



MONROE COUNTY  
COMMUNITY COLLEGE

# Course Outcome Summary

Standard Course

## CHEM 251 Organic Chemistry I

### Course Information

Division	Science/Mathematics
Contact Hours	90
Lecture Hours	45
Lab Hours	45
Total Credits	4

**Prerequisites**                      **CHEM 152**

### Course Description

The preparation, properties, structures and reactions of alkanes, alkyl halides, alkenes, alkynes, alcohols, ethers and carboxylic acids. Laboratory develops basic organic chemistry techniques and skills as well as instrumental methods, including chromatography and spectroscopy. The course includes three hours of lecture and three hours of laboratory each week.

### CHEM 251 Course Outcomes

This course will enable the student to understand how profoundly scientific and technological developments affect society and environment. The fully successful student will also realize the following specific learning outcomes:

1. Identify and draw  $\sigma$  and  $\pi$  bonding, resonance structures, formal charges and functional groups in organic molecules.
2. Utilize molecular, structural, and condensed formulas to represent organic molecules.
3. Name and draw organic compounds in terms of their functional groups under the IUPAC system of nomenclature and other accepted common terminology.
4. Relate the 3-D structure and functional groups of organic molecules to their physical and chemical properties such as acid and/or base behavior, relative boiling/melting point, optical activity, and reactivity profiles.
5. Identify and draw various isomers including cyclic and acyclic conformational, structural, and stereoisomers and explain the energetic and reactivity consequences related to these isomers.
6. Identify and predict reagents and products for the synthesis and reactions of alkyl halides, alkenes, and alkynes including acid-base reactions, nucleophilic substitution ( $S_N1$  and  $S_N2$ ), elimination reactions (E1 and E2), and alkene additions and explain the mechanisms of these reactions.
7. Construct and interpret energy diagrams for a variety of chemical processes.
8. Utilize infrared (IR) spectroscopy and mass spectrometry to assist in the elucidation of molecular structure.
9. Apply a working knowledge of laboratory safety when handling equipment and implementing lab techniques.

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By: M. Fuertes