CH 241 : ORGANIC CHEMISTRY I

Transcript title

Organic Chemistry I

Credits

5

Grading mode

Standard letter grades

Total contact hours

70

Lecture hours

40

Lab hours

30

Prerequisites

CH 223.

Course Description

Builds on principles of general chemistry with an emphasis on the chemistry of carbon compounds for science and chemical engineering majors. Includes bond angles, molecular shape, Lewis structures, formal charge, electron orbitals, polar bonds, polar reactions, resonance, alkanes, alkenes, cycloalkanes, addition via carbocation, addition via cyclic intermediates, chirality, addition to alkynes, substitution, reaction mechanisms, and energy diagrams. The laboratory introduces standard lab techniques for separating, purifying and characterizing compounds on microscale and/or macroscale, while using record keeping methods acceptable in the discipline of chemistry.

Course learning outcomes

1. Draw, identify, and describe stereochemical aspects, physical properties and chemical properties of alkanes, alkenes, and cycloalkanes.
2. Apply and interpret energy diagrams, Lewis structures, transition states, and curved-arrow electron notation in addition and substitution reaction mechanisms.
3. Predict and describe the effects of resonance on reaction rate, equilibrium, kinetics, percent yield, and reaction efficiency.
4. Safely purify, characterize, and propose possible structures of compounds in the laboratory.
5. Collect, represent, and analyze data drawing valid conclusions based upon quantitative measurements and qualitative observations.

Content outline

1. Introduction to Organic Chemistry 2. Bond Angles and Molecular shape 3. Lewis Structures and Formal Charge 4. Electron orbitals 5. Polar bonds, polar reactions 6. Resonance 7. Alkanes and alkenes 8. Cycloalkanes 9. Addition via carbocation 10. Addition via cyclic intermediate 11. Oxidation and reduction 12. Addition to alkynes 13. Chirality 14. Substitution

Required materials

Required textbooks, laboratory safety glasses or goggles and a scientific calculator.