



DEPARTMENT OF SCIENCE
COURSE INFORMATION SHEET FOR
CHE242 – ORGANIC CHEMISTRY II

All members of the Science Department at Clinton Community College use the respective course templates as a basis for their course syllabi. Faculty may, at their discretion, change the order of the course content or add course content.

COURSE NUMBER AND TITLE: CHE242 – Organic Chemistry II

COURSE SECTION: *TBA*

CONTACT HOURS: 5 **CREDIT HOURS:** 4

SEMESTER AND YEAR: *TBA*

INSTRUCTOR'S NAME, TELEPHONE NUMBER, EMAIL ADDRESS, OFFICE NUMBER, AND OFFICE HOURS: *TBA*

I. COURSE DESCRIPTION:

This course is the second semester of a two-semester sequence of basic organic chemistry covering aromatic reactions, the chemistry of functional groups: alcohols and thiols, ethers, epoxides and sulfides, aldehydes and ketones, carboxylic acids, amines, and some biological compounds. There are three hours of lecture and one two-hour laboratory per week.

II. PREREQUISITE: CHE241 – Organic Chemistry I or its equivalent

III. COURSE OBJECTIVES:

As the result of instructional activities, students will be able to:

1. recognize electrophilic (the usual mechanism) and nucleophilic substitution reactions of aromatic compounds.
2. recognize alcohol and thiol functional groups, be able to name simple alcohols and thiols, know the properties, reactions and spectroscopic properties of these compounds.
3. recognize ethers, epoxides and sulfides, be able to name ethers and know how to prepare ethers and reactions of ethers and epoxides, recognize the spectroscopic properties of ethers.
4. recognize carbonyl compounds and their general reactions.
5. recognize the aldehyde and ketone functional groups, be able to name simple aldehydes and ketones, will know general mechanism of nucleophilic additions to these compounds and know the general spectroscopic properties of aldehydes and ketones.
6. recognize carboxylic acids, be able to name simple carboxylic acids, learn the preparation and reactions of carboxylic acids, know the general spectroscopic properties of carboxylic acids.

7. recognize and be able to name simple amines, learn the preparation and reactions of amines, know the general spectroscopic properties of amines.
8. be introduced to the organic chemistry of biomolecules.

IV. REQUIRED TEXTBOOK AND MATERIALS:

REQUIRED TEXTBOOK:

1. Organic Chemistry, 8th edition; Solomons and Fryle. John Wiley & Sons, Inc.
ISBN# 0-471-41799-8.
2. Study Guide and Solution Manual Organic Chemistry, 8th edition; Solomons and Fryle.
John Wiley & Sons, Inc.
ISBN# 0-471-21507-4.

REQUIRED MATERIALS:

Safety glasses are required for all on-campus sections.

V. METHODS OF INSTRUCTION/COURSE ORGANIZATION: *To be determined by the respective instructor.*

VI. ATTENDANCE PROCEDURE (INCLUDING MAKEUP POLICY): *To be determined by the respective instructor.*

VII. BIBLIOGRAPHY OF READINGS (IF APPLICABLE): *To be determined by the respective instructor.*

VIII. METHODS OF EVALUATION (INCLUDING THE CALCULATION OF COURSE GRADE): *To be determined by the respective instructor. The methods of evaluation shall include tests (test types, length and weight of each), papers (weight of each), projects (weight of each), and other forms of evaluation (weight of each).*

IX. GRADING SCALE: *To be determined by the respective instructor. The grading scale shall indicate what numerical scores correspond to the following grades: A, A-, B+, B, B-, C+, C, C-, D+, D, and F.*

Please Include: If you have, or suspect you may have, any type of disability or learning problem that may require extra assistance or special accommodations, please speak to me privately after class or during my office hours as soon as possible so I can help you obtain any assistance you may need to successfully complete this course. You should also contact Laurie Bethka, Room 420M in the Academic Assistance Center, for further assistance.

X. GENERAL TOPICS OUTLINE:

1. Carbon Compounds and Chemical Bonds.
2. Representative Carbon Compounds: Functional Groups, Intermolecular Forces, and Infrared (IR) Spectroscopy.
3. An Introduction to Organic Reactions: Acids and Bases.
4. Alkanes: Nomenclature, Conformational Analysis, and an Introduction to Synthesis.

5. Stereochemistry: Chiral Molecules.
6. Ionic Reactions—Nucleophilic Substitution and Elimination Reactions of Alkyl Halides.
7. Alkenes and Alkynes I: Properties and Synthesis, Elimination Reactions of Alkyl Halides.
8. Alkenes and Alkynes II: Addition Reactions.
9. Nuclear Magnetic Resonance and Mass Spectrometry: Tools for Structure Determination.
10. Radical Reactions.
11. Alcohols and Ethers.
12. Alcohols from Carbonyl Compounds. Oxidation-Reduction and Organometallic Compounds.
13. Conjugated Unsaturated Systems.
14. Aromatic Compounds.
15. Reactions of Aromatic Compounds.
16. Aldehydes and Ketones I: Nucleophilic Addition to the Carbonyl Group.
17. Aldehydes and Ketones II: Aldol Reactions.
18. Carboxylic Acids and Their Derivatives. Nucleophilic Addition-Elimination at the Acyl Carbon.
19. Synthesis and Reactions of β -Dicarbonyl Compounds: More Chemistry of Enolate Ions.
20. Amines.

XI. ACADEMIC INTEGRITY: Academic honesty is expected of all Clinton Community College students. It is academically dishonest, for example, to misrepresent another person's work as one's own, to take credit for someone else's work or ideas, to accept help on a test, to obtain advanced information on confidential test materials, or to intentionally harm another student's chances for academic success.

XII. COURSE CONTINUITY PLAN: In the case that the college officially closes because of an emergency which causes a short term disruption of this course, we will utilize e-mail to continue this course in the short term (1-3 weeks). All students need to utilize their campus e-mail to receive course related information.