

BIOLOGY (BIO)

BIO 103 Introductory Biology - 4 Hours

A general survey of the basic principles of biology with an emphasis on humanity and humanity's role in nature. The scientific method, evolutionary theory, and Christianity as the basis of understanding nature and its problems are considered. Laboratory is included. Not open to Biology or Health Sciences majors for credit toward a major in Biology or Health Sciences. Laboratory fee. Offered each semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 105S Environmental Biology - 4 Hours

Students will become familiar with the way in which organisms interact with their environment. Topics include the nature of an ecosystem, the definition and biology of a population, the structure of communities, and the process of succession. Field studies and lab work scheduled for Wednesday and Thursday afternoons (4 hours). An overnight field trip may be required. Prerequisite: BIO 103 or BIO 140 or equivalent or permission of instructor. Not open to Biology majors for credit toward a major in Biology. Laboratory/Field work fee. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 111 General Biology - 4 Hours

A concentrated study of the principles and fundamentals of biology. Basic biochemistry, cellular structure and function, energetics, concepts of basic molecular biology, and genetics are included. Laboratory is included. This course is open to majors in the Division of Science and Technology only or by consent of the instructor. Prerequisite or corequisite: CH 103 or CH 111 or consent of department. Laboratory fee. Offered each semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 112 Biology: Plant and Animal Kingdoms - 4 Hours

A concentrated study of the principles and fundamentals of biology, ecology, and evolutionary biology are studied. Also examined are the diversity, morphology, physiology, and reproduction of microorganisms, plants, and animals. Laboratory is included. This course is open to majors in the Division of Science and Technology only or by consent of the instructor. Prerequisite or corequisite: CH 111 or consent of department. Laboratory fee. Offered fall semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 140 Survey of Human Anatomy and Physiology - 4 Hours

A study of human anatomy and physiology. Laboratory is included. This course is open to majors in Sports and Wellness Management or minors in Health Psychology only. All others are by consent of the instructor. Not open to Biology or other Health Sciences majors for credit toward a major. Laboratory fee. Offered spring semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 145 Human Biology - 4 Hours

A study of basic principles of biology, cells, genetics, anatomy and physiology, and the human impact on the environment. Special emphasis will be given to understanding anatomy and physiology as it pertains to the workings of the human body and its response to disease. This course is suitable for nonscience majors and includes laboratory experience. Not for credit toward a major in biology. Laboratory fee. Delivery mode: REACH/Excel adult undergraduate.

BIO 150 Laboratory Methods in Biology - 1-3 Hours

This course is designed to meet the needs of the student who requires or desires laboratory experience in a particular area of biology additional to that available as part of the regularly offered coursework. The area of study will vary with the needs of the student. Prerequisites: at least one introductory course in the biology and consent of the department chair. Laboratory fee. Offered each semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 201X Physiology of Exercise - 3 Hours

A systematic approach to the study of the function of the human body during physical activity and recovery. Emphasis is placed on how the physiology of the sedentary body responds and adapts to both acute and chronic workloads. The course includes application of these principles to exercise prescription for the achievement of optimal fitness and athletic performance. Laboratory is included. Prerequisites: BIO 140 or BIO 340-BIO 341 and current Community First Aid and CPR certification (or acceptable equivalent) or consent of instructor. Laboratory fee. Offered spring semester for Deerfield traditional undergraduate. Cross-listed with HS 201X, HPW 201X. Delivery mode: Deerfield traditional undergraduate.

BIO 210 Ecology and Field Biology - 4 Hours

A study of the fundamental principles and concepts of ecology emphasizing the ecosystem approach. Introduction to the principles and concepts pertaining to the ecosystem, including energy flow, nutrient cycling, limiting factors, ecological development, and organismic, population, and community ecology. The structure and characteristics of various terrestrial and aquatic ecosystems, environmental problems, and resource management are also included. Laboratory and field work are included. Prerequisites: BIO 111, 112 or consent of instructor. Laboratory fee. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 220 General Botany - 4 Hours

The taxonomy, anatomy, physiology, and ecology of vascular and nonvascular plants will be studied. Emphasis will be placed on the relationship of the cellular, organismal, and gross structures of vascular plants with development and function in time and environment. Laboratory is included. Prerequisites: BIO 111 and CH 112. Laboratory fee. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 250 Advanced Laboratory Methods in Biology - 1-3 Hours

This course is designed to provide the student with advanced laboratory experience in a particular area of interest in the biology beyond that offered as part of the regularly scheduled coursework. The field of study will vary with the needs of the student. Prerequisites: at least one introductory course in biology and consent of the department chair. Laboratory fee. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 285X Statistics - 4 Hours

An examination of both descriptive and inferential statistics. Specific topics include the scientific method, data analysis and production, measures of central tendency and variability, correlation and regression, random sampling and probability, nonparametric inferential tests, and parametric inferential tests, including one-way analysis of variance. Specific instruction and computer experience in the use of SPSS is provided. Offered each semester for Deerfield traditional undergraduate. Computer fee. Cross-listed with MA 285X, PSY 285X, SOC 285X. Delivery mode: Deerfield traditional undergraduate.

