

**J. Sargeant Reynold Community College
Course Content Summary**

Course Prefix and Number: CHM 260

Credits: 3

Course Title: Introductory Biochemistry

Course Description: Explores fundamentals of biological chemistry. Includes study of macromolecules, metabolic pathways, and biochemical genetics. Prerequisites: CHM 112 and satisfactory placement score for ENG 111. Lecture 3 hours per week.

General Course Purpose: This is a one-semester college transfer-level course designed to meet the needs of science majors. CHM 260 is an elective course for science majors in their second year of college study following completion of CHM 111-112, "College Chemistry I-II" and BIO 101-102, "General Biology I-II". This course would also benefit the students who are in pre-medical, pre-dental, pre-veterinary, and health technologies programs.

Course Prerequisites and Co-requisites:

Prerequisites: CHM 112 and satisfactory placement score for ENG 111.

Course Objectives:

Upon completing the course, the student will be able to:

- a. Describe how cells are fractionated and their components studied;
- b. Describe the chemical and physical properties of water as they relate to life processes;
- c. Describe the structure and chemistry of carbohydrates, lipids, proteins, and nucleic acids;
- d. Define and discuss the significance of protein conformation;
- e. Explain enzyme catalysis, kinetics, and regulation;
- f. Describe the structure and function of biological membranes;
- g. Describe the pathways of intermediary metabolism and their regulation; and
- h. Describe replication, transcription, and translation.

Major Topics to Be Included:

- a. Review of cell structure and function
- b. Water and pH
- c. Protein structure and function
- d. Enzyme catalysis
- e. Lipids and membranes
- f. Nucleotide and nucleic acid chemistry
- g. DNA, RNA, and protein synthesis
- h. Gene regulation
- i. Recombinant DNA
- j. Carbohydrates
- k. Bioenergetics
- l. Intermediary metabolism

Optional Topics:

- a. Muscle and connective tissue proteins
- b. Experimental methods
- c. Photosynthesis
- d. Immunochemistry
- e. Complex carbohydrates and glycoproteins
- f. Neurochemistry

Effective Date of Course Content Summary: Fall, 2014