

CHEM 146

Introduction to Organic and Biochemistry

3 Credits (3 lecture hours and 1 recitation hour per week)

Community College of Baltimore County
Common Course Outline

Description

CHEM146 – Introduction to Organic and Biochemistry: Introduces the chemistry of organic compounds, discusses hydrocarbons & their functional derivatives, stereochemistry, carbohydrates, proteins, lipids & nucleic acids.

Pre-requisites: CHEM 131 or (CHEM 107 and CHEM 108). Concurrent enrollment in CHEM 147 is highly recommended.

Overall Course Objectives

Upon completion of this course, students will be able to:

1. describe the general principles of chemical equilibrium;
2. explain the rate laws for the kinetics and order of reaction;
3. describe the concepts of acids and bases;
4. calculate pH;
5. describe the general properties of hydrocarbons and hydrocarbon derivatives;
6. predict the types of intermolecular forces expected between various types of particles;
7. apply international union of pure and applied chemistry (IUPAC) names to any organic compound having up to 10 carbons in its parent structure;
8. classify biological compounds and structures as a carbohydrate, monosaccharide, disaccharide, polysaccharide, fat, lipid, protein or nucleic acid given its structure or visa vice versa;
9. describe the general properties and reactions of compounds which have the functional groups, listed above;
10. classify various stereoisomers given their structure including enantiomers, diastereomers and geometrical isomers;
11. write chemical equations involving the transformation of some functional groups into others;
12. describe the methods used to analyze amino acids and proteins; and
13. describe the biological function of carbohydrates, protein enzymes, lipids and nucleic acids.

Major Topics

- I. Covalent and Ionic Bonding
- II. Interparticle Forces
- III. Concepts of Chemical Equilibrium
- IV. Concepts of Chemical Kinetics
- V. Concepts of Acids and Bases and pH
- VI. Alkanes, Alkenes, Alkynes and Aromatic Hydrocarbons

The Common Course Outline (CCO) determines the essential nature of each course.

For more information, see your professor's syllabus.

- VII. Alcohols, Phenols, Ethers, and Organic Halides
- VIII. Aldehydes and Ketones
- IX. Carboxylic Acids and Esters
- X. Carbohydrates
- XI. Amines and Amides
- XII. Lipids
- XIII. Proteins and enzymes
- XIV. Nucleic acids
- XV. DNA, RNA

Course Requirements

Grading will be determined by the individual faculty member, but shall include the following, at minimum:

- 13 Homework problem sets
- three Quizzes
- three Unit Exams and a comprehensive Final Exam

Written assignments and research projects: Students are required to use appropriate academic resources in their research and cite sources according to the style selected by their professor.

Other Course Information

While it is expected that these topics will be covered, faculty members may include additional topics consistent with department practices

Completion of CHEM 107, 108, 146, and 147 will satisfy transfer requirements for institutions that require 8 credits of college chemistry that includes 4 credits of organic & biochemistry.

Date Revised: 11/7/2023