BIO 300 Environmental Conservation - 3 Hours

An ecological approach to the study of conservation of natural resources as related to current environmental problems. Significant fieldwork is required. Delivery mode: REACH/Excel adult undergraduate.

BIO 305 Scientific Applications - 1-4 Hours

In-depth instructional or laboratory experience designed to enhance the student's expertise, critical thinking, laboratory and communication skills in any of several areas. May be repeated for credit. Prerequisite: invitation of instructor. Instructor's consent by signature required. Offered each semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 306 Scientific Applications Professional Experience - 1-4 Hours

In-depth instructional or laboratory experience, including teaching assistantship and laboratory assistantship, designed to enhance the student's expertise, critical thinking, laboratory, and communication skills in any of several areas. May be repeated for credit. Prerequisite: invitation of instructor. Instructor's consent by signature required. Satisfies the Professional Experience requirement. Offered each semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 310 Microbiology - 4 Hours

A study of the taxonomy and identification, structure, nutrition and growth, physiology, metabolism, genetics, host microbial interactions, immunology, ecology, epidemiology, and control of microorganisms and viruses. Laboratory is included. Prerequisites or corequisites: BIO 111, CH 111-CH 112. Laboratory fee. Offered fall semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 315 Genetics - 4 Hours

A study of the basic principles of heredity, including classical, cytological and population genetics. In addition, the course will emphasize the analysis of genes at the molecular level and the study of gene expression. Laboratory is included. Prerequisite: BIO 111, BIO 112. Offered fall semester in odd-numbered years for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 320 Immunology - 3 Hours

A study of the cellular and molecular nature of innate and adaptive immune systems, including immunoglobulins, humoral and cell-mediated immune responses, immunopathology, immunobiology, and cancer biology. Prerequisites: BIO 111 and CH 112. Courses in microbiology, cell and molecular biology, and genetics are highly recommended. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 321 Immunology Case Studies Laboratory - 1 Hour

A problem-based discussion/laboratory course exploring the use of contemporary immunological laboratory procedures and the application of immunological theory and practical knowledge to clinical diagnosis of immunological diseases. Clinical case studies will be used as the discussion vehicle. Course must be taken in conjunction with BIO 320 Immunology. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 330 Animal Physiology - 4 Hours

A detailed study of the physiological processes of animals. Laboratory is included. Prerequisites: BIO 111, BIO 112. Laboratory fee. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 340 Human Anatomy and Physiology I - 4 Hours

An in-depth study of the anatomical and physiological features of the following human body systems: integumentary, skeletal, muscular, nervous, circulatory, digestive/metabolic, lymphatic, and endocrine. Relevant clinical information and pathology are discussed. A strong emphasis is placed on experimental study and analysis of physiological processes. This course is suitable for premedical students, health sciences students, students wishing to pursue graduate studies in science, and education majors with a science emphasis. Laboratory is included. Prerequisites or corequisites: BIO 111 and CH 103 or CH 111-CH 112, or consent of instructor. Laboratory fee. Offered each year for Deerfield traditional undergraduate. Both semesters must be completed in order to apply to major. Delivery mode: Deerfield traditional undergraduate.

BIO 341 Human Anatomy and Physiology II - 4 Hours

An in-depth study of the anatomical and physiological features of the following human body systems: integumentary, skeletal, muscular, nervous, circulatory, digestive/metabolic, lymphatic, and endocrine. Relevant clinical information and pathology are discussed. A strong emphasis is placed on experimental study and analysis of physiological processes. This course is suitable for premedical students, health sciences students, students wishing to pursue graduate studies in science, and education majors with a science emphasis. Laboratory is included. Prerequisites or corequisites: BIO 111 and CH 103 or CH 111-112, or consent of instructor. Laboratory fee. Offered each year for Deerfield traditional undergraduate. Both semesters must be completed in order to apply to major. Delivery mode: Deerfield traditional undergraduate.

BIO 350 Topics In Biology - 1-4 Hours

Selected topics in biology. May be repeated for credit with different topics. Prerequisites: BIO 111, BIO 112, or consent of the instructor. Laboratory fee may be required depending on topic. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 359 Topics for Honors Students - 3 Hours

Selected topics not taught under specific course titles. Depending on the topic, the course will be designated as falling under one or more departments. May be repeated for credit if the topic differs. Offered spring semester in odd-numbered years for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 400 Origins and Evolution - 3 Hours

A critical examination of the empirical and theoretical bases for the theories of the origin of life and biological evolution. The scriptural account of creation and the various schools of thought on creation and evolution are considered. Prerequisites: BIO 111, 112 or consent of the instructor. Offered spring semester in odd-numbered years. Delivery mode: Deerfield traditional undergraduate.

