

BIOLOGY (BIO)

BIO 501 ENVIRONMENTAL SCIENCE (3 Hours)

An introductory course for non-major graduate students dealing with the science of the environment and man's relationships through political, social, economic, and ethical processes.

BIO 506 HUMAN ENVIRONMENT & NATURL SYS (3 Hours)

Emphasis placed on fundamental problems that confront man from day to day. Topics among others for discussion are ecology, population, energy, food, transportation and land pollution.

BIO 507 BIOLOGY FOR ELEMENTARY TEACHER (3 Hours)

Prerequisite: None.

The application of biological procedures and techniques at the elementary school level with emphasis on selected topics in biology.

BIO 509 GENERAL GENETICS (3 Hours)

Prerequisite: ; Bio 318.

A study of the principal concepts of heredity to include the application of classical and modern genetics.

BIO 511 BIostatISTICS (3 Hours)

This course is designed for students in biological sciences with no advanced training in mathematics. Basic concepts in statistical methods and experimental techniques and their general applicability in biology will be stressed.

BIO 512 NATURAL RESOURCES & CONS (3 Hours)

A study of our natural resources with emphasis on their origin, properties, use and misuse and good conservation practices.

BIO 513 HUMAN NUTRITION (3 Hours)

Prerequisite: Bio 233 or 218 and CHEM 241.

Review of nutrient sources, requirements and deficiency diseases of man. Emphasis on nutritional metabolism under normal and pathological conditions, and current research.

BIO 515 MOLECULAR BIOLOGY (3 Hours)

Study of the structure, synthesis, isolation and interactions of macromolecules of biological interest.

BIO 517 MAMMALIAN PHYSIOLOGY (3 Hours)

BIO 523 ECOLOGY (3 Hours)

Prerequisite: Senior standing or consent of instructor.

A study of the tropic relationships and energy transfer in ecosystems.

BIO 530 ADVANCED MICROBIOLOGY (3 Hours)

Prerequisite: BIO 313; CHEM 242.

Special techniques for culturing microorganisms. Includes a survey of some of the important microbes in medicine, industry and public health.

BIO 531 INVERTEBRATE ZOOLOGY (3 Hours)

Prerequisite: BIO 114, CHEM 142.

Intended for students who wish to obtain a comprehensive knowledge of the invertebrates.

BIO 532 ADVANCED PARASITOLOGY (3 Hours)

Prerequisite: BIO 331; CHEM 142, 242.

The physiology of specific parasite and host-parasite relationships will be studied in great detail. Clinical specimens will be studied.

BIO 540 CELL BIOLOGY (3 Hours)

Prerequisite: BIO 111, 119 or 121, 313, and CHEM 241.

Study of cell anatomy as revealed by electron microscopy. Emphasis on bioenergetics, cell metabolism and current cell research.

BIO 550 IMMUNOLOGY & SEROLOGY (3 Hours)

The study of antibodies that are elicited in response to antigens and the difference between the protoplasm of one organism and another as reflected in the blood.

BIO 561 MOLECULAR VIROLOGY (3 Hours)

An introduction to the types of viruses that infect humans, animals, plants, and bacteria, their mode of replication, mode of swiping cellular functions, human viral diseases and viral vaccines, and drug development, and the medical and economic significance of viral diseases in public health.

BIO 570 HUMAN PHYSIOLOGY (3 Hours)

Prerequisite: BIO 115, CHEM 242.

The study of physiological processes related to the human. The physiological systems to be examined are: gastro-intestinal, renal, endocrine, neural, and reproductive.

BIO 575 ENDOCRINOLOGY (3 Hours)

Prerequisite: BIO 115, 218; CHEM 142, 242.

The basic fundamentals of endocrinology. The role of the endocrine glands and their products (hormones) in the maintenance of a constant internal environment in living organisms.

BIO 576 HISTOPATHOLOGY (3 Hours)

Prerequisite: BIO 115, 218, and 441.

Provides general consideration of the principal concepts of tissues and cellular pathology, with emphasis on human tissues and pathology. The course prepares students for further studies in medicine, dentistry, and allied health fields.

BIO 587 INDEPENDENT STUDY (2-4 Hours)

Prerequisite: Graduate standing in biology.

Students will elect a specific topic that is not covered in other biology courses. The student, working independently, will be required to submit a research paper that includes an exhaustive review of literature.

BIO 589 GRADUATE SEMINAR (1 Hour)

A course designed for survey of biological literature. The student will be required to prepare and present reports and assigned projects. Required of all students.

BIO 599 THESIS RESEARCH (1-6 Hours)

Thesis representing original research. (Required for M.S. students)

BIO 610 ENVIRONMENTAL MICROBIOLOGY (3 Hours)

The study of the roles of microorganisms in natural systems with attention given to the examination of nutrient cycles, methods of analysis of microbial biomass and activities as well as the functional roles of microorganisms.

BIO 615 PRINCIPLES OF BIOREMEDIATION (3 Hours)

This course uses modern knowledge in life sciences, as well as new developments in biotechnology to address important issues related to environmental clean-up of hazardous wastes. The nature of environmental pollution is reviewed, and basic concepts in molecular biology, biochemistry, and microbiology and plant physiology are applied to demonstrate the significance of bioremediation and phytoremediation in pollution control. Therefore, an emphasis is put on the use of biological methods and processes for the remediation of contaminated soils and water resources.

BIO 620 INDEPENDENT STUDY (1-6 Hours)

Students will elect a specific topic that is not covered in other biology courses. The student, working independently, will be required to submit a research paper that includes an exhaustive review of literature.

BIO 623 SYSMS BIO & SIGNALING NETWORKS (3 Hours)

The objectives of the Systems Biology course is to present methods for modeling and analyzing biological systems, in particular cellular systems. It is designed to cover intracellular processes, including enzymatic reactions, polymerization processes, gene expression, gene-environment interactions, and signal transduction. Also the course introduces mathematical modeling fundamentals, including deterministic models, including linear regression methods, explains the differences between linear and nonlinear regression, and illustrates how to determine input variables to improve estimation accuracy during experimental design. The material covers the process-function-behavior sequence in cells and illustrates how modeling and analysis of signal transduction units play a mediating role between process and function.

BIO 650 ANALYSIS OF HORMONE ACTION (3 Hours)

Prerequisite: Graduate status and consent of the instructor.

An analysis of the cellular mechanisms of hormone action. The role of target tissues, receptors, hormone analogs and, metabolic inhibitors in studies of hormone action will be discussed.

BIO 689 ADVD TPCS IN COMPUTATIONAL BIO (3 Hours)

The Advanced Topics in Computational Biology will introduce the students to data-driven models of molecular interaction networks and applications of discrete algorithms, data mining, and machine learning to the modeling and analysis of molecular interactions and computational disciplines in systems biology networks.