# **COURSE SYLLABUS**

LAST REVIEW	Spring 2021
COURSE TITLE	Organic Chemistry I
COURSE NUMBER	CHEM-0211
DIVISION	Math, Science, and Business Technology
DEPARTMENT	Chemistry
CIP CODE	24.0101
CREDIT HOURS	3
CONTACT HOURS/WEEK	Class: 3
PREREQUISITES	College Chemistry II and Lab, CHEM-0112
COURSE PLACEMENT	None

### **COURSE DESCRIPTION**

The course covers aliphatic and aromatic compounds with emphasis on organic reactions and reaction mechanisms, nomenclature, stereoisomerism, and spectroscopy. Students should enroll in Organic Chemistry Laboratory CHEM-0213 at the same time.

## TEXTBOOKS

http://kckccbookstore.com/

## **METHODS OF INSTRUCTION**

A variety of instructional methods may be used depending on content area. These include but are not limited to the following: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

### **COURSE OUTLINE**

- I. Introduction
  - A. Definitions of organic chemistry terms
  - B. Review of general chemistry concepts
- II. Alkanes
- III. Alkenes
- IV. Alkynes
- V. Cyclic Hydrocarbons (aliphatic)
- VI. Alcohols
- VII. Spectroscopy

## **COURSE LEARNING OUTCOMES AND COMPETENCIES**

Upon successful completion of this course, the student will:

- A. Be able to demonstrate a scientific framework of organic chemistry knowledge in the areas of aliphatic compounds, aromatic compounds, organic reactions and mechanisms, organic nomenclature, and stereochemistry.
  - 1. The student will be able to define, identify, and illustrate various functional groups: alkanes, alkenes, alkynes, cyclic hydrocarbons, aromatic hydrocarbons, halocarbons, and alcohols.
  - 2. The student will be able to demonstrate the ability to name and draw structures of chemical compounds possessing those functional groups.
- B. Be able to demonstrate a working knowledge of the fundamental concepts of organic chemistry to allow further study of chemistry.
  - 1. The student will be able to predict the outcome of organic reactions involving these functional groups under given reaction conditions.
  - 2. The student will be able to draw and show scientifically valid reaction mechanisms of organic chemical reactions.
  - 3. The student will be able to demonstrate the ability to outline syntheses of simple organic compounds.
  - 4. The student will be able to define pertinent thermodynamic and kinetic parameters associated with conformational analysis and chemical reactions.
  - 5. The student will be able to illustrate pertinent thermodynamic and kinetic parameters associated with conformational analysis and chemical reactions.
  - 6. The student will be able to discuss pertinent thermodynamic and kinetic parameters associated with conformational analysis and chemical reactions.
  - 7. The student will be able to define quantum mechanical theory to discuss the nature of chemical reactivity.
  - 8. The student will be able to illustrate quantum mechanical theory to discuss the nature of chemical reactivity.
  - 9. The student will be able to utilize quantum mechanical theory to discuss the nature of chemical reactivity.
  - 10. The student will be able to illustrate and discuss resonance and resonance structures.

- 11. The student will be able to draw and identify chiral compounds.
- 12. The student will be able to identify and define stereochemistry concepts, such as; racemate, enantiomer, diastereomer, stereoselective, stereospecific, dextrorotatory, levorotatory, and meso-isomers.
- 13. The student will be able to identify and define (*R*), (*S*).
- C. Be able to demonstrate a working knowledge of instrumentation used in organic chemistry.
  - 1. The student will be able to demonstrate an ability in theory and practice of modern instrumental methods of analysis including ultraviolet spectroscopy, infrared spectroscopy, and gas chromatographic mass spectrometry (GC/MS).

### ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

### **COLLEGE POLICIES AND PROCEDURES**

Student Handbook https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-ofconduct.pdf

College Catalog https://www.kckcc.edu/academics/catalog/index.html

College Policies and Statements https://www.kckcc.edu/about/policies-statements/index.html

#### Accessibility and Accommodations

https://www.kckcc.edu/academics/resources/student-accessibility-supportservices/index.html.