Prescott Unified School District
District Instructional Guide

Grade Level: 10-12	Subject: Concepts of Chemistry 1-2	Semesters 1 Quarter 1	Core Text: *Chemistry: Concepts and Applications* Glencoe

Time Block	Unit	Content	Skills	Standards	Assessments
Week One	Introduction to Chemistry	Lab Safety Algebra Review Major Areas of Chemical Study	Demonstrate safe and ethical procedures and behavior in all lab (inquiry) activities. Identify real world applications of various areas of chemistry.	SlClPOl,2,3 SlC2POl,2	Safety Exam- 25 multiple choice, l0 true/false questions.
Week Two	Matter and Change	Extensive & Intensive Properties Substances/Compounds	Categorize a sample of matter into various categories.	S5ClPOl,2 S5C3PO3 S5C4PO2,l0	Cumulative Quiz-
Weeks Three/Four	Measurement	Accuracy/Precision Dimensional Analysis Density Calculations	Distinguish among accuracy, precision, and the error of a measurement. Construct Conversion factors from equivalent measures. Calculate the density of a material using experimental data.	S5ClPOl,2 S5C4PO2 SlC2POl,5	Cumulative Quiz- Lab- Measurement activity Lab- Zinc coating thickness
Weeks Five/Six/Seven	Atomic Structure	Distinguishing between atoms, ions, and isotopes Atomic Models	Explain what makes atoms, ions, and isotopes different from each other. Calculate the average atomic mass of an element.	S5ClPOl,2,6 S5C4PO2 SlC2POl,5	Cumulative Quiz- Atomic Mapping Activities Completion of Lab activities and associated calculations. Lab- Periodic trends
Weeks Eight/Nine	The Periodic Table	Electron Configuration Periodic Trends	Describe the relationship between wavelength, frequency, and electron energies. Describe trends among elements for atomic radii, ionic radii, electro-negativity, & ionization energy.	S5ClPO7,8 S5C5PO2,3,7 S5ClPOl,2,3,6,7,8	Cumulative Quiz- Mid Term Exam

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Time Block	Unit	Content	Skills	Standards	Assessments
Week One/Two	Thermochemistry	Calorimetry	Explain how energy, heat, and work are related Complete Calorimetric Calculations	S5C3POI,2,3,4 S5C4PO8,I0	Cumulative Quiz- Food Calorimetry Lab Report Sheet Lab-Specific heat of metal
Week Three/Four/Five/Six	Ionic and Metallic Bonding Inorganic Nomenclature	Ionic Bonds Bonding in Metals	Describe how cations and anions form Explain how the octet rule applies to atoms of metallic and nonmetallic elements Describe 3 properties of ionic compounds Discuss uses and applications of alloys Apply a naming flow chart to various chemical compounds	S5CIPOI,2,3,5,6,8 S5C4PO4,I3	Lab Report Sheet-Specific heat of unknown metal Cumulative Quiz- Pop Quiz-polyatomic ions
Week Seven/Eight/Nine	Covalent Bonding	Molecular compounds Covalent Bonding VSPER Theory Polar Bonds and Molecules	Describe how electrons are shared to form covalent bonds Describe and apply VSPER Theory to predicting the shapes and bond angles of molecular compounds Evaluate the strength of intermolecular attractions compared to the strength of intramolecular attractions	S5CIPOI,2,3,5,6,8 S5C4PO4,I3	Quiz-Polyatomic Naming Lab Report Sheet-VSPER Theory Lab Report-Inorganic Nomenclature Lab Practical Exam-Molecular Geometry and Inorganic Nomenclature

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Time Block	Unit	Content	Skills	Standards	Assessments
Week One/Two/Three	Chemical Quantities	Mole-Mass Relationships Mole-Volume Relationships Percent Composition and Chemical Formulas	Calculate and convert molar quantities to masses, representative particles, and volumes of gas at STP conditions Interpret and calculate empirical and molecular formulas	S5C4PO3,5,6	Cumulative Quiz- Lab Report Sheet-% water in an unknown hydrate
Week Four/Five/Six	Chemical Reactions	Describing Chemical Reactions Types of Chemical Reactions Predicting Reaction Products	Describe 5 general types of chemical reactions Balance coefficients in a chemical reaction Predict the products of a chemical reaction	S5C3PO3 S5C4POI,3,9	Cumulative Quiz- Lab Report Sheet-Determining the Empirical Formula of a Compound Lab Report Sheet-Double Replacement Reactions
Week Seven/Eight	Stoichiometry	Quantitative Relationships in Chemical Reactions Stoichiometric Calculations Limiting Reactant and Percent Yield	Construct mole ratios from balanced chemical equations and apply these ratios to stoichiometric calculations Identify and use limiting reactants to calculate the maximum amount of products produced and the amount of excess reactant in a specific reaction Calculate the theoretical yield and apply to determine the percent yield of specific chemical reactions	S5CIPOI,2 S5C3POI,2,3,4 S5C4POI,3,9	Cumulative Quiz- Lab Report Sheet-Moles, Mass and Stoichiometry Lab Report Sheet-Limiting Reactants and Percent Yield
Week Nine	States of Matter	Gases Liquids Solids Changes of State	Describe the assumptions of the kinetic theory as it applies to gases Identify the factors that determine the shape of a crystal Identify the conditions for various phase changes using phase diagram charts	S5C3PO7 S5C5POI S5C4POII	Cumulative Quiz- Mid Term Exam

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Time Block	Unit	Content	Skills	Standards	Assessments
Week One	Water and Aqueous Systems	Homogeneous Aqueous Systems Heterogeneous Aqueous Systems	Explain high surface tension and low vapor pressure in terms of structure and polarity of water (hydrogen bonding) Distinguish between solutions, suspensions, and colloids	S5C4PO4	Cumulative Quiz-
Week Two/Three	Gas Laws	Properties of Gases Gas Laws Gases: mixtures and movements	Describe the relationships between temperature, volume, and pressure of a gas Use combined gas law to solve quantitative problems Use the ideal gas law to combine gas laws and stoichiometry	S5CIPOI,2 S5C3PO6 S5C5PO4,5	Cumulative Quiz- Lab Report Sheet- Gas Laws and Stoichiometry
Week Four/Five	Solutions	Properties of Solutions Concentrations of Solutions Calculations involving Colligative properties	Solve calculations based on Molarity, molality, and percent solutions Solve freezing point depression, boiling point elevation, and vapor pressure lowering problems	S5C4PO4,7,8	Cumulative Quiz Lab - Freezing point depression (making ice cream)
Week Six/Seven	Kinetics Equilibrium	Progress of Chemical Reactions Reversible Reactions and Equilibrium	Describe how the amounts of products and reactants change in a chemical system at equilibrium	S5CIPOI,2 S5C2POI,2 S5C3PO6 S5C4POII S5C5PO4,5	Cumulative Quiz Problems using LeChatlier's Principle
Week Eight/Nine	Acids & Bases	Acid-Base theories Hydrogen Ions and Acidity Strengths of Acids and Bases Neutralization Reactions Titrations	Compare and contrast acids and bases as defined by Arrhenius, Bronsted-Lowry, and Lewis theories Calculate pH and pOH values based on concentrations Explain and apply the technique of titration to neutralization reactions	S5C4POI2	Cumulative Quiz Titration Lab Practical- Determination of 5 acid in an unknown acid/salt combination Lab-Standardization of base to use in Lab Practical