

BIOLOGY (BIO)

BIO 100 Biological Science (3 Credits)

Study of the general principles and problems of biology, with special emphasis on the human organism, including anatomy, physiology, growth, reproduction, and inheritance. The evolution and diversity among living things are discussed from an ecological perspective.

BIO 100H Honors Biological Science (3 Credits)

Study of the general principles and problems of biology, with special emphasis on the human organism, including anatomy, physiology, growth, reproduction, and inheritance. The evolution and diversity among living things are discussed from an ecological perspective.

BIO 100L Biological Science Lab (1 Credits)

Practical approach to understanding the nature of science. The exercises on cells, tissues, and organ systems are designed to help students understand the human systems.

BIO 105 Human Biology (3 Credits)

Survey of the structure and function of the human body and the human life cycle with particular focus on reproduction, growth, and development.

BIO 105L Human Biology (1 Credits)

Laboratory includes dissection of preserved animals/structures, models and microscopic observations, slide/videotapes, computer-simulated dissections and experiments, and hands-on experiments.

BIO 110 General Biology (3 Credits)

Survey of basic concepts and principles with emphasis at the molecular and cellular levels of biological systems. Includes contemporary genetics, metabolism, and organ systems of representative plants and animals.

BIO 110H Honors General Biology (3 Credits)

Survey of basic concepts and principles with emphasis at the molecular and cellular levels of biological systems. Includes contemporary genetics, metabolism, and organ systems of representative plants and animals.

BIO 110L General Biology Laboratory (1 Credits)

Survey of basic concepts and principles with emphasis at the molecular and cellular levels of biological systems. Includes contemporary genetics, metabolism, and organ systems of representative plants and animals.

BIO 111 General Biology II (3 Credits)

The course is a comprehensive survey of basic biological concepts and principles with emphasis at the organismal level of biological systems. While kingdom organisms are included, plant/animal structure and function, human anatomy/physiology (human organ systems), and ecosystems are also emphasized.

BIO 111L General Biology II Laboratory (1 Credits)

The second part of an introductory laboratory course for science majors designed as a hands-on study of the organismal level of biological systems. Experimental topics in the course include the structure and function of prokaryotes, plants, and animals. The scientific method is emphasized as students collect, analyze, and discuss data relevance to each topic.

BIO 160L Gen Zoology Lab (1 Credits)

Biological concepts of animal life, including morphology, taxonomy, life histories, reproduction, and distribution.

BIO 161 General Botany (3 Credits)

Introductory study of the basic principles of botany, including comparative studies on morphology, physiology, genetics, ecology, and economic uses of major plants.

BIO 163 Microbiology for the Health Sciences (3 Credits)

General survey of microorganisms that cause human diseases. The mechanisms of body defense and immunity to infectious agents are discussed.

BIO 163L Microbiology for the Health Sciences Laboratory (1 Credits)

Study of culture methods, microscopic sterilization, and aseptic techniques.

BIO 165 Human Anatomy and Physiology (3 Credits)

One-year course consisting of an integrated study of the structure and function of the human body; BIO 165 is a lecture series on cells through the four major tissues.

BIO 165L Human Anatomy and Physiology Laboratory (1 Credits)

Emphasis on teaching aids such as computer managed instructions and hands-on experience with animal tissues.

BIO 166 Human Anatomy and Physiology (3 Credits)

One-year course consisting of an integrated study of the structure and function of the human body; BIO 166 presents lecture topics on the structure and function of organs and organ systems. (Must be taken in sequence with BIO 165).

BIO 166L Human Anatomy and Physiology Laboratory (1 Credits)

Emphasis on teaching aids such as computer managed instructions and hands-on experience with animal tissues.

BIO 253 Human Physiology (3 Credits)

Survey of the integration of functions, in the human body, noting their structural relationships.

BIO 260 Integrative Zoology (3 Credits)

Biological concepts of animal life, including morphology, taxonomy, life histories, reproduction and distribution.

BIO 260L Integrative Zoology Laboratory (1 Credits)

Biological concepts of animal life, including morphology, taxonomy, life histories, reproduction and distribution.

BIO 261 General Botany (3 Credits)

Introductory study of the basic principles of botany, including comparative studies on morphology, physiology, genetics, ecology, and economic uses of major plants.

BIO 261L General Botany Laboratory (1 Credits)

Introductory study of the basic principles of botany, including comparative studies on morphology, physiology, genetics, ecology, and economic uses of major plants.

BIO 263 Vertebrate Embryology (3 Credits)

Study of the mechanics of development, including the origin of gametes, fertilization, organogenesis, and morphogenesis of early development of the frog, chick, pig, and man.

BIO 263L Vertebrate Embryology Lab (1 Credits)

Laboratory study of the mechanics of development including the origin of gametes, fertilization organogenesis, and morphogenesis of early development of the frog, chick, pig, and man.

