conservation Biology. (3-0)** Principles of conservation biology. Study of how evolutionary change, dynamic ecology, and humans influence

conservation of living organisms. Topics include population genetics, ecosystem conservation, habitat fragmentation, and practical applications of the sciences to conservation problems. Prerequisites: BIOL 303 and 401 or approval of department head.

585-1 Seminar. (1-0) A graduate seminar course providing the opportunity for students to lead discussions on a current topic in Biology. Topics vary according to interests of faculty and/or students. May be repeated for credit as topics vary. Prerequisite: 12 hours of biology.

586-v Biological Problems. (Credit variable.) Independent research under the supervision of an instructor. A formal report will be submitted to the instructor. A student may not count more than 6 hours of biological problems toward a degree. Lab fee \$10.

588-3 Thesis. (3-0) Scheduled when the student is ready to begin the thesis. No credit until thesis is completed. Prerequisite: BIOL 598 and consent of major professor.

590-3 Special Topics. (3-0) Selected topics in an identified area of biology, biochemistry or biotechnology. May be repeated for credit as topics vary. Prerequisites: 12 hours of biology and 8 hours of chemistry or approval of department head.

598-3 Research Design and Analysis. (3-0) Statistical principles and techniques applicable to the procurement, analysis, and evaluation of quantitative data. Prerequisite: MATH 107 or approval by the department head.

599-3 Practicum, Field Problem, or Internship. (3-0) Supervised practice in specialized laboratory or professional settings. Prerequisites: 12 hours of biology and 8 hours chemistry or approval of department head.

