Chemistry 2304
Elementary Organic Chemistry for the Life Sciences

Credits: 3

Prerequisites: prereq Grade of at least C- in 2301

Catalog description: Second semester of organic chemistry, designed for life sciences majors. Covers conjugation, aromaticity, chemistry of carbonyls and amines, carbohydrates, amino acids, proteins, enzyme mechanisms, lipids, and nucleic acids. Differs from CHEM 2302 in that it focuses on biological significance of organic molecules and mechanisms.


Grading

Hour Exams: 20% x 3 (4 total with one drop) = 60%
Homework Projects: 5 x 2% = 5%
Final Exam: 30%

Tentative Course Outline

A. Conjugation and Aromatic Systems
   Conjugation
   Benzene and Aromatic Systems
   Aromatic Substitution Reactions

B. Carbonyl Chemistry
   Carboxylic Acids
   Aldehydes and Ketones-Nucleophilic Addition
   Carboxylic Acid Derivatives
   Enolate Chemistry
   Carbonyl Condensation Reactions

C. Amines
   Physical Properties
   Preparation of Amines
   Reactions of Amines

D. Carbohydrates
   Monosaccharides
   Disaccharides
   Polysaccharides

E. Amino Acids and Proteins
   Properties of Amino Acids
   Stereochemistry of Amino Acids
   Peptides
Peptide Sequencing
Peptide Synthesis
Protein Structure
Enzymatic Catalysis

F. Lipids
Waxes
Fatty Acids
Phospholipids
Eicosanoids
Terpenes
Steroids

G. Nucleic Acids
Synthesis
Structure
DNA Sequencing

H. Cofactor Chemistry
B6 Reactions
TPP Reactions

I. Chemistry of Metabolic Pathways
Analysis of the Chemical Reactions in Metabolic Pathways