

## LABETTE COMMUNITY COLLEGE BRIEF SYLLABUS

### **SPECIAL NOTE:**

This brief syllabus is not intended to be a legal contract. A full syllabus will be distributed to students at the first class session.

### **TEXT AND SUPPLEMENTARY MATERIALS USED IN THE COURSE (if any):**

Please check with the LCC bookstore <http://www.labette.edu/bookstore> for the required texts for this class.

**COURSE NUMBER:** CHEM 205

**COURSE TITLE:** ORGANIC CHEMISTRY I LECTURE

**SEMESTER CREDIT HOURS:** 3

**DEPARTMENT:** Chemistry Department

**DIVISION:** General Education

**PREREQUISITE:** CHEM 124, College Chemistry I or equivalent  
Concurrent Enrollment in CHEM 204, Organic Chemistry I

### **COURSE DESCRIPTION:**

Course content is the same course as CHEM 204 Organic Chemistry I, but lecture only. This is a first course of a two semester study of the principles of organic chemistry. Course content includes organic nomenclature, nucleophilic substitution,  $\beta$ -elimination, acids and base, alkanes, alkenes, stereochemistry, conjugation, and aromaticity.

### **COURSE OUTCOMES AND COMPETENCIES:**

**Students who successfully complete this course will be able to:**

1. Explain bonding and shapes of molecules (chapter 1); Name and explain the structures and reactions of alkanes and cycloalkanes (chapter 2)

- (Review) Explain and write electronic structures, Lewis structures, predict 3-D structures using the VSEPR model and polarity of molecules.
- (Review) Explain bonding theory.
- Identify and write functional groups.
- Explain and write resonance structures.
- Identify and draw the structure of and name alkanes, cycloalkanes, and bicycloalkanes.
- Explain the physical properties of alkanes.
- Explain the sources and reactions (including mechanisms) of alkanes.

2. Explain and identify Bronsted-Lowry and Lewis acids and bases. (chapter 3); Explain stereoisomerism (chapter 4)

- (Review) Explain the definitions of Bronsted-Lowry and Lewis acids and bases.
- Calculate acid and base strength.
- Determine the position of equilibria for acid-base reactions.
- Explain and compare types of isomers.
- Explain and identify chirality, enantiomers, diastereomers, and meso compounds.
- Explain and draw Fischer projection formulas.
- Explain optical activity, Cahn-Ingold-Prelog system, and E-Z system.
- Explain how to separate enantiomers and the significance of chirality in biological compounds.

3. Name and explain the structures and properties of alkenes (chapter 5); Explain the reactions of alkenes (chapter 6)

- Name and draw the structures of alkenes.
- Identify and explain the properties of alkenes.
- Identify the structures and physical properties and name terpenes.
- Explain and write reactions of alkenes.
- Explain the mechanisms of alkene reactions.
- Explain isomerism and alkene reactions.
- 

4. Name and explain the structures and reactions of alkyl halides (chapter 7); Write reactions, compare, and predict nucleophilic substitution and elimination reactions (chapter 8)

- Identify and draw the structure of and name alkyl halides.
- Explain the physical properties of alkyl halides.
- Explain the reactions including mechanisms of alkanes.
- Compare and write the reactions for  $S_N1$  and  $S_N2$  reactions.
- Compare and write the reactions for E1 and E2 reactions
- Compare and predict nucleophilic substitution with elimination reactions

5. Write reactions, compare and predict the products of the reactions of conjugated dienes. (chapter 9)

- Complete the reactions and write the mechanisms for 1, 2 and 1, 4 addition to conjugated dienes.
- Complete the reactions and write the mechanisms for Diels-Alder reactions.
- Explain the effect of electron withdrawing and electron donating groups on dienes and dienophiles.