General Instructional Objectives
Chapter 13. Unsaturated hydrocarbons
13.1 Unsaturated Hydrocarbons
- Be familiar with important classes of unsaturated hydrocarbons and provide examples of each of these classes of compounds and discuss their uses.

13.2 Characteristics of Alkenes and Cycloalkenes
- Describe the bonding characteristics of the carbon atom forming double and triple bonds.
- Be able to determine the number of units of unsaturation in a compound.

13.3 Names for Alkenes and Cycloalkenes
- Know IUPAC nomenclature for alkenes.

13.4 Line-Angle Formulas for Alkenes
- Draw and interpret the line anglel formula of alkenes: acyclic saturated hydrocarbons: normal and branched.

13.5 Isomerism in Alkenes
- Be able to determine different types of isomerism: constitutional, conformational and stereo isomers.
- Write structures and name simple geometric isomers of alkenes.
- Know cis/trans geometric isomerism (stereo ismoers) in alkenes
- Be able to determine the number of units of unsaturation in a compound

13.6 Naturally Occurring Alkenes
- Be able to identify Terpenes.
- Be able to identify isoprene units in terpenes.

13.7 Physical Properties of Alkenes
- Know structure and physical property trends (you do not need to know the exact melting point or boiling point for a specific alkenes and cycloalkanes.

13.8 Chemical Reactions of Alkenes
- Write equations predicting the products of the simple addition reactions of alkenes: hydrogenation, halogenation, hydration, and drohalogenation.
- Discuss the addition mechanism for alkenes particularly as it pertains to the hydration reaction.

13.9 Polymerization of Alkenes: Addition Polymers
- Write equations predicting the products of polymerization reactions of alkenes: ethylene, propylene, vinyl chloride, and styrene.

13.10 Alkynes
- Know IUPAC nomenclature for alkynes.

Chemistry at a Glance: Chemical Reactions of Alkenes
Chemistry at a Glance: IUPAC Nomenclature for Alkanes, Alkenes, and Alkynes
13.11 Aromatic Hydrocarbons
- Be familiar with important classes of aromatic hydrocarbons and provide examples of each of these classes of compounds and discuss their uses.

13.12 Names for Aromatic Hydrocarbons

- Know nomenclature for simple aromatic compounds

13.13 Aromatic Hydrocarbons: Physical Properties and Sources

- Know structure, physical property trends and source of aromatic hydrocarbons.

13.14 Chemical Reactions of Aromatic Hydrocarbons

- Write equations for substitution reactions involving benzene.