

CHEMISTRY (LAB SCIENCE)

Grade Level: 10, 11, 12

Credit: 0.5 or 1.0

Prerequisite: Algebra 1, Geometry, at least 1st semester of Algebra 2

Chemistry uses an atoms-first approach and coverage includes the parts of the atom and the basics of nuclear chemistry; electronic configurations of atoms including orbitals, covalent and ionic bonding, Lewis structures, and VSEPR theory; intermolecular forces; periodic properties, nomenclature, and descriptive chemistry; chemical reactions, including balancing, the mole concept, stoichiometry (including limiting reagents), equilibrium; thermodynamics, solutions and electrolytes, concentration; gas laws, including static and non-static conditions; acids, bases, pH, and equilibrium; and organic functional groups. Students must show proficiency in dimensional analysis, provide cogent short answers to various concept questions, demonstrate the ability to research information not directly provided in the lessons and cite sources correctly, and complete safe, home-based experiments that include full laboratory reports.

Chemistry Lessons

Teacher Message

Lesson 1 Atoms, Molecules and Ions

Lesson 2 Bohr Model and Spectra

Lesson 3 Nuclear Radiation

Lesson 4 Mass and Energy

Lesson 5 Quantum Theory of Electrons in Atoms

Lesson 6 Electron Structure of Atoms (Electron Configurations)

Lesson 7 Periodic Trends in Element Properties

Lesson 8 Ionic Bonding

Lab 1: Salts and Solubility

Lesson 9 Covalent Bonding



Lesson 10 Lewis Symbols and Structures

Lesson 11 Intermolecular Forces

Lesson 12 Gases

Lab 2: States of Matter

Lesson 13 Liquids and Solids

Lab 3: Crystallization

Lesson 14 Myth Busters and the Scientific Method

Lesson 15 Phase Transitions

Lesson 16 Balancing Chemical Reactions

Lesson 17 Prediction of Products

Lab 4: Temperature and Rates of Reaction

Lesson 18 Enthalpy

Lesson 19 Review: Reactions, Equilibrium, and Thermodynamics

Lesson 20 Antioxidants & Free Radicals Research

Lesson 21 The Mole, Conservation of Mass and Chemical Reactions

Lesson 22 Stoichiometric Calculations

Lesson 23 Solutions

Lesson 24 Review

Lesson 25 Thermodynamics

Lab 5: Boiling Point Elevation

Lesson 26 Chemical Equilibrium



Lab 6: Fizz Rates

Lesson 27 Acids and Bases

Lab 7: Indicators and Dyes

Lesson 28 Organic Chemistry

