

Course Title: Anatomy & Physiology I

Course Code (lecture): BIO221 (3 units)

Course Code (lab): BIO221L (1 unit)

Course Description: This course will serve as an introduction to the systems of the human body. Necessary life functions and survival needs will be examined, followed by an orientation of the language of anatomy. Thorough analyses of intracellular function, tissue types, the integumentary system, skeletal tissue and the human skeleton, joints, muscle tissue and the muscular system, the fundamentals of nervous tissue, the nervous system, and the endocrine system will follow.

Course Title: Anatomy & Physiology II

Course Code (lecture): BIO226 (3 units)

Course Code (lab): BIO226L (1 unit)

Prerequisite*: Anatomy & Physiology I

Course Description: This course will focus on the structure and function of the human body and mechanisms for maintaining homeostasis. Topics include the study of blood, cardiovascular system including lymphatic system, immune system, respiratory system, digestive system, urinary system and male and female reproductive systems. Emphasis is placed on the integration of systems as they relate to normal health. Laboratory exercises provide first-hand experience with the structure and processes discussed in lecture.

Course Title: Biochemistry

Course Code (lecture): BIO321 (3 units)

Course Code (lab): BIO321L (1 unit)

Prerequisite*: General Chemistry 1 and 2, and Organic Chemistry 1

Course Description: Biochemistry examines the structure and function of the following biological macromolecules in the context of cellular integrity, dynamics and metabolism: carbohydrates, lipids, proteins and nucleic acids. The weekend biochemistry topics include enzymology, bioenergetics, catabolism, anabolism, regulation of gene expression, biotechnology, and hormone regulation of mammalian metabolism and the pre-biotic evolution of life on earth. This course is designed to enhance, deepen, and further integrate knowledge of the subject by developing different problem-solving skills and conceptual organization.

Course Title: General Chemistry I

Course Code (lecture): CHEM211 (3 units)

Course Code (lab): CHEM211L (1 unit)

Course Description: The first semester of chemistry for science majors, pre-professional students, and others in science related fields. This course provides a quantitative introduction to atomic and molecular structure, states of matter, basic thermodynamics, and solutions. A number of concepts within each topic will be demonstrated and sample problems discussed. These topics will be covered at a brisk pace in lectures due to the accelerated nature of this course. Within this course, students become conversant with the scientific vernacular, chemical symbols and notation. Students will manipulate mathematical equations in order to appreciate the quantitative nature of atomic interactions. States of matter will be categorized. The Periodic Table of the Elements will be studied to illustrate chemical periodicity and bonding. The gas laws will be introduced in order to understand statistical handling of large populations of atoms and molecules. The laws of thermodynamics will be introduced, including the concepts of enthalpy and entropy.

Prerequisites for all courses is a high school diploma, GED, or equivalent. *Prerequisites must transfer with a "C" or greater; must be equivalent to a 4 unit semester with a lab component (Psychology exempted); and must have been completed within the last 10 years.

Course Title: General Chemistry II

Course Code (lecture): CHEM216 (3 units)

Course Code (lab): CHEM216L (1 unit)

Prerequisite*: General Chemistry I

Course Description: The General Chemistry 2 course further develops the concepts of chemical bonding in order to appreciate the size, shape, polarity and macroscopic behavior of molecules. The processes of oxidation-reduction will be explained, particularly as they apply to biological systems. Solution chemistry will be introduced, stressing the concepts of equilibriums and colligative properties. Acid/base chemistry, including titrimetry, buffers, and pH will be studied. Nuclear chemistry in the evolution of matter will be considered. Organic chemistry will be introduced as a corollary to concepts presented in the college chemistry course.

Course Title: Human Biology I

Course Code (lecture): BIO211 (3 units)

Course Code (lab): BIO211L (1 unit)

Course Description: This course is a comprehensive examination of the human organism. It begins with a survey of the principles and structures characteristic of all living things. The remainder of the biology course focuses on molecular biology, biochemistry, cell biology, histology, and genetics.

Course Title: Human Biology II

Course Code (lecture): BIO216 (3 units)

Course Code (lab): BIO216L (1 unit)

Prerequisite*: Human Biology I

Course Description: Biology 2 course continues with a comprehensive examination of the human organism. It focuses on histology, anatomy, and physiology of the major organ systems found in the human body. Nutrition and evolution are also discussed. Students gain an understanding of the structure and function of the human body on a variety of complex levels.

Course Title: Physics I

Course Code (lecture): PHYS211 (3 units)

Course Code (lab): PHYS211L (1 unit)

Course Description: This non-calculus, algebra/trigonometry based college physics course will include the following topics: Motion in one and two dimensions, velocity, acceleration, forces and Newton's Laws of motion, linear and angular momentum, circular motion, center of mass, torque, mechanics of rigid bodies, work, kinetic energy, and potential energy, Newton's Law of gravitation, Kepler's Laws, and simple harmonic motion. Problem solving skills will be strongly emphasized.

Course Title: Physics II

Course Code (lecture): PHYS216 (3 units)

Course Code (lab): PHYS216L (1 unit)

Prerequisite*: Physics I

Course Description: This is the second course of a two-term algebra-based sequence in general physics focusing on thermodynamics, electricity, magnetism and optics. Topics will include, but not be limited to; kinetic theory of gasses, thermodynamic processes, waves, electric fields, flux and force, electricity, circuits, magnetism, electromagnetic interactions, induced currents, lenses and mirrors.

