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.

Text: Organic Chemistry, 3ed., Janice G. Smith

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 Subtitution 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