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 207

COURSE TITLE: ORGANIC CHEMISTRY II

SEMESTER CREDIT HOURS: 5

DEPARTMENT: Chemistry

DIVISION: General Education

PREREQUISITE: CHEM 204 Organic Chemistry I

COURSE DESCRIPTION:
Continuation of CHEM 204 Organic Chemistry I with course content extending into alcohols, ketones, carboxylic acids and derivatives, aromatics, other classes of compounds, reaction mechanisms, and spectroscopy.

COURSE OUTCOMES AND COMPETENCIES (LECTURE)
Students who successfully complete this class will be able to:

1. Name, draw the structures and explain the reactions of alcohols & thiols (Chapter 1); Name, draw the structures and explain the reactions of alkynes (Ch. 2)

   - Identify, draw the structure of and name alcohols and thiols.
   - Explain the physical properties of alcohols and thiols.
   - Identify, draw the structure of and name alkynes.
   - Explain the physical properties of alkynes.

2. Name, draw the structures & explain the reactions of ethers, sulfides, & epoxides (Ch.3); Explain Infrared and Ultraviolet-Visible Spectroscopy (Ch. 4)

   - Identify, draw the structure of and name ethers, sulfides, and epoxides.
   - Explain the physical properties of ethers, sulfides, and epoxides.
   - Explain how UV-Vis spectrometers operate.
   - Determine the unsaturation in molecules using UV-Vis data.
3. Explain Nuclear Magnetic Resonance (Ch. 5); Explain Mass Spectrometry (Ch. 6)

- Explain how nuclear magnetic resonance spectrometers operate.
- Determine the structures of molecules using $^1\text{H}$-NMR and $^{13}\text{C}$-NMR data.
- Explain how mass spectrometers operate.
- Predict molecular formulas and partially determine the structures of molecules from Mass Spectrometry.
- Given molecular formulas, and spectra data such as mass spectrometry, $^1\text{H}$-NMR, $^{13}\text{C}$-NMR, and infrared spectrophotometry of unknowns, be able to determine the structure of the unknowns and interpret the meaning of each spectrum.

4. Name, draw the structures and explain the reactions of aldehydes and ketones (Ch. 7); Name, draw the structures and explain the reactions of carboxylic acids and their derivatives (Ch. 8)

- Identify, draw the structure of and name aldehydes and ketones.
- Explain the physical properties of aldehydes and ketones.
- Explain the reactions of aldehydes and ketones.
- Identify, draw the structure of and name carboxylic acids.
- Explain the physical properties of carboxylic acids.
- Explain the reactions of carboxylic acids and derivatives.

5. Name, draw the structures and explain the reactions of aromatic compounds (Chs 9, 10)

- Name and draw the structures of aromatic compounds.
- Explain aromaticity and given a compound’s structure, be able to predict whether it is aromatic.
- Explain and give examples of electrophilic aromatic substitution reactions.

**COURSE OUTCOMES (LABORATORY)**

Students who successfully complete this class will be able to:

6. Demonstrate competencies in laboratory techniques.

- Describe and demonstrate the following laboratory techniques; IR spectroscopy, NMR spectroscopy, steam distillation, thin-layer chromatography, gas chromatography, qualitative organic analysis, extraction, and maintaining a laboratory notebook.

7. Show greater understanding in concepts that correlate with those in the lecture.

- Show understanding of the following concepts; Grignard reaction, elimination of an alcohol, IR and NMR spectroscopy.