Flagler County Chemistry, Pre-AICE Chemistry, Pre-IB Chemistry
2025-2026 Scope and Sequence

Year at a glance: Please note that the map is based on a 180-day schedule.

Quarter 1: August 11, 2025- October 10, 2025	
Topics	**Benchmark/ Standards**
Scientific Method States of Matter Physical vs Chemical Change/Properties Pure Substances and Mixtures Lab Safety Physical and Chemical Properties and Changes Lab Models - Dalton, Thompson, Rutherford Subatomic Particles and Isotopes The Periodic Table Names and Formulas of Compounds Energy, Frequency and Wavelength (Bohr & Quantum Mechanical Model) Electron Configurations - Standard Configurations - Noble Gas Configurations - Ionic Configurations - Orbital Diagrams Periodic Trends - atomic radius - ionization energy - electronegativity - ion size - electron affinity	SC.912.N.1.1 Define a problem based on a specific body of knowledge. SC.912.N.1.3 Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented. SC.912.N.1.6 Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied. SC.912.N.2.2 Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion. SC.912.N.3.5 Describe the function of models in science, and identify the wide range of models used in science. SC.912.N.2.4 Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability. SC.912.P.8.01 Differentiate among the four states of matter. SC.912.P.8.02 Differentiate between physical and chemical properties and physical and chemical changes of matter. SC.912.P.8.03 Explore the scientific theory of atoms (also known as atomic theory) by describing changes in the atomic model over time and why those changes were necessitated by experimental evidence. SC.912.P.8.04 Explore the scientific theory of atoms (also known as atomic theory) by describing the structure of atoms in terms of protons, neutrons and electrons, and differentiate among these particles in terms of their mass, electrical charges and locations within the atom. SC.912.P.8.05 Relate properties of atoms and their position in the periodic table to the arrangement of their electrons. SC.912.P.8.07 Interpret formula representations of molecules and compounds in terms of composition and structure. SC.912.P.10.9 Describe the quantization of energy at the atomic level. SC.912.P.10.18 Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms of wavelength, frequency, and energy, and relate them to phenomena and applications. SC.912.P.12.11 Describe phase transitions in terms of kinetic molecular theory. MA.K12.MTR.4.1 Engage in discussions that reflet on the mathematical thinking of self and others. MA.K12.MTR.5.1 Use patterns and structure to help understand and connet mathematical concepts.

	ELA.K12.EE.5.1 Use patterns and structure to help understand and connect mathematical concepts. ELD.K12.ELL.SC.1 English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple ways. ELA.K12.EE.4.1 Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations.
Quarter 2: October 14, 2025-December 19, 2025	
Topics	Benchmark/ Standards
The Mole Concept Molar Relationships Percent Composition and Empirical Formulas Modeling Chemical Reactions - Word Equations - Chemical Equations - Skeletal Equations - Balancing Chemical Equations Predicting Outcomes of Chemical Reactions - Synthesis/Combination - Decomposition - Single Replacement - Double Replacement (solubility rules/net ionic reactions) - Combustion - Endothermic and Exothermic Reactions Chemical Reactions vs Nuclear Reactions - Law of Conservation of Mass, Chemical vs Nuclear Reactions - Radioactivity - Fission vs Fusion - Nuclear Technologies Quantifying Reactants and	SC.912.N.1.1 Define a problem based on a specific body of knowledge. SC.912.P.8.2 Differentiate between physical and chemical properties and physical and chemical changes of matter. SC.912.P.8.8 Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions. SC.912.P.8.9 Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions. SC.912.P.10.1 Differentiate among the various forms of energy and recognize that they can be transformed from one form to others. SC.912.P.10.6 Create and interpret potential energy diagrams, for example: chemical reactions, orbits around a central body, motion of a pendulum. SC.912.P.10.7 Distinguish between endothermic and exothermic chemical processes. SC.912.P.10.12 Differentiate between chemical and nuclear reactions. SC.912.P.12.12 Explain how various factors, such as concentration, temperature, and presence of a catalyst affect the rate of a chemical reaction. ELA.K12.EE.4.1 Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple ways. MA.K12.MTR.5.1 Use patterns and structure to help understand and connect mathematical concepts.

