Course Information Form (CIF)

Course Code: CHE 203 (IAI CHM 913)
Course Title: Organic Chemistry I

Department: Natural Sciences
PCS Code: 1.1 - Baccalaureate/Transfer
CIP Code: 40.0504
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 3-0-3
Credit Hour Distribution:

Lecture: 3	Lab: 0	Clinical: 0	**Total: 3**

General Course Information

Catalog Description

Properties, preparations, and reactions of alkanes, alkenes, alkynes, alkyl halides, alcohols, epoxides, and organometallics. Mechanisms of reactions. Stereochemistry.

General Course Objectives

To introduce the fundamentals of organic chemistry. To reinforce an understanding of the fundamentals by applying concepts to synthesis problems. To make applications to everyday life.

Minimum Placement Levels

English	Reading	Math
None	Placement out of CCS 098	None

Prerequisites

Credit in CHE 141 and CHE 142 with grades of C or higher

Methods of Evaluation

Quizzes (weekly), 3-4 hour exams, project (researching an organic journal article (original research) and giving a presentation/report), and a comprehensive final exam.

Instructional Materials and Additional Supplies

Organic Chemistry, current edition; Joel M. Karty, Norton
Organic Chemistry Study Guide, current edition
SmartWork5 online homework system
Molecular Modeling Kit

Course Content

General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Bonding Review	1. Draw resonance structures. 2. Predict hybridization. 3. Describe valence bond theory and molecular orbital theory. 4. Predict polarity of molecules. Review hydrogen bonding.	6	0	0
Alkanes and Cycloalkanes	1. Draw and name alkanes. 2. Identify constitutional isomers. 3. Perform conformational analysis of linear alkanes. 4. Perform chair inversions of cyclohexane and determine the lowest energy chair conformation.	5	0	0
Stereochemistry	1. Recognize and discuss stereochemical properties, including optical activity. 2. Characterize configurations of molecules.	3	0	0
Organic Acids/Bases	1. Define and recognize both Bronsted and Lewis acids and bases. 2. Correlate pKa to acidity or basicity. 3. Correlate structure to relative acidity or basicity by applying the CARDIN-al rule.	3	0	0
Elementary Steps (Mechanism)	1. Identify elementary steps in a mechanism. 2. Draw the curved arrows for an elementary step. 3. Predict if the products or reactants of a reaction are favored. 4. Determine if a carbocation will rearrange and predict the product of the rearrangement. 5. Apply Frontier Molecular Orbital Theory to elementary steps.	5	0	0
Nomenclature of Functional Groups	1. Draw and name alcohols, alkyl halides, alkenes, ethers, amines, aldehydes, ketones, carboxylic acids, and carboxylic acid derivatives.	2	0	0
Nucleophilic Substitution and Elimination	1. Complete reaction equations for substitution and elimination reactions. 2. Describe the mechanism of reactions and use the mechanism to predict products. 3. Explain the role of the solvent, nucleophile, and substrate in determining the appropriate reaction pathway.	8	0	0
Organic Synthesis	1. Classify reactions as functional group transformations or carbon-carbon bond forming. 2. Perform retrosynthetic analysis. 3. Understand and avoid synthetic traps in designing a synthesis. 4. Complete reaction equations, describe the mechanism, and use the mechanism to predict products of some useful substitution and elimination reactions including, but not limited to: Williamson ether synthesis, epoxide formation from halohydrins, ring opening reactions of epoxides, alpha halogenation of aldehydes and ketones, and alpha alkylation of aldehydes and ketones. 5. Apply the principles of kinetic vs. thermodynamic control to alpha-alkylation reactions.	6	0	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Alkene and Alkyne Reactions	1. Complete reaction equations for the reactions of alkenes and alkynes. 2. Use mechanisms to predict products of the reactions of alkenes and alkynes. 3. Explain conjugation and its role in stabilizing compounds. 4. Complete reaction equations for reactions involving conjugated systems. 5. Use the mechanism to predict products. 6. Define and identify kinetic and thermodynamic products.	7	0	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
45	0	0