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 Credit Hours

DEPARTMENT: Chemistry Department

DIVISION: General Education

PREREQUISITE: CHEM 204 Organic Chemistry I or equivalent

REVISION DATE: 2/2017

COURSE DESCRIPTION:

Continuation of CHEM 204 Organic Chemistry I with course content extending into aldehydes, ketones, carboxylic acids and derivatives, aromatics, amines, and 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 epoxides and sulfides (Chapter 1); Name, draw the structures and explain the reactions of alkynes (Ch. 2)

- Identify, draw the structure of and name epoxides and sulfides.
- Explain the physical properties of sulfides.
- Identify, draw the structure of and name alkynes.
- Explain the physical properties of alkynes.

2. Explain Infrared and Ultraviolet-Visible Spectroscopy (Ch. 3); Explain Nuclear Magnetic Resonance (Ch. 4)

- Explain how infrared spectrometers produce IR spectra.
- Explain how to use IR spectra in structure determination.
- Determine the role of UV-Vis in structure determination.
- Explain how nuclear magnetic resonance spectrometers produce NMR spectra.
- Determine the structures of molecules using ^{1}H-NMR and ^{13}C-NMR data.

3. Explain Mass Spectrometry (Ch. 5); Name, draw the structures and explain the reactions of aldehydes and ketones (Ch. 6)

- Explain how mass spectrometers are able to produce mass spectra.
- Explain how to use mass spectra data to produce molecular formulas and how to use mass spectra to determine structure of molecules.
- Given molecular formulas, and spectra data such as mass spectrometry, ^{1}H-NMR, ^{13}C-NMR, and infrared spectrophotometry of unknowns, be able to determine the structure of molecules.
- 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.

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

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

5. Name, draw the structures and explain the reactions of amines (Ch. 9);

- Identify, draw the structure of and name amines.
- Explain the physical properties of amines.
- Explain the reactions of amines.

STUDENT LEARNING 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.

- Use laboratory work to show understanding of concepts developed during the lectures.