



# SCHOOL OF STEM SYLLABUS



**TERM:**

**COURSE CODE:** CHP-225

**COURSE TITLE:** Organic Chemistry I

**DAY(S) AND TIME(S):**

**LOCATION:**

**INSTRUCTOR:**

**OFFICE HOURS:**

**OFFICE LOCATION:**

**EMAIL:**

**PHONE:**

**COURSE PREREQUISITE:** CHP - 211

**CREDITS:** 4

## **COURSE DESCRIPTION:**

This is the first of a two-course sequence of introductory organic chemistry. The physical and chemical properties of organic compounds, including aliphatics, alicyclics, and aromatics are studied through an examination of their structure, preparation, reactivity, and spectral properties. The study of organic functionality centers in the hydroxyl and carbonyl groups. The laboratory component includes separation and purification techniques and other synthetic procedures.

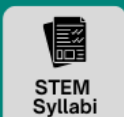
## **STUDENT LEARNING OUTCOMES:**

Learning objectives in Organic Chemistry 1 include student understanding of:

1. The geometries and structures of carbon-based compounds, the tetravalence of carbon atoms, and the local geometries that result from  $sp$ ,  $sp^2$ , and  $sp^3$  hybridization.
2. The common and important functional groups in organic compounds.
3. The composition and structures of hydrocarbon compounds and geometric isomerism.
4. Stereoisomerism; chirality of tetra-substituted carbon atoms; R and S enantiomers; and diastereoisomerism.
5. The standard organic chemistry reaction mechanisms: substitution, elimination, and addition reactions.
6. The preparation, structures, and reactions of alkyl halide compounds. The reactivity of electron deficient carbons. Nucleophilicity and structures of nucleophiles.
7. The preparation, structures, and reactions of alkene and alkyne compounds.
8. The fundamental description of spectroscopic methods of analysis including mass spectrometry, infrared, and nuclear magnetic resonance spectroscopy. Determinations of chemical structure on the basis of spectroscopic evidence.

## **STEM STUDENT HUB**

Information & Resources tailored towards students taking any STEM courses



**TEXTBOOK AND SUPPLEMENTAL MATERIALS:**

"Organic Chemistry" 9<sup>th</sup> Edition, Cengage Learning Publishing

**Author(s):** John McMurry

**ISBN-13:** 978-1-305-08211-3

*Lab Manual specific to CHP-225*

**GRADING POLICY:**

Three exams 75 points

Quizzes 5 points

Lab 5 points

Home Works 5 points

Presentation 5 points

Class Participation 5 points

**SAMPLE COURSE SCHEDULE:**

Week 1 Introduction to the course, grading policy, course  
Requirements. Safety Rules in the laboratory, Glassware  
Chapter 1: Structure and Bonding

Week 2 Chapter 1: Structure and Bonding

Week 3 Chapter 2: Polar Covalent Bonds; Acids and Bases

EXP. 1 (Lab 1 - Melting Point)

Week 4 Chapter 2: Polar Covalent Bonds; Acids and Bases

Week 5 Chapter 3: Organic Compounds: Alkanes and their Stereochemistry

EXP. 2 (Lab 2 - Boiling Point)

Week 6 Chapter 4: Organic Compounds: Cycloalkanes and their Stereochemistry

Week 7 Review (1,2,3,4) Exam 1

EXP. 3 (Lab 3 - Distillation)

Week 8 Chapter 5: Stereochemistry at Tetrahedral Centers

Week 9 Chapter 6: An Overview of Organic Reactions

EXP. 4 (Lab 4 - Crystallization)

Week 10 Chapter 7: Alkenes: Structure and Reactivity

Week 11 Review (5,6,7)

EXP. 5 (Lab 5 - Sublimation)

Exam 2

Week 12

Chapter 08: Alkenes: Reactions & Synthesis

Week 12

Chapter 9: (Alkynes: An Introduction to Organic Synthesis)  
EXP. 6 (Lab 7 - Thin-Layer Chromatography)

Week 13

Chapter 10: Organohalides

Week 13

Chapter 11: Reactions of Alkyl Halides: Nucleophilic Substitutions & Elimination

EXP. 7 (Lab 8 -Extraction of Caffeine from Tea)

Week 14

Chapter 11: Reactions of Alkyl Halides: Nucleophilic Substitutions & Elimination

Week 14

Review (8,9,10,11)

EXP. 8 (Lab 9 - Isomers)

Week 15

Final Exam

**HCCC POLICIES, STATEMENTS, AND SERVICES:**

<https://www.hccc.edu/administration/academic-affairs/syllabus-addendum.html>



