



## CHM 236: Organic Chemistry II

Part two of a two-semester science majors level course on the facts and principles of chemistry as they apply to carbon-based compounds. The course has a mandatory lab that complements the lecture. Topics include re-emphasis of lab safety; synthetic techniques; spectroscopy; patterns in the nomenclature, structure, physical properties, spectra; reactivity; stability, stereochemistry and chemical reactions of conjugated systems, benzene and its derivatives, aromatic systems, ethers, carbonyls, amines, carboxylic acids, esters, amides; acid chlorides; anhydrides; nitriles, enols, steroids, lipids, carbohydrates and amino acids; applying the principles of thermodynamics, kinetics and reaction mechanisms to the substitution addition, redox, condensation and elimination reactions of these compounds. Prerequisite(s): CHM 235 with a grade of C or better. Three lecture and three laboratory hours per week. Instructional Support Fee applies.

### Course Student Learning Outcomes

1. Recognize families of organic compounds based on their functional groups, and apply nomenclature rules to draw formulas, structures, and write names of organic compounds.
2. Apply the concepts of isomerism and chirality in organic chemistry, draw Fischer projections, recognize and assessing configurations.
3. Apply knowledge of functional group reactivity to propose reasonable mechanisms for basic organic chemistry reactions, and apply knowledge of reaction mechanisms to predict and explain the outcome of a reaction, relative reactivity and stereochemistry.
4. Explain the concept of aromaticity and determine if a compound is aromatic, anti-aromatic or non-aromatic.
5. Describe the techniques of Nuclear Magnetic Resonance spectrometry, Infrared spectroscopy, and Mass Spectroscopy, and use spectroscopic data to determine molecular structures.
6. Plan multi-step synthesis of organic compounds using retrosynthetic analysis and functional group interconversions.

**Credits:** 4

**Program:** Chemistry