

FALL 2007 CHEMISTRY / BIOLOGY ELECTIVES

SC325 Advanced Organic Chemistry (3-0-3) **Asst. Prof. C. Gutteridge**

Building on the foundation of SC225-226, this course will apply fundamental topics such as stereochemistry, conformation, structure / bonding and mechanisms to advanced topics such as pericyclic reactions, heterocyclic compounds, and the relationship between structure and function of biochemically important organic compounds.

SC338 Molecular and General Genetics (3-0-3) **Asst. Prof. B. Rehill**

Students in this course will study the inheritance of traits, starting with basic (Mendelian) genetics and ending with modern molecular biology. The course will examine incomplete dominance, epistasis, pleiotropy, transformation, cloning, genetic engineering, imprinting, and experimental techniques.

SC416 Analytical Chemistry in Forensic Investigations (3-0-3) **Prof. G. Cheek**

This course will address the types of sample collection techniques used in criminal investigations, as well as the chemical and instrumental methods used to determine the presence of substances associated with illicit activities. Emphasis will be placed on specific forensic investigative techniques such as DNA fingerprinting, drug detection, arson investigations (petroleum residues), bombings (explosives residues) and characterization of fibers / paint.

SC485 Chemical Kinetics (3-0-3) **Assoc. Prof. R. McClean**

Chemical kinetics is the study of the rates of chemical reactions, and how the rates depend on factors such as concentration and temperature. Chemical kinetic studies are important in providing evidence for reaction mechanisms; i.e., the elementary steps that occur at the molecular level. Kinetics is relevant to disciplines such as biology, oceanography, pharmacology, geology, physics, atmospheric science, chemical engineering, and psychology. This course will focus on basic kinetic concepts, the analysis of kinetic data, and the theories of reaction rates. Most applications will involve elementary gas phase reactions.

SPRING 2008 CHEMISTRY / BIOLOGY ELECTIVES

SC311 Marine and Atmospheric Chemistry (3-0-3) **Assoc. Prof. D. O'Sullivan**

An introduction to chemical processes that influence the chemistry of marine waters and the atmospheric marine boundary layer. The course will begin with the composition of seawater and progress towards an understanding of the biogeochemical cycles of important elements in oceanic systems, including the chemistry of tropospheric ozone and aerosol formation. The impact these processes have on current and future Naval operations will be discussed.

SC336 Biochemistry II (3-0-3)**Asst. Prof. J. Schlessman**

This course will provide advanced treatment of topics covered in SC335, such as biomolecular structure, bioenergetics and enzyme kinetics, and cover the following new material as well: biosynthesis of amino acids, nucleotides and cofactors; photosynthesis and plant metabolic cycles; signal transduction; molecular genetics; regulation of eukaryotic and prokaryotic gene expression. There will be an introduction to virology, immunology and the metabolism of specialized cells. Prereq: SC335.

SC421 Introduction to Polymer Chemistry (2-2-3)**Asst. Prof. S. Lin**

The synthesis, characterization and physical chemistry of macromolecules, both man-made and natural, will be presented with the ultimate goal of understanding the relationship between molecular structure and physical properties. Polymer processing, fabrication and recent novel applications, including those related to the Navy, will be presented. Field trips to local polymer research and manufacturing facilities are planned.

SC486 Inorganic Materials and Nanotechnology (3-0-3)**Assoc. Prof. W. Heuer**

This course will survey applications of Inorganic materials in nanoscience and technology. Specific examples to be discussed will include: semiconductor materials and "quantum dots" for use in electronic and photonic devices, applications of metal complexes as sensitizers in solar cells and as emitters electroluminescent displays, superconducting materials, template fabrication of nanostructures, and applications of carbon nanotubes in nanoelectronics and sensors.