

Chemistry I  
First Marking Period

Course Description

Unit 1 - Introduction/ Classification of Matter

Content

Definition of chemistry; chemical and physical changes; elements, compounds, mixtures

Lab Activities

Safety lesson, signed agreement, quiz

Learning names of lab equipment

Demonstrations

He and H<sub>2</sub> balloons

Fe + S - mixture vs compound

Electrolysis of water v. boiling water

Video

Elements, Compounds, Mixtures

Unit 2 - Math Skills/Measurement/ Metric System

Content

Using the metric system; scientific notation; significant digits; density; using dimensional analysis

Lab Activities

Measurements

Determining the Density of Three Materials

Demonstrations

Ice Cube floating on vegetable oil

Density of cold v hot water / blue-gold mix

Unit 7a - Writing Formulas & Balancing Equations

Content

Writing chemical formulas; naming compounds; writing and balancing equations

Lab Activity

Observation of Four Types of Chemical Reactions

Exo/endothermic Kit in the storage room

Demonstrations

Production of oxygen gas

Unit 3 - The Structure of the Atom/ History and Current Theory

Content

Atomic structure; historic experiments, radioactivity

Lab Activity

Separation by Filtration

Demonstrations

Cathode Ray tubes

#### Unit 4 - Arrangement of Electrons in the Atom

##### Content

Energy levels; electron configurations and their effect on chemical properties

##### Lab Activity

Flame Tests

Separation by Distillation - Part 1

##### Demonstrations

C-spectra films, spectral tubes, spectroscopes

##### Video

Elements, Compounds, and Mixtures - part 2

#### Unit 5 - The Periodic Law

##### Content

Historic development of the Periodic Chart; periodicity of properties

##### Lab Activity

Qualitative Analysis of Dissolved Ions

##### Demonstrations

Reactions of Li, Na, K in water; Mg and Ca in weak acid

##### Video

Periodic Table

### Second Marking Period

#### Unit 6 - Chemical Bonding

##### Content

Types of bonding; shapes of molecules; identification of dipoles

##### Lab Activities

Separation by Distillation - Part 2

Paper Chromatography

Drops of water on a penny

##### Demonstrations

Attraction of water to static charge

Needles float

##### Video

Chemical Bonding

Water

## Unit 8 - Percent composition, Empirical and Molecular Formulas

### Content

Calculation of molar masses; calculation of per cent composition of compounds;  
determination of empirical and molecular formulas

### Lab Activities

Percent Sugar in Bubble Gum  
Determination of the Formula of Tin Oxide  
Percent Water in Hydrate ( $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ )

## Unit 9 - Stoichiometry

### Content

Calculation of the amounts of substances that will react

### Lab Activity

Relationship Among Masses of Reacting Substances ( $\text{HCl} + \text{NaHCO}_3$ )

## Unit 10 - Acids & Bases

### Content

Definitions and properties of acids and bases; reactions of acids and bases

### Lab Activities

Titration of An Acid of Unknown Concentration  
Determination of the Percent Acetic Acid in Vinegar  
Comparison of the Neutralizing Power of Antacids

## Unit 11 - Physical Characteristics of Gases

### Content

Laws relating the volume, pressure, and temperature of gases

### Lab Activity

Using Charles' Law to Determine a Value for Absolute Zero

### Demonstrations

Crushed Soda Cans  
Vacuum Pump, balloons, marshmallows

## Unit 12 - Physical Characteristics of Liquids and Solids

### Content

Properties of solids and liquids, phase diagrams

### Lab Activity

Golden Penny - Formation of an Alloy  
Melting Point of a Pure Substance  
Boiling Water in a vacuum (florence flask)