

BIOLOGY (BIO)

BIO-111 INTRO TO BIOLOGICAL SCIENCE (4 Credits)

An introductory course in Biology in which plants and animals are used to illustrate basic biological principles. The course will examine the relationships among living organisms, including man, and their environment. It is designed to increase student awareness and appreciation of organisms in nature as well as the natural history of selected plants and animals. The laboratory includes the identification of common organisms living in West Michigan during field trips. This course is for non-science majors and minors and satisfies the core requirement for Lab Science. Course fee applied.

Prerequisite: None

BIO-121 BIOSTATISTICS (3 Credits)

This course teaches the statistical methods and principles of biostatistics. Students will learn to use the statistical program R to understand, interpret, and analyze data used in the biological sciences.

Prerequisite: Complete math core

BIO-151 GENERAL BIOLOGY (4 Credits)

This course is designed to provide a natural science foundation for all science majors and minors. Foundational concepts in cell biology/chemistry, genetics (classical and molecular) and microbiology will be stressed in both lecture and lab. This course satisfies the core requirement for Lab Science. Course fee applied.

Prerequisite: None

BIO-161 HUMAN BIOLOGY (4 Credits)

This course includes examination of the structure and function of the human body with special emphasis on disease process as it relates to dysfunction along with practical applications for a lifestyle of healthful living. Emphasis is placed upon cell biology, tissues and various systems of the body including integumentary, skeletal, muscular, nervous, endocrine, circulatory, lymphatic, respiratory, digestive, urinary, endocrine and reproductive systems. This general survey course fulfills the science core requirements for a lab science and is open to students desiring basic knowledge of human anatomy and physiology. Course fee applied.

Prerequisite: None

BIO-171 INTRODUCTION TO MICROBIOLOGY (4 Credits)

This course will provide students with an introduction to the microbial world. The lectures cover topics including microbial growth and metabolism, microbial diversity, ecology, and a survey of common diseases and control mechanisms. The laboratory sessions introduce proper culture and identification, microscopy, aseptic transfer, and medical tests involving microorganism. Lecture and lab. Course fee applied.

Prerequisite: None

BIO-225 BOTANY (4 Credits)

Studies basic plant science, including the structure, reproduction, and ecological relationships among plants. Lecture and lab. This course satisfies the core requirement for Lab Science. Course fee applied.

Prerequisite: BIO-111 or BIO-151

BIO-233 ZOOLOGY (4 Credits)

Introduction to the basic principles of zoology, including development, distinguishing characteristics and interactions of the major animal kinds, with special emphasis on the invertebrates. Lecture and lab. This course satisfies the core requirement for Lab Science. Course fee applied.

Prerequisite: BIO-111 or BIO-151

BIO-241 ANATOMY AND PHYSIOLOGY I (4 Credits)

A systems approach to the structure and function of the human body with special emphasis on disease process as it relates to dysfunction along with practical applications for a life-style of healthful living. Includes integumentary, skeletal, muscular, nervous, and endocrine systems. Laboratory experiences will use microscopic and lab animal investigation. Stresses the homeostatic function and intricacy of the body and its analogies to the Body of Christ, the Church. Lecture and lab. This course satisfies the core requirement for Lab Science. Course fee applied.

Prerequisite: None

BIO-242 ANATOMY & PHYSIOLOGY II (4 Credits)

A systems approach to the structure and function of the human body with special emphasis on disease process as it relates to dysfunction, along with practical applications for a life-style of healthful living. Includes cardiovascular, digestive, respiratory, lymphatic, urinary, and reproductive systems. Laboratory experiences will use microscopic and lab animal investigation. Stresses the homeostatic function and intricacy of the body and its analogies to the Body of Christ, the Church. Lecture and lab. This course satisfies the core requirement for Lab Science. Lab fee applied.

Prerequisite: BIO-241, C- or higher

BIO-331 ORNITHOLOGY (4 Credits)

Study of bird anatomy, behavior, life cycles, migration, distribution, and economic relations. Field work is concerned with identification by sight and song and observing the habitat requirements of each species. Lecture and lab. This course satisfies the core requirement for Lab Science. Course fee applied.

Prerequisite: None

BIO-347 INTRO TO NUTRITION (3 Credits)

This course is designed to study foods and their effects upon health, development, and performance of the human body. Students will develop an understanding of healthful and performance nutrition as it relates to optimal health and physical performance. Also, students will study energy pathways in the body and the six basic nutrients related to performance. Additionally, students will investigate body composition and weight control.

Prerequisite: None

BIO-351 GENETICS (4 Credits)

A study of classical Mendelian genetics, molecular genetics, genomes and developmental genetics, as well as the current molecular basis of gene expression. Lab investigations include inherited traits studied with fruit flies and corn. Lab experience includes modern techniques in molecular genetic analysis, PCR, gel electrophoresis, transformation and cloning. Ethical issues will also be considered. Course fee applied.

Prerequisite: BIO-151

BIO-352 MICROBIOLOGY (4 Credits)

A survey study of the structure and function of micro-organisms, with an emphasis on bacteria. Lab included basic techniques in the isolation, identification and culture of micro-organisms. Lecture and lab. Course fee applied.

Prerequisite: BIO-233 or BIO-151

BIO-353 PATHOPHYSIOLOGY (3 Credits)

The Pathophysiology course is designed to promote the understanding and application of fundamental concepts of disease processes. General concepts of disease (e.g. cell injury, inflammation, necrosis, wound healing, immune response, infectious disease, and neoplasia) are discussed. These concepts are then applied in a systems-oriented approach, including the pathogenesis, clinical manifestations, diagnosis and treatment of the various disease processes.

Prerequisite: BIO-241 and BIO-242

BIO-400 CAPSTONE SEMINAR: BIOETHICS & ARGUMENT (3 Credits)

This course is a senior capstone course for Biology and Pre-Professional Majors, and investigates the ethical and theological issues confronting one choosing a biology-related career. Emphasis will be placed upon constructing a personal, Christian philosophical framework. Students will address these concepts as they investigate and evaluate relevant biological issues.

Prerequisite: None

BIO-431 VERTEBRATE ZOOLOGY (4 Credits)

Introduction to the characteristics of the seven classes of vertebrate animals, their structure and life history. Lecture and lab. Course fee applied.

Prerequisite: BIO-233

BIO-451 MOLECULAR CELL BIOLOGY (4 Credits)

Examines the structure, function, differentiation and reproduction of cells at all levels of organization with special emphasis on current research in oncology, immunology, neurology and embryology. Lab experience includes modern techniques in sterile tissue culture and cell growth as well as some computer graphics. Lecture and lab. Course fee applied.

Prerequisite: BIO-351

BIO-480 SPECIAL TOPICS BIOLOGY (1-3 Credits)

Prerequisite: None