Products Chemical Calculations - Mole Ratio - Mole to Mole - Mass to Mass* - Volume to Volume* - Particles to Particles* (*Mole Road) Limiting reagent and percent yield	

Quarter 3: January 7, 2026- March 12, 2026

Topics	Benchmark/ Standards
Ionic Bonds Metallic Bonds - Comparing Ionic and Molecular Compounds - Comparing Metals and Nonmetals Covalent Bonds - Lewis Structures - Electron (domain) geometries - VSEPR/Molecular geometries - Bond angles Polarity - Within a bond - Determining if a structure is polar or non-polar Intermolecular Forces (Water and aqueous systems) Kinetic Theory and a Model of Gases	SC.912.N.1.1 Define a problem based on a specific body of knowledge. SC.912.N.3.5 Describe the function of models in science, and identify the wide range of models used in science. SC.912.P.8.1 Differentiate among the four states of matter. SC.912.P.8.5 Relate properties of atoms and their position in the periodic table to the arrangement of their electrons. SC.912.P.8.6 Distinguish between bonding forces holding compounds together and other attractive forces, including hydrogen bonding and van der Waals forces. SC.912.P.8.7 Interpret formula representations of molecules and compounds in terms of composition and structure. SC.912.P.10.1 Differentiate among the various forms of energy and recognize that they can be transformed from one form to others. SC.912.P.10.5 Relate temperature to the average molecular kinetic energy. SC.912.P.12.10 Interpret the behavior of ideal gasses in terms of kinetic molecular theory. SC.912.P.12.11 Describe phase transitions in terms of kinetic molecular theory. MA.K12.MTR.1.1 Actively participate in effortful learning both individually and collectively. MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple ways. ELA.K12.EE.3.1 Make inferences to support comprehension. ELA.K12.EE.4.1 Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. ELA.K12.EE.6.1 Use appropriate voice and tone when speaking or writing. ELD.K12.ELL.SC.1 English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science.

The Behavior of Gases - Properties of Gases The Behavior of Gases - The Gas Laws - Boyle's Law - Charles's Law - Gay-Lussac's Law - Combined Gas Law - Avogadro's Law The Behavior of Gases - Ideal Gases - Ideal Gas Law The Behavior of Gases - Gases in the Atmosphere	

Quarter 4: March 23, 2026- May 28, 2026	
Topics	Benchmark/ Standards
Acids, Bases and Salts - Arrhenius - Bronsted-Lowrey - Lewis Acids & Bases - Self-Ionization of Water - Calculate Molarity - Dilutions & Percent Solution - Calculating pH Reactions of Acids and Bases - Acid-Base Neutralization Reactions - Acid-Base Titrations - Titrations and pH Curves Energy in Chemical Bonds -Collision theory -activated complex	SC.912.L.18.12 Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent. SC.912.N.3.5 Describe the function of models in science, and identify the wide range of models used in science. SC.912.N.4.1 Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making. SC.912.P.8.8 Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions. SC.912.P.8.11 Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH. SC.912.P.10.1 Differentiate among the various forms of energy and recognize that they can be transformed from one form to others. SC.912.P.10.6 Create and interpret potential energy diagrams, for example: chemical reactions, orbits around a central body, motion of a pendulum. SC.912.P.10.7 Distinguish between endothermic and exothermic chemical processes. SC.912.P.12.11 Describe phase transitions in terms of kinetic molecular theory. SC.912.P.12.13 Explain the concept of dynamic equilibrium in terms of reversible processes occurring at the same rates. MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple ways.

System and Surroundings -Conservation of Energy (system and surroundings) Activation Energy (Ea) - Exothermic potential energy graph - Endothermic potential energy graph - Catalyst affect on Ea Specific Heat - Heat gained / lost - High specific heat of water vs other substances Rates of Reaction - Collision Theory - Factors that affect reaction rates (temperature, concentration, surface area, catalyst) The Progress of Chemical Reactions Reversible Reactions and Equilibrium - Le Chatelier's Principle (equilibrium shift) - concentration - pressure -temperature	MA.K12.MTR.3.1 Complete tasks with mathematical fluency MA.K12.MTR.6.1 Assess the reasonableness of solutions. Mathematicians who assess the reasonableness of solutions MA.K12.MTR.7.1 Apply mathematics to real-world context. ELA.K12.EE.1.1 Cite evidence to explain and justify reasoning.ELA.K12.EE.6.1 Use appropriate voice and tone when speaking or writing. ELD.K12.ELL.SC.1 English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science."