

Minnesota State College Southeast

CHEM 2520: General, Organic & Biochemistry II

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 2

OJT Hours/Week: *.*

Prerequisites:

This course requires the following prerequisite

CHEM 2518 - General, Organic & Biochemistry I

Corequisites: None

MnTC Goals: Goal 02 - Critical Thinking, Goal 03 - Natural Science

This is the second part of a two part series of General, Organic and Biochemistry. The course will further explore basic principles of organic and biochemistry. The carbonyl, carboxyl, and amine functional groups as well as nucleic acids, energy production and metabolism mechanisms will be covered through theoretical and experimental means. These topics are related to biological chemistry throughout the course as it is a foundation course for students enrolled in health related programs; however, this course is open to all students enrolled in any program. (MnTC Goals 2 & 3) (Prerequisite: Successful completion of CHEM 2518 General, Organic and Biochemistry I) (4 credits: 3 lecture/1 lab)

B. COURSE EFFECTIVE DATES: 03/08/2012 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Organic Functional Groups (Aldehydes, Ketones, Carboxylic Acids, Esters, Amines and Amides)
2. Enzymes and Vitamins
3. Nucleic Acids
4. Biochemical Energy Production
5. Metabolism (Carbohydrate, Lipid and Protein)

D. LEARNING OUTCOMES (General)

1. Gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected
2. Imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives which can give alternative meanings or solutions to given situations or problems
3. Analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them
4. Demonstrate understanding of scientific theories
5. Formulate and test hypotheses by performing laboratory, simulation or field experiments in at least two of the natural science disciplines of chemistry and biology. Gain a greater depth in students; laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty will be demonstrated
6. Increase and become more perseverant in problem solving and critical thinking skills as they relate to chemical processes
7. Demonstrate competence in nomenclature, chemical reactions and structure of aldehydes, ketones, carboxylic acids, amines and amides
8. Identify the function, storage and sources of vitamins and enzymes
9. Understand nucleic acid structure, replication, transcription, translation and manipulation
10. Understand metabolism of carbohydrates, lipids and proteins, both catabolic and anabolic, in terms of energy, chemical reactions and function
11. Be more interested in chemistry and relate concepts to real life experiences

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 02 - Critical Thinking

1. Gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected.
2. Imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives which can give alternative meanings or solutions to given situations or problems.
3. Analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.

Goal 03 - Natural Science

1. Demonstrate understanding of scientific theories.
2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted