

# Chemistry I

**Pre-Requisites:** Algebra I

**Credits:** 0.5 (per segment)

**Estimated Completion Time:** 2 segments / 32-36 weeks

**Earliest Start Date:** March 2014

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## Description

Chemistry I and Chemistry I Honors are rigorous and not intended for credit recovery. Students will be challenged and need to have 6-10 hours per week designated to be successful. It is designed as an interactive, 21st century course focusing on Chemistry. Topics include the composition, properties, and changes associated with matter and their applications.

This course is designed to serve as a foundation for the study of Chemistry. The utilization of scientific inquiry, web 2.0 tools, interactive experiences, higher order thinking, collaborative projects, real world application through labs and a variety of assessments all aid the student in ultimately demonstrating a vast understanding of the importance of Chemistry in the world around them; enabling them to apply these properties to their everyday lives.

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## Major Topics and Concepts

Segment 1:

- Scientific Method
- Lab safety
- Measurement
- Mass
- Volume
- Mixtures
- Atomic Structure
- Atomic Mass, Mass Number, Number of Protons, Neutrons and Electrons, and Isotopes
- Valence Electrons and Lewis Structures
- Electron Configurations
- Ions, Ionic Names, and Ionic Compounds
- Compound Lewis Structures
- Molecule names and Compounds
- Ionic vs. Covalent
- Chemical Reactions
- Balancing Equations
- Molecular Attraction
- Moles
- Molar Mass
- Atoms, Molecules, Formula Units
- Stoichiometry
- Limiting reactants and percent yield
- Molecular Geometry and Polarity

\*Collaborative project: Students are required to submit one collaborative project in segment 1. There will be five different options throughout the segment to choose from.

Segment 2:

- Liquids
- Solids
- Plasmas
- Gas Basics
- Phase Changes
- Gas Laws
- Types of Solutions
- Aqueous Solution
- Concentrations of Solutions
- Molarity
- Colligative properties
- Reactions
- Reaction Rates

- Reaction Rate Laws
- Equilibrium
- Equilibrium expressions and constants
- Will any reaction occur?
- Specific Heat and Calorimetry
- Thermochemistry
- Entropy, Enthalpy, and Free Energy
- Equilibrium
- Le Chatlier's Principle
- Acids and Bases
- Strong and Weak Acids and Bases
- pH
- Neutralization
- What is Energy?
- Nuclear Energy
- Law of Conservation of Energy
- Nonrenewable vs. renewable energy
- Electromagnetic Radiation
- Organic Chemistry
- Bio-Chemistry
- New Discoveries

\*Collaborative project: Students are required to submit one collaborative project in segment 2. There will be five different options throughout the segment to choose from

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## Required Materials

Household items for lab experiments

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## Course Objectives

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## Grading Policy

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## Communication Policy

Besides engaging students in challenging curriculum, FLVS guides students to reflect on their learning and evaluate their progress through a variety of assessments. Assessments can be in the form of self-checks, practice lessons, multiple choice questions, writing assignments, projects, essays, labs, oral assessments, and discussions. Instructors evaluate progress and provide interventions through the variety of assessments built into a course, as well as through contact with the student in other venues