BIO 264 Concepts of Developmental Biology (3 Credits)

Study of the principles of development exemplified, by experimental studies in model organisms, including invertebrates, vertebrates, and plants. Examines common themes pre-birth, and continued, development and regeneration post-birth.

BIO 264L Concepts of Developmental Biology Labor (1 Credits)

Laboratory study of the principles of development, using experimental studies in model organisms, including invertebrates, vertebrates, and plants, to examine embryonic, post-embryonic and, regenerative processes.

BIO 270 Comparative Vertebrate Anatomy and Physiology (3 Credits)

Study of the classification, morphology, and anatomy of vertebrates, including the functions of their organs and organ systems.

BIO 270L Comparative Vertebrate Anatomy & Physiology Laboratory (1 Credits)

Study of the classification, morphology, and anatomy of vertebrates, including the functions of their organs and organ systems.

BIO 271 Ecology (3 Credits)

Composition and distribution of biotic communities emphasizing interrelationships of organisms and their physical environment with application to current environmental problems.

BIO 271H Honors Ecology (3 Credits)

Composition and distribution of biotic communities emphasizing interrelationships of organisms and their physical environment with application to current environmental problems.

BIO 271L Ecology Laboratory (1 Credits)

Composition and distribution of biotic communities emphasizing interrelationships of organisms and their physical environment with application to current environmental problems.

BIO 272 Human Anatomy (3 Credits)

Study of the basic structure of organs and organ systems of the body.

BIO 272H Human Anatomy, Honors Human Anatomy (3 Credits)

Study of the basic structure of organs and organ systems of the body.

BIO 272L Human Anatomy Laboratory (1 Credits)

Study of the basic structure of organs and organ systems of the body.

BIO 274 Plant Morphology (3 Credits)

Comparative survey of typical representatives of, the plant kingdom with description of form, and structure, reproductive processes (normal life, cycles), and phylogenetic relationships, , of the principal plant groups.

BIO 274L Plant Morphol Lab (1 Credits)

Laboratory focuses on comparative surveys, of typical representatives of the plant kingdom, with description of form and structure, , reproductive processes (normal life cycles), , and phylogenetic relationships of the principal , plant groups

BIO 278 Cell Biology (3 Credits)

Study of intracellular mechanisms and the influence of such processes on the cell and its extracellular environment.

BIO 278H Honors Cell Biology (3 Credits)

Study of intracellular mechanisms and the influence of such processes on the cell and its extracellular environment.

BIO 278L Cell Biology Laboratory (1 Credits)

Study of intracellular mechanisms and the influence of such processes on the cell and its extracellular environment.

BIO 310 General Microbiology (3 Credits)

Introduction to the microbes, including bacteria, molds, yeasts, and viruses. Investigation of fundamental concepts of microorganisms, including nutrition, ecology, and physiology; principles of sterilization and methods of control of microorganisms; their economic importance.

BIO 310L General Microbiology Laboratory (1 Credits)

Introduction to the microbes, including bacteria, molds, yeasts, and viruses. Investigation of fundamental concepts of microorganisms, including nutrition, ecology, and physiology; principles of sterilization and methods of control of microorganisms; their economic importance.

BIO 320 Pathophysiology (3 Credits)

Introduction to the study of the normal physiology of various systems of the human body and how alterations in structure and function can initiate the onset of disease. Inherent in this course is a study of the adaptive capacity of the human body.

BIO 350 Parasitology (3 Credits)

Study of symbiotic relationships between representatives that are dependent upon a symbiont and the clinical and pathological implications inherent in such a relationship.

BIO 350L Parasitology Laboratory (1 Credits)

Inquiry-based application of the clinical and pathological implications of inherent relationships established between symbionts.

BIO 351 Principles of Genetics (3 Credits)

Introductory course dealing with the principles of heredity and variation in plants and animals, including man.

BIO 351H Principles Genetics - Honors (3 Credits)

Introductory course dealing with the principles, of heredity and variation in plants and animals, , including man

BIO 351L Principles of Genetics Laboratory (1 Credits)

Introductory genetic labs are designed to provide exercises that deal with the principles of heredity and variation in plants and animals, including man.

BIO 362 Histology and Microtechnique (3 Credits)

Study of the structure and properties of cells the cellular relationships to the main type of tissues and histology of organs; the principles and methods of preparation of plant and animal tissues; and some techniques in histochemistry.

BIO 362L Histology & Microtechnique Laboratory (1 Credits)

Study of the structure and properties of cells; the cellular relationships to the main type of tissues and histology of organs; the principles and methods of preparation of plant and animal tissues; and some techniques in histochemistry.

BIO 364 Seminar and Colloquium in Biology (1 Credits)

Consideration of current research and development in biology, including reviews, reports, and discussions of investigations reported in scientific journals.

