



## Secondary Course Outline

### Forest Lake Area Schools

Course name: Organic Chemistry

Grade(s): 11-12

Course description (as found in the registration guide):

Organic chemistry is the study of carbon compounds and the various functional groups that commonly are added. The focus will be on nomenclature and structure of these compounds. Students will have a lab component as well focusing on synthesis of small organic molecules and polymers, and characterization of their physical properties. Organic chemistry is a second course designed for science, chemical engineering, and health-related majors, as well as students who aspire to become chemical professionals.

Graduation standard(s) information: (alignment with Minnesota Academic Standards or national standards)

No official standards exist, but recommendations from the American Chemical Society will guide the development of the course and assessments.

- Nomenclature
- Structure, Hybridization, Resonance, Aromaticity
- Acids and Bases
- Stereoisomerism
- Nucleophilic Substitutions and Eliminations
- Oxidations and Reductions
- Spectroscopy
- Synthesis and Analysis

Learner outcomes:

Upon completion of this class, students will be able to name and draw structures for small organic compounds, predict bonding and three-dimensional structure, including chirality of organic compounds. Students will be able to predict the reactivity of specific functional groups, and construct efficient, simple mechanistic pathways for the synthesis of a given compound. Students will be able to identify compounds based on melting point and spectroscopic data.

Course content: (Write this in outline format.)

1. Review of Chemistry AB content (electronegativity, covalent bonds, Lewis structures)
2. Hydrocarbons (nomenclature, structure, resonance, isomerism)
3. Functional groups (nomenclature, structure, properties)
4. Organic reactions (alkylation, synthesis, simple mechanisms)
5. Spectroscopy (IR, NMR, UV/Vis)

Required Curriculum Materials: (This section should contain information regarding textbooks, technology integration, films, videos and various resources used in teaching the course. Please note whether items already exist in-district or will need to be purchased. Any additional notes that are useful to teachers should be included.)

model kits (5 additional needed), currently own 8 kits.

Flinn Chemistry of Organic Compounds - own this reference

Creation of CK12 online textbook - no cost

Organic Chemistry Activity Book (need to be ordered - \$38 for a set of 24)

about \$200 worth of new chemicals specific to Organic in addition to those already in the stockroom