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Students will be able to apply physical laws and principles to practical problems relevant to several scientific fields. Furthermore, the student will understand how observation and experimentation create testable scientific theories and thus offer a strong foundation in problem solving strategies. Students will conduct experiments in lab and submit pre-lab and post-lab assignments describing the relevance of laboratory activities. The laboratory course compliments the theories and concepts discussed in lecture by utilizing hands-on examples.

Course Title: **Organic Chemistry I**

Course Code (lecture): OCHM311 (3 units)

Course Code (lab): OCHM311L (1 unit)

Prerequisite*: General Chemistry I and II

Course Description: The course will begin with a review of some of the major concepts in inorganic chemistry. The chemistry of carbon compounds will be distinguished from inorganic chemistry. The various classes of aliphatic and aromatic compounds will be examined. The diversity of functional groups will be explored with regard to reactivity and mechanism. Nucleophilic and electrophilic reaction mechanisms will be stressed. Stereochemistry will be explored. Concepts of hydrophobicity and hydrophilicity will be examined in relation to extraction, phase partitioning, absorption and chromatography. Biochemical and physiological analogies will be reviewed.

Course Title: **Organic Chemistry II**

Course Code (lecture): OCHM316 (3 units)

Course Code (lab): OCHM316L (1 unit)

Prerequisite*: Organic Chemistry I

Course Description: This course further elaborates functional groups with emphasis on alcohols, phenols, ethers, aldehydes, ketones, amides, esters, amines, and carboxylic acids once the nature and reactivity of these functional groups is understood, important biological examples will be stressed and elaborated. Biochemistry, particularly the properties and metabolism of biological macromolecules such as nucleic acids, lipids, and proteins will be introduced.

Course Title: **Microbiology**

Course Code (lecture): BIO231 (3 units)

Course Code (lab): BIO231L (1 unit)

Course Description: The course is designed to convey general concepts, methods, and applications of microbiology for health sciences. The role of microorganisms in the environment and in human disease is discussed. Topics include: immunology, bacteriology, virology, and mycology; the morphology, biochemistry, and physiology of microorganisms including bacteria, viruses, and fungi; the diseases caused by these microorganisms and their treatments. Laboratory portion of the course provides first hand experiences that inform, illustrate, expand, and reinforce major concepts discussed in lecture.

Course Title: **Psychology I**

Course Code (lecture): PSY102 (3 units)

Course Description: Examines basic psychological concepts, such as the nervous system, memory, intelligence and development along with Freudian, humanistic, social, cognitive, and trait theories. Presents an introduction to the issues, methods, and descriptions of psychology. Discusses individual and social problems of everyday life through the viewpoints and methods of modern scientific psychology. Examines the psychological processes through which people deal with the challenges of everyday life.

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Course Title: Psychology II

Course Code (lecture): PSY202 (3 units)

Prerequisite: Psychology I

Course Description: This Developmental Psychology course will focus on the lifespan perspective and theories of human development from infancy, early childhood to adolescence. Classes will focus on prenatal development, birth and physical development, cognitive development and socioemotional development throughout the lifespan. Critical thinking skills will be important to the understanding of the important elements of development throughout a person's life.

Course Title: Biopsychology

Course Code (lecture): BIO431 (3 units)

Course Code (lab): BIO431L (1 unit)

Prerequisite: Psychology I

Course Description: This course will examine the development and function of the brain. It will assess various sensory systems, and how neural processes inform the human experience through sleep, sex, emotion, hunger, and other aspects of consciousness. An assessment of causes of brain damage and various psychiatric disorders will also be reviewed.

Course Title: Human Genetics

Course Code (lecture): GEN331 (3 units)

Course Code (lab): GEN331L (1 unit)

Course Description: This course will examine trait inheritance and the mechanisms by which different traits propagate. This will require an analysis of Mendelian genetics and its extensions. Chromosomal mutation will be investigated, and a more in-depth analysis of replication, transcription, and translation will be offered than in past courses. A closer look at cancer will be offered, as well as a brief analysis of the ethics of biotechnology. It will address the human nature of genetics, genetic development and health and wellness areas related to how genes interplay within the human organism. Historical concepts in research and genetic developments will be explored. Additionally, concepts related to ethics and genetics, research and application will be explored. Students will learn how genes influence physical traits, physiological considerations, and issues related to health, wellness and related applications.

Course Title: Chemistry for Health Sciences

Course Code (lecture): CHEM351 (4 units)

Course Code (lab): CHEM351L (1 unit)

Prerequisite*: General Chemistry I

Course Description: CHEM351/CHEM351L is an introductory course, which is designed exclusively for Health Sciences for Pre-Nursing majors. Basic concepts in general, organic and biological chemistry are covered. The course is designed to show the centrality of chemistry between the physical and life sciences. Topics covered will include measurement and unit conversion, atomic and molecular structure of matter, solutions, acid/base chemistry, organic chemistry and structure of proteins, carbohydrates, and fats. Laboratory portion of the course provides first hand experiences that inform, illustrate, expand, and reinforce major concepts discussed in lecture.

IoS Course Codes – Descriptions – Prerequisites, effective August 26, 2016

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