BIO 400 Forensic Molecular Biology (3 Credits)

Designed to provide students with the scientific, background and hands-on experience on the molecular, aspects of DNA forensics. Protocols, and procedures currently used in DNA , forensic tests will be performed, , including DNA isolation from various sample, sources, gel electrophoresis, PCR, STR, analysis, and data interpretation. , Relevant scientific journals will be consulted and, articles discussed.

BIO 400L Forensic Molecular Biology LB (1 Credits)

Experiment of DNA forensic tests on current , protocols and procedures, including DNA isolation, various sample sources, gel electrophoresis, PCR, STR, analysis and data interpretation

BIO 452 Biological Instrumental Techniques (2 Credits)

Training and practice in various bio instrumental , techniques, including statistical analysis of , data, respirometry, photo microscopy,, spectrophotometry, chromatography,, electrophoresis, and physiological measurements.

BIO 459 General Physiology (3 Credits)

Discusses fundamental principles and properties of physiological processes common to animals.

BIO 459L General Physiology Laboratory (1 Credits)

Demonstrates fundamental principles and properties of physiological processes common to animals.

BIO 461 Plant Physiology (4 Credits)

Consideration of the physicochemical factors involved in plant growth with special emphasis on synthesis, water economy, transpiration, energy transfers, mineral nutrition, regulation, and the red, far-red reactions of phytochrome of seed plants.

BIO 461H Honors Plant Physiology (4 Credits)

Consideration of the physicochemical factors involved in plant growth with special emphasis on synthesis, water economy, transpiration, energy transfers, mineral nutrition, regulation, and the red, far-red reactions of phytochrome of seed plants.

BIO 461L Plant Physiology Laboratory (0 Credits)

Consideration of the physicochemical factors involved in plant growth with special emphasis on synthesis, water economy, transpiration, energy transfers, mineral nutrition, regulation, and the red, far-red reactions of phytochrome of seed plants.

BIO 469 Biochemistry (3 Credits)

Biochemical analysis of cellular function and consideration of the implications of the properties of cells, including the cell and its organization, protein structure and specificity; biochemistry of lipids, carbohydrates, and nucleic acids; regulation of cell metabolism; cellular basis of hormone action; and biochemical aspects of synthesis.

BIO 469L Biochemistry Laboratory (1 Credits)

Designed to analyze biochemical properties of protein structure and specificity; biochemistry of lipids, carbohydrates, and nucleic acids; regulation of cell metabolism; cellular basis of hormone action; and biochemical aspects of synthesis.

BIO 474 Molecular Biology (3 Credits)

Introduction to the basic techniques in Recombinant DNA which encompasses the principles and practical aspects of molecular techniques through discussions, demonstrations, and hands-on experience, covering isolation of DNA, restriction of endonuclease digests

BIO 474L Molecular Biology Laboratory (2 Credits)

Introduction to the basic techniques in Recombinant DNA which encompasses the principles and practical aspects of molecular techniques through discussions, demonstrations, and hands-on experience, covering isolation of DNA, restriction of endonuclease digests

BIO 482 Epidemiology (3 Credits)

Basic principles and methods of epidemiology, and the application to communicable and non-communicable diseases, community health, and health services research. Reviews observational, and experimental study design; methods and data analysis; and various indices of assessing morbidity, mortality and population dynamics

BIO 484 Cytogenetics (4 Credits)

This course is designed to provide students with hands-on experience in standard cytogenetics, and molecular cytogenetics. Laboratory exercises will include cell preparations for cytological analysis, sister chromatid exchange, chromosomal preparations for Karyotypic analysis using standard banding techniques.

BIO 485 Immunology (3 Credits)

General properties of immune responses; cells and tissues of immune system; lymphocyte activation and specificity; effector mechanisms; immunity to microbes; immunodeficiency and AIDS; autoimmune diseases; transplantation.

BIO 492 Genetic Toxicology (4 Credits)

General principles of toxicology as they relate to adverse genetic effects of environmental agents, Basic mechanism of action, including the molecular and chemical basis for mutagenic effects. Techniques for the detection and characterization of chemical mutagen will be included in the laboratory demonstrations.

BIO 495 Biostatistics (3 Credits)

Introduction to statistical methods of health sciences. The principles underlying basic methods of statistical analysis are examined, including elementary concepts of probability, descriptive statistics, and statistical estimation and testing. Special emphasis

BIO 496 Special Problems in Toxicology (4 Credits)

Discussion and practical work sessions concerning the development of ideas and activities for specific experimental studies. The specific features include conversance with current methodology, initiation of independent and original protocols as a toxicological tool.

BIO 497 Introduction to Research (2 Credits)

Introduction to independent experimental work under the guidance of staff members. Provisions for Honors and undergraduate research participation projects and investigations.

BIO 499 Tissue and Cell Culture (4 Credits)

Study of the basic protocols currently employed in the initiation and maintenance of cell lines for in vitro studies, including cell structure, cell types and tissues, behavior of cells in culture, and environmental factors that modulate cell growth.