

CHM 094
BASIC BIOLOGICAL CHEMISTRY

COURSE DESCRIPTION:

Prerequisites: MAT 060 and RED 080, or satisfactory score on placement test

Corequisites: MAT 070 or satisfactory score on placement test

This course introduces the chemistry important to biological processes. Emphasis is on the aspects of general, organic, and biological chemistry that apply to biological systems and processes. Upon completion, students should be able to demonstrate an understanding of the basic biological chemistry necessary for success in college-level biology courses. Laboratory work reinforces the principles discussed in lecture. Course Hours Per Week: Class, 3. Lab, 2. Semester Hours Credit, 4.

LEARNING OUTCOMES:

Upon completion of this course, the student will demonstrate basic knowledge in the following:

- a. Fundamental chemical concepts in inorganic chemistry.
- b. Fundamental chemical concepts in organic chemistry.
- c. Fundamental concepts of biochemistry.

OUTLINE OF INSTRUCTION:

- I. Measurement in chemistry
 - A. Metric system
 - B. Density and specific gravity
 - C. Temperature scales

- I. Properties of matter
 - A. States of matter
 - B. Physical and chemical changes
 - C. Physical and chemical properties
 - D. Mixtures
 - E. Elements
 - F. Compounds

- I. Structure of matter
 - A. Law of definite bonds
 - B. Atomic structure
 - C. Periodic table

- I. Chemical bonding
 - A. Types of chemical bonding
 - B. Writing formulas for compounds
 - C. Naming compounds
 - D. Formula weights
 - E. Chemical mole

- V. Chemical equations
 - A. Types of equations
 - B. Balancing equations

- VI. Oxygen
 - A. Physical and chemical properties
 - B. Ozone
 - C. Oxidation-reduction reactions

- VII. Water
 - A. Chemical and physical properties
 - B. Hydrogen bonding

- VIII. Solutions
 - A. Properties of true solutions
 - B. Properties of colloidal solutions
 - C. Properties of suspensions
 - D. Concentration

- VIII. Ionization and dissociation

- IX. Acids and bases
 - A. Properties of Arrhenius acid bases
 - B. Properties of Brønsted-Lowry acids and bases
 - C. Chemical equilibrium
 - D. pH
 - E. Neutralization
 - F. Buffers
 - G. Henderson-Hasselback equation

- XI. Organic chemistry
 - A. Hydrocarbons
 - B. Alcohols
 - C. Esters
 - D. Ethers
 - E. Organic acids
 - F. Cyclic organic compounds
 - G. Heterocyclic organic compounds

- XII. Biochemistry
 - A. Carbohydrates
 - B. Lipids
 - C. Proteins
 - D. Enzymes

REQUIRED TEXTBOOKS AND MATERIALS:

To be selected by the Instructor/Discipline Chair.

STATEMENT FOR STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 686-3652 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.