BIO 405 Advanced Scientific Applications - 1-4 Hours

Advanced instructional, clinical, field study, or laboratory experience designed to enhance the student's expertise, critical thinking, and laboratory and communication skills in any of several areas. May be repeated for credit. Prerequisite: invitation of the instructor. Instructor's consent by signature required. Laboratory fee may be required. Offered each semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 406 Advanced Scientific Applications Professional Experience - 1-4 Hours

Advanced instructional, clinical, field study, or laboratory experience designed to enhance the student's expertise, critical thinking, and laboratory and communication skills in any of several areas. May be repeated for credit. Prerequisite: invitation of the instructor. Instructor's consent by signature required. Satisfies the Professional Experience Requirement. Laboratory fee may be required. Offered each semester. Delivery mode: Deerfield traditional undergraduate.

BIO 410 Biology Seminar - 1 Hour

This course includes presentations and discussions of selected papers, topics of current interest in the field, and senior research projects by students and invited speakers. Starting in the student's second year in the Biology program, this course must be taken each semester it is offered until graduation or changing of majors. The student will audit all semesters except one. During the spring semester of the student's senior year, the course must be taken for credit and a senior seminar presentation will be required. Prerequisite: major in the Division of Science and Technology, and Health, or consent of instructor. This course fulfills the IDS 499X Integrative Thought Capstone requirement for students in the Biology, Biology/Pre-Medical, and Biology/Pre-Physician Assistant. Offered spring semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 415 Molecular Genetics - 4 Hours

This course will offer a detailed study of the analysis and manipulations of genes at the molecular level, including control of gene expression, study of genome structure, and molecular evolution. Course will include reading and discussion of current literature relevant to the field of molecular genetics and instruction in the use of biological databases. The application of molecular genetics to analyze the human genome will be considered. Prerequisites: BIO 315, CH 203 or CH 212. Suggested prerequisite or corequisite: CH 320 or consent of instructor. Laboratory fee. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 420 Cell and Molecular Biology - 4 Hours

A detailed study of the organization, physiology, metabolism, and molecular biology of the cell. Laboratory included. Prerequisites: BIO 111, BIO 112 and CH 320. Laboratory fee. Offered spring semester in even-numbered years for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 430 Developmental Biology - 4 Hours

A study of the nature of basic developmental processes of animals at the classical, experimental, and molecular level. Prerequisites: BIO 111, BIO 340, BIO 341. Offered spring semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 440 Microbial Physiology - 4 Hours

A study of microorganisms (with the emphasis on bacteria) and their nutritional requirements, metabolism, ultrastructure, genetics, and taxonomy. Laboratory included. Prerequisite: BIO 310. One semester of organic chemistry is recommended. Laboratory fee. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 445 Pathophysiology - 3 Hours

This course provides an in-depth exploration of altered structural and physiological adaptation processes and how they apply to assessment and treatment of disease and injury with an emphasis on conditions encountered in health care. Additional topics include pathological mechanisms underlying disease states, diagnosis and treatment of disorders, cell injury, inflammation, immunopathology, genetic disorders, neoplasms, nervous system, bones, joints, skeletal muscle, cardiovascular, respiratory, blood and lymphoid systems, and diabetes. Offered fall semester. Prerequisite: BIO 341 or consent of instructor.

BIO 450 Independent Study - 1-3 Hours

Research and specialized studies designed to meet the needs of individual students. Prerequisite: consent of instructor. Laboratory fee may be required. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 460 Comparative Vertebrate Anatomy - 4 Hours

A comparative study of the anatomy, morphology, and functions of vertebrates. Laboratory is included. Prerequisites: BIO 111, BIO 112. Laboratory fee. Offered on demand for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 470 Undergraduate Research - 1-4 Hours

A laboratory course involving investigation of a research problem under faculty supervision. Course requirements include a literature survey, research, a written formal report, and oral presentation of results in biology seminar (BIO 410). Prerequisites: BIO 111 and at least one of the following: BIO 310, BIO 340, BIO 341, BIO 420. Instructor's consent by signature required. May be repeated for credit. Laboratory fee may be required. Satisfies the Professional Experience Requirement. Offered each semester for Deerfield traditional undergraduate. Delivery mode: Deerfield traditional undergraduate.

BIO 5340 Gross Anatomy - 4 Hours

This course will involve primarily human cadaver dissection. Dissection will be supplemented with classroom lectures. The course is designed for graduate students to learn basic and advanced dissection skills along with developing a deep appreciation of human gross anatomy from a whole systems approach with the intent of practical application. Emphasis will be placed on the musculoskeletal, articular, and neurovascular systems of the human body. The role of anatomical structures as they relate to athletic injury mechanisms, evaluation, and rehabilitation will be emphasized. Prerequisite: Admission to graduate program in Health Sciences Department or consent of instructor. Health Sciences laboratory fee. Offered face to face at the Deerfield campus.

BIO 6340 Pathophysiology - 3 Hours

This course provides an in-depth exploration of altered structural and physiological adaptation processes and how they apply to assessment and treatment of disease and injury with an emphasis on conditions encountered in health care. Additional topics include pathological mechanisms underlying disease states, diagnosis and treatment of disorders, cell injury, inflammation, immunopathology, genetic disorders, neoplasms, nervous system, bones, joints, skeletal muscle, cardiovascular, respiratory, blood and lymphoid systems, and diabetes. Prerequisite: Admission to graduate program in Health Sciences Department or consent of instructor. Offered face to face at the Deerfield campus.