

Flagler County Pre-IB/AICE, Chemistry I, Honors Chemistry I, Chemistry I*

2023-2024 Scope and Sequence

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

Quarter 1: August 10, 2023- October 11, 2023

Topics	Benchmark/ Standards
Scientific Method	<p>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.</p> <p>SC.912.N.1.1 Define a problem based on a specific body of knowledge.</p> <p>SC.912.N.1.6 Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.</p> <p>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.</p> <p>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.</p>
Matter	<p>SC.912.P.8.01 Differentiate among the four states of matter.</p> <p>SC.912.P.12.11 Describe phase transitions in terms of kinetic molecular theory.</p>

Physical/Chemical Changes & Properties	<p>SC.912.P.8.02 Differentiate between physical and chemical properties and physical and chemical changes of matter.</p>
Mixtures	<p>SC.912.P.8.02 Differentiate between physical and chemical properties and physical and chemical changes of matter.</p>
Atomic Models	<p>SC.912.N.3.5 Describe the function of models in science, and identify the wide range of models used in science.</p> <p>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</p> <p>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.</p>
Counting Subatomic Particles	<p>SC.912.P.8.05 Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.</p>
Periodic Table (Basics)	<p>SC.912.P.8.05 Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.</p>
Compounds (Naming/Formulas)	<p>SC.912.P.8.05 Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.</p> <p>SC.912.P.8.07 Interpret formula representations of molecules and compounds in terms of composition and structure.</p>
Energy, Frequency, Wavelengths (Photoelectric Effect)	<p>SC.912.P.10.9 Describe the quantization of energy at the atomic level.</p>
Electron	<p>SC.912.P.8.05</p>

Configurations	Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.
Trends	SC.912.P.8.05 Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.
Quarter 2: October 12, 2023- December 22, 2023	
Topics	Benchmark/ Standards
Avogadro's Calculations Molar Mass	MA.K12.MTR.1.1 Actively participate in effortful learning both individually and collectively. Mathematicians who participate in effortful learning both individually and with others: MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways: SC.912.P.8.09 Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.
Mole Calculations	MA.K12.MTR.1.1 Actively participate in effortful learning both individually and collectively. Mathematicians who participate in effortful learning both individually and with others: MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways: SC.912.P.8.09 Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.
Percent Composition	MA.K12.MTR.1.1 Actively participate in effortful learning both individually and collectively. Mathematicians who participate in effortful learning both individually and with others: MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways:

Empirical Formulas	<p>SC.912.P.8.09 Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.</p> <p>SC.912.P.8.07 Interpret formula representations of molecules and compounds in terms of composition and structure.</p> <p>MA.K12.MTR.1.1 Actively participate in effortful learning both individually and collectively. Mathematicians who participate in effortful learning both individually and with others:</p> <p>MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways:</p>
Balancing Equations	<p>SC.912.P.8.09 Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.</p> <p>SC.912.P.8.07 Interpret formula representations of molecules and compounds in terms of composition and structure.</p>
Types of Reactions	<p>SC.912.P.8.08 Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions.</p>
Predicting Products of Reactions	<p>SC.912.P.8.08 Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions.</p> <p>SC.912.P.10.12 Differentiate between chemical and nuclear reactions.</p>
Stoichiometry	<p>SC.912.P.8.07 Interpret formula representations of molecules and compounds in terms of composition and structure</p> <p>MA.K12.MTR.4.1</p>

	<p>Engage in discussions that reflect on the mathematical thinking of self and others. Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others.</p> <p>MA.K12.MTR.5.1 Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts.</p> <p>MA.K12.MTR.7.1 Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts:</p>
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Quarter 3: January 6, 2024- March 14, 2024

Topics	Benchmark/ Standards
Limiting Reactants	<p>SC.912.P.8.09 Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.</p>
Excess Reactants	<p>SC.912.P.8.09 Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.</p>
Types of Bonds	<p>SC.912.P.8.07 Interpret formula representations of molecules and compounds in terms of composition and structure.</p>
Lewis Structures VSEPR	<p>SC.912.P.8.07 Interpret formula representations of molecules and compounds in terms of composition and structure.</p>
Molecular/Electron Geometry	<p>SC.912.P.8.07 Interpret formula representations of molecules and compounds in terms of composition and structure.</p>
Polarity	<p>SC.912.P.8.06 Distinguish between bonding forces holding compounds together and other attractive forces, including hydrogen bonding and van der Waals forces.</p> <p>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.</p>

pH, pOH, [H ⁺], [OH ⁻], Kw calculations	SC.912.P.8.11 Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH.
Dilution Calculations	MA.K12.MTR.6.1 Assess the reasonableness of solutions. Mathematicians who assess the reasonableness of solutions: SC.912.P.8.11 Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH.
Titration	MA.K12.MTR.6.1 Assess the reasonableness of solutions. Mathematicians who assess the reasonableness of solutions: SC.912.P.8.11 Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH.
Potential Energy graphs	SC.912.P.10.7 Distinguish between endothermic and exothermic chemical processes.
Specific Heat Calculations	SC.912.P.10.7 Distinguish between endothermic and exothermic chemical processes
Molar Enthalpy	SC.912.P.10.7 Distinguish between endothermic and exothermic chemical processes
Rates of 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.
Dynamic Equilibrium	SC.912.P.12.13 Explain the concept of dynamic equilibrium in terms of reversible processes occurring at the same rates.
Le Chatelier's Principle	SC.912.P.12.13 Explain the concept of dynamic equilibrium in terms of reversible processes occurring at the same rates.

*For Chemistry I, modifications will be made on teacher preference in terms of scope and depth of the standard.

