**212 Course Objectives**

**Test 1:**

Chapter 1

* Identifying energy and matter
* Classifying physical properties and changes
* Classifying chemical properties and changes
* Differentiating observation and inference

Chapter 2:

* Identifying metric system units of measurement
* Performing unit conversion problems using metric system and English system units
* Defining and utilizing Significant Figures in calculations
* Understanding Temperature Conversions of the three major Temperature scales
* Assembling density
* Utilizing density as a conversion factor

Chapter 3:

* Learning the Dalton’s Atomic Theory: definition of atom and molecule
* Understanding elemental symbols and the periodic table
* Labeling monoatomic vs. diatomic elements
* Classifying matter into pure substance or mixture
* Identifying subatomic particles
* Using the periodic table to determine the number of subatomic particles in an atom
* Defining ions
* Defining Isotopes
* Learning the labels and trends of the periodic table

**Test 2:**

Chapter 4:

* Relating Valence electrons to Group number for the Main Group Elements
* Using the Octet Rule to determine the charges on Main Group Ions
* Writing the formulas and names for ionic compounds involving only Main Group Ions, Transition Metal Ions, and Polyatomic Ions.
* Understanding Covalent Bonding and the Octet Rule
* Drawing Lewis Dot Structures for simple covalent compounds
* Understanding bond polarity and electronegativity
* Writing formulas and names for covalent compounds

Chapter 5:

* Understanding the mole and Avogadro’s Number
* Utilizing Molar mass to convert between grams and moles for elements and compounds
* Identifying the parts of a chemical equation
* Balancing chemical equations
* Performing mol-to-mol and gram-to-gram stoichiometry with a balanced equation
* Defining endothermic and exothermic reactions
* Learning about reversible reactions, equilibrium and LeChatelier’s Principle

Chapter 6:

* Defining the three states of matter and transitions between the states
* Understanding the Kinetic Molecular Theory of Gases
* Defining Pressure of Gases, Boyle’s Law and Charles’ Law
* Understanding the special properties of water and surface tension

**Test 3:**

Chapter 7:

* Assigning oxidation numbers to neutral atoms and ions in ionic compounds
* Identifying Oxidation and Reduction half reactions
* Labeling what is being oxidized and reduced in a Redox reaction
* Labeling the oxidizing agent and the reducing agent in a Redox Reaction

Chapter 8:

* Defining solutions, solutes and solvents
* Understanding solubility, insolubility, and precipitation
* Identifying compounds which will dissolve in water with a solubility chart
* Discussing the effects of temperature and pressure on solubility
* Defining the degree of saturation of a solution
* Calculating Molarity concentrations
* Utilizing Molarity as a conversion factor
* Using the Dilution formula
* Discussing the colligative properties of solutions
* Defining colloids and emulsions
* Writing equations showing the dissociation of strong electrolytes, weak electrolytes, and nonelectrolytes

Chapter 9:

* Defining acids and bases according to the Arrhenius and Bronsted-Lowry Theory
* Recognizing B-L Acids and bases within a reaction
* Identifying conjugate acids and bases within a reaction
* Writing equations showing the dissociation of strong acids and bases and weak acids and bases
* Showing the ionization of pure water
* Utilizing the Kw equilibrium constant for water to calculate the concentrations of [H3O+] and [OH—] for neutral, acidic, and basic solutions
* Calculating pH and using pH to determine acidity or basicity
* Writing out the Total and Net Ionic equations for Neutralization reactions

**Lab Experiments:**

* Safety in the Laboratory
* Making Observations and Inferences
* Measuring Length with a Ruler
* Measuring Weight with an electronic Balance
* Calculating the Density of an object using 3 methods
* Isotopes (counting marbles)
* Observing Elements and Compounds
* Observing Chemical Reactions
* The Surface Tension of Water
* Removing the Fat from Potato Chips
* Chromatography of washable Markers
* Making Ice Cream (Freezing Point Depression)
* Concentration and Density
* Measuring pH of Common Household solutions
* Effectiveness of Antacids