

University of Arkansas – Fort Smith
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General Syllabus

CHEM 27061 –Organic Chemistry I Laboratory

Credit Hours: 1

Lecture Hours: 0

Laboratory Hours: 3

Prerequisite or corequisite: CHEM 27163 Organic Chemistry I

Effective: 2018~2019

I. Course Information

A. Catalog Description

Presentations of the physical and chemical properties, and structural analysis of aliphatic and aromatic hydrocarbons, alkyl halides, and alcohols.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Assign names to aliphatic and aromatic hydrocarbons, and alkyl halides.
2. Demonstrate and explains the principles of chemical kinetics and chemical equilibrium and apply them to the mechanisms of substitution, addition, and elimination reactions.
3. Predict the physical properties and chemical reactivity of a substance based on its molecular structure.
4. Explain the fundamental theory and operation of the infrared spectrophotometer and the gas chromatograph.
5. Obtain and use mass, IR, and NMR spectra to identify the structure of a molecule.

B. University Learning Outcomes

Organic Chemistry I Laboratory enhances student abilities in the following areas:

Analytical Skills

Critical Thinking Skills: Students will identify a problem or issue and will research, evaluate, and compare information from varying sources in order to evaluate authority, accuracy, recency, and bias relevant to the problems/issues. Students will generate

solutions/analysis of problems/issues evaluated and will assess and justify the solutions and/or analysis.

Communication Skills (written and oral)

Students will communicate proficiently. Students will compose coherent documents appropriate to the intended audience and effectively communicate orally in a public setting.

Ethical Decision Making

Students will model ethical decision-making processes. Students will identify ethical dilemmas and affected parties and will apply ethical frameworks to resolve a variety of ethical dilemmas.

Global & Cultural Perspectives

Students will reflect upon cultural differences and their implications for interacting with people from cultures other than their own. Students will demonstrate understanding or application of their discipline in a global environment and will demonstrate how their discipline impacts or is impacted by different cultures.

III. Major Course Topics

- A. Structure and Properties of Molecules
- B. Alkanes: Preparation, Properties, and Reactions
- C. Stereochemistry
- D. Cycloalkanes
- E. Alkyl Halides: Nucleophilic Aliphatic Substitution
- F. Alkenes: Preparation, Properties, and Reactions
- G. Dienes, Conjugation and Resonance
- H. Aromatic Compounds: Electrophilic Aromatic Substitution
- I. Structural Analysis