

Chemistry - Curriculum Overview Summary Sheets

2021-2022

NINE WEEKS 1	NINE WEEKS 2	NINE WEEKS 3	NINE WEEKS 4
<p><u>Safety Orientation to Lab</u></p> <ul style="list-style-type: none"> • General Safety Rules • Disposal of Wastes • Chemical Safety • Safe Behavior • Fire Drill or Emergency Evacuation <p><u>Measurement, Significant Digits, and Problem Solving</u></p> <ul style="list-style-type: none"> • Identifying qualitative measurements and quantitative measurements • Identifying significant digits • General problem solving strategy: • States (Phases) <p><u>Matter and Its Properties</u></p> <ul style="list-style-type: none"> • Physical and chemical properties • Physical and 	<p><u>Bonding and Geometry</u></p> <ul style="list-style-type: none"> • Lewis Electron dot structures for atoms • Lewis electron dot structures for ionic and covalent compounds • Metallic bonding • Metallic properties • Valence Shell Electron Pair Repulsion (VSEPR) theory <p><u>Nomenclature</u></p> <ul style="list-style-type: none"> • Naming and writing the chemical formulas of ionic compounds, covalent compounds, acids, and bases, using International Union of Pure and Applied Chemistry (IUPAC) nomenclature rules, polyatomic ions, transition metals, acids, and bases. 	<p><u>Moles, Empirical, and Molecular Formulas</u></p> <ul style="list-style-type: none"> • "Mole" • The use of the mole concept and Avogadro's Number to calculate the number of atoms, ions, or molecules in a sample of material • Calculation of percent composition and empirical and molecular formulas <p><u>Stoichiometry</u></p> <ul style="list-style-type: none"> • Performing stoichiometric calculations, including determination of mass relationships between reactants and products, calculation of limiting reagents, and percent yield. 	<p><u>Solutions</u></p> <ul style="list-style-type: none"> • The unique role of water in chemical and biological systems • Solubility rules for solutes in aqueous solutions • Calculating molarity from mass and volume • Calculating molarity following dilution • Distinguishing among strong electrolytes, weak electrolytes and nonelectrolytes • Distinguishing among unsaturated, saturated, and supersaturated solutions • Factors that affect solubility • Factors that affect rates of dissolution <p><u>Acid and Bases</u></p> <ul style="list-style-type: none"> • Define acids and bases and distinguish

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<p>chemical changes</p> <ul style="list-style-type: none"> • Extensive and intensive properties • Solids, liquids, and gases • Pure substances and mixtures • Elements and compounds <p><u>Models of the Atom and Periodic Table</u></p> <ul style="list-style-type: none"> • Periodicity • Chemical families • Periodic trends • The development of modern atomic theory • The mathematical relationships among energy, frequency, and the wavelength of light • The characteristics of alpha, beta, and gamma radiation • Radioactive decay processes • Balanced nuclear equations • Fission reactions • Fusion reactions 	<p><u>Chemical Equations and Reactions</u></p> <ul style="list-style-type: none"> • Using the law of conservation of mass to write and balance chemical equations • Understanding and differentiating among acid-base reactions, precipitation reactions, and oxidation-reduction reactions 	<p><u>Gases</u></p> <ul style="list-style-type: none"> • Boyle's law • Charles' law • Avogadro's law • Combined gas law • Dalton's law of partial pressures • Ideal gas law • Stoichiometric calculations involving gases • The postulates of kinetic molecular theory 	<p>between Arrhenius and Bronsted-Lowry definitions</p> <ul style="list-style-type: none"> • Acid-base reactions • Neutralization reactions • Precipitation reactions • Oxidation-reduction reactions • pH and pOH • Using the hydrogen or hydroxide ion concentrations to calculate the pH of a solution <p><u>Thermochemistry</u></p> <ul style="list-style-type: none"> • ALL Types of Energy (Kinetic, Potential, Chemical, Thermal and the Law of conservation of energy) • Phase change • Heat transfer • Classifying reactions as exothermic or endothermic • Using thermochemical equations to calculate energy process.
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