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Chemistry Scope & Sequence

1st Six Weeks (25 Days) August 14th-September 19th	2nd Six Weeks (27 Days) September 24th-November 1st
Unit 0: Getting Started/ (5 days) Aug. 14th-20th **SEL and Safety: Establish Procedures and Routines** ➢ Social and Emotional Learning ➢ Science Safety Rules ➢ Lab rules and expectations, equipment, and setup ➢ Interactive Notebooks **Unit 1: Properties of Matter (11 Days) Aug. 21st-Sept. 6th** **Big Ideas:** Students will understand that matter is classified in terms of the properties that they hold ➢ **Important Concepts**: ■ Differentiate between physical and chemical changes and properties. ■ Extensive and intensive properties ■ Compare solids, liquids, and gases in terms of compressibility, structure, shape, and volume ■ Classify matter as pure substances or mixtures ➢ **Readiness TEKS: C.4A, C.4D** ➢ **Supporting TEKS: C.4B, C.4C** **Unit 2: Atomic Theory (11 Days) Sept. 9th-19th** **Big Ideas:** Atoms are the fundamental building blocks of matter. Theory of the structure of atoms was developed over multiple experiments and the interpretation of the data. ➢ **Important Concepts**: ■ Development of the Modern atomic theory, mathematical relationships between energy, frequency, and wavelength of light. ➢ **Readiness TEKS: None** ➢ **Supporting TEKS: C.6A, C.6B**	**Unit 3: Periodic Table (13 Days) Sept. 24th-Oct. 10th** **Big Ideas**:The Periodic Table is a unique structure, laid out in a way that each element is in a specific location according to Periodic Law and it trends. ➢ **Important Concepts:** ■ Chemical and physical properties in the historical development of the ■ Periodic Table, properties of chemical families, periodic trends, electron configurations and Lewis valence electron dot structures. ➢ **Readiness TEKS: C.5B, C.5C, C.6D** ➢ **Supporting TEKS: C.5A** **Unit 4: Compounds – Bonding and Molecular Structure (14 Days) Oct. 15th-Nov. 1st** **Big Ideas:** Compounds are formed by the bonding of atoms in three distinct types: Metallic, Ionic and Covalent. A compound's bond geometry is important to its properties. ➢ **Important Concepts:** ■ Electron dot formulas to illustrate ionic and covalent bonds, metallic bonding and explain metallic properties ■ Classify molecular structure for molecules with linear, trigonal planar, and tetrahedral electron pair geometries ➢ **Readiness TEKS: C.7C** ➢ **Supporting TEKS: C.7D, C.7E**

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3rd Six Weeks (26 Days) November 6th-December 19th	4th Six Weeks (31 Days) January 7th-February 21st
Unit 5: Compounds – Nomenclature (10 Days) Nov. 6th-19th ❖ **Big Ideas**: A common and consistent system of rules for writing formulas and naming chemical compounds is vital to communicate in the scientific community. ➢ **Important Concepts**: ■ Name ionic compounds containing main group and transition metals, covalent compounds, acids, and bases, and write the chemical formulas of ionic compounds containing representative elements, transition metals and common polyatomic ions, covalent compounds, and acids and bases. ➢ **Readiness TEKS: C.7A, C.7B,** **Unit 6: Compounds – The Mole (15 Days) Nov. 20th-Dec. 19th** ❖ **Big Ideas**: The Mole is a way of counting a very large number of very small items. The Mole is a way of accounting for the number of particles with the periodic table values in a compound or element. ➢ **Important Concepts**: ■ Use and concept of a mole. calculate the average atomic mass of an element using isotopic composition. Calculate the number of atoms or molecules in a sample of material and percent composition of compounds. Empirical and molecular formulas. ➢ **Readiness TEKS:, C.8B** ➢ **Supporting TEKS: C.6C, C.8A, C.8C, C.8D**	**Unit 0: Getting Started/ (5 days) Jan. 7th-13th** **SEL and Safety: Establish Procedures and Routines** ➢ Social and Emotional Learning ➢ Science Safety Rules ➢ Lab rules and expectations, equipment, and setup ➢ Interactive Notebooks **Unit 7: Chemical Reactions (13 Days) Jan. 14th-31st** **Big Ideas:** Balanced chemical equations are both quantified and qualified representations of chemical reactions. ➢ **Important Concepts**: ■ Write and balance chemical equations, law of conservation of mass, double replacement reactions and oxidation – reduction reaction, single replacement, and combustion reactions. ➢ **Readiness TEKS: C.8E** ➢ **Supporting TEKS: C.8F** **Unit 8: Stoichiometry (13 Days) Feb. 3rd-21st** **Big Ideas**: Balanced chemical equations are used to predict the amounts of reactants needed and/or products produced with a concept called stoichiometry**.** ➢ **Important Concepts:** ■ Stoichiometric calculations to determine mass and gas volume relationships and concept of limiting reactants in a balanced chemical equation ➢ **Readiness TEKS: None** ➢ **Supporting TEKS: C.8G, C.8H**

