New York Mills High School

Curriculum Document

Curriculum Area: Science

Course Name: Chemistry (I)

Common Course Catalog Number: 03101

Length of Course: 1 semester

Pre-Requisite: Science 9

Grade Level: 11-12th grade

Course Description:

This course introduces the concepts and principles essential to the understanding of chemistry. Students will investigate and read about chemical structure, properties, and interactions between organic and inorganic compounds. Chemical formulas, equations, kinetic theory & thermodynamics will also be studied.

Embedded in the curriculum are the Minnesota State Standards for the nature of science and engineering, chemistry, and physical science.

Essential Learner Outcomes (5 to 7)

What will students know and be able to do as a result of this course?

* Identify subatomic particles their charges & locations within atoms.

* Explain the periodic law and how it relates to valence electrons. Use examples from the repeating patterns of physical and chemical properties of elements on the periodic table to demonstrate understanding.

* Explain how interactions between valence electrons of atoms produce ions. Using different atomic models, demonstrate the interaction of ions when forming ionic bonds. Use chemical formulas for ionic compounds to represent the proportion of ion of each element in the ionic array.

* Explain how interactions between valence electrons of atoms produce covalent compounds. Using different atomic models, demonstrate the interaction of ions when forming covalent bonds to produce

molecules. Use chemical formulas for covalent compounds to represent the proportion of each element in a molecule.

* Demonstrate the rearrangement of atoms during a chemical reaction between ionic or molecular compounds. Explain the changes in energy that accompany chemical reactions.

* Explain how substitution of different functional groups onto organic molecules changes their chemical and physical properties. Use common biological molecules in the explanation.

Units of Study:

* Introduction
* Properties and trends
* Inorganic chemistry
* Organic chemistry