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5th Six Weeks (33 Days) February 24th-April 17th	6th Six Weeks (31 Days) April 20th-June 2nd
Unit 9: Solutions and Acid and Bases (16 Days) Feb. 24th-Mar. 24th **Big Ideas**: Water is a universal solvent. Solutions are measured qualitatively and quantitatively according to the amount of solute dissolved in the water (Saturation, Molarity and pH). Acids and bases are water solutions that have properties according to the amount of H+ ion in solution. ➢ **Important Concepts**: ■ Unique role of water in solutions in terms of polarity. Solubility through investigations with aqueous solutions. ■ Types of solutions such as electrolytes and nonelectrolytes; unsaturated, saturated, and supersaturated solutions; and strong and weak acids and bases. Molarity – Concentration and Dilution of Solutions Factors that influence solid and gas solubility ➢ Define acids and bases and distinguish between Arrhenius and Bronsted – Lowery definitions, products in acids – bases reactions that form water. Define pH and calculate the pH of solutions ➢ **Readiness TEKS: C.10B, C.10E, C.10F** ➢ **Supporting TEKS: C.10A, C.10C, C.10D, C.10G, C.10H** **Unit 10: Behavior of Gases (17 Days) Mar. 25th-Apr. 17th** **Big Ideas**: Gases have ideal, quantifiable relationships between the four properties that define them (Pressure, Temperature, Volume, and number of particles). ➢ **Important Concepts**: ■ Relations between volume, pressure, number of moles, and temperature for an ideal gas and postulates of kinetic molecular theory. ➢ **Readiness TEKS: C.9A** ➢ **Supporting TEKS: C.9B** Note: The process standards are embedded in concept standards so that the student, for at least 40% of instructional time, conducts laboratory and field investigations	**Unit 11: Energy and its Forms and Calculating heat (15 Days) Apr. 20th- May 8th** **Big Ideas**: Chemical reactions involve a transfer of energy in particular thermal or heat energy. ➢ **Important Concepts**: ■ Describe energy and its forms, including kinetic, potential, chemical, and thermal energy. Law of conservation of energy and the processes of heat transfer in terms of calorimetry. ■ Exothermic or endothermic. ■ Perform calculations involving heat, mass, temperature change, and specific heat. ➢ **Readiness TEKS: C.11C** ➢ **Supporting TEKS: C.11A, C.11B, C.11D** **Unit 12: Nuclear Chemistry (14 Days) May 11th-May 29th** **Big Ideas**: Nuclear energy comes from the nucleus of an atom that releases various nuclear particles and energy as it transforms from one unstable element to another. ➢ **Important Concepts** ■ Describe the characteristics of alpha, beta, and gamma radioactive decay processes in terms of balanced nuclear reactions. ■ Compare fission and fusion reactions. ➢ **Readiness TEKS: None** ➢ **Supporting TEKS: C.12A, C.12B**

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