

Chemistry Grades 10 - 12	NJSLS Standards (NGSS)	NJ Model Curriculum Unit	Essential Questions	Content	Skills	Essential Vocabulary
September @ 15 days *First few days of school included	HS-PS1-1	Unit 1	<p>What is chemistry?</p> <p>What are safe practices in a lab?</p> <p>How do scientists structure an investigation of matter?</p> <p>How is chemistry used to improve the quality of life?</p> <p>How is matter organized?</p>	<p>Unit 1: Intro. to chemistry</p> <p>Branches</p> <p>Apps</p> <p>Lab safety &amp; lab safety contract</p> <p>Scientific inquiry</p> <p>Intro to periodic table (element symbols)</p>	<p>Design an experiment</p> <p>Penny Test</p> <p>Candle test</p> <p>Lab Safety</p> <p>Scavenger hunt</p> <p>Quiz</p> <p>Color Code P.T.</p>	<p>Branches (inorganic, Organic, Physical, Bio, Analytical)</p> <p>Applied/Pure Chemistry</p> <p>Hypothesis, Observation, Experiment, Control</p> <p>Independent/DEpendent</p> <p>Periodic Table</p>
October @ 21 Days	HS-PS1-7	Unit 1	<p>How does math apply to our understanding of chemistry?</p> <p>How is the metric (system) useful and used intentionally?</p> <p>How is density used to identify substances?</p> <p>How is dimensional analysis (used) solve problems in chemistry?</p>	<p>Unit 2: Math Apps in chemistry</p> <p>Metric System</p> <p>Scientific notation and Significant Figures</p> <p>Density</p> <p>Dimensional Analysis</p> <p>% error and measurements</p> <p>Unit 3: Matter and Properties</p> <p>Types of Matter</p>	<p>Is the rock pure gold? (d)</p> <p>Soda Can Lab (d)</p> <p>Mixtures and Solutions Lab</p>	<p>S.I. units</p> <p>Scientific notation/significant figures</p> <p>Density</p> <p>Dimensional analysis</p> <p>% error</p> <p>States of Matter</p>
November @18 days **4 of these are ½ days	HS-PS1-7; HS-PS1-1; HS-PS1-2	Unit 1 Unit 3	<p>Why are physical and chemical properties important to analyze the properties of</p>	<p>Unit 3: Matter and Properties</p> <p>Physical and Chemical properties of matter</p>	<p>Differentiating Physical and chemical changes</p> <p>Flame Test</p> <p>Modeling Atoms and Orbitals</p>	<p>Physical/Chemical Properties/Changes</p> <p>Law of Conservation of mass</p>

			<p>matter? How can you apply the law of conservation of mass to chemical reactions? How can you use a periodic table to predict the structure of an atom?</p>	<p>Law of conservation of mass  Unit 4: Periodic Table Atomic number Mass number AMU Isotopes ?? Electron configuration Electron cloud Orbitals Theorion</p>		<p>Aomic # Mass # Isotopes, AMU Orbitals/ Sub Levels E<sup>-</sup> configurations Quantum #'s</p>
<p>December @ 16 days ** 1 day is ½ day</p>	HS-PS1-3	Unit 3	<p>How do metals behave differently than non-metals? Why do covalent compounds have diverse properties compared to ionic compounds? How do acids and bases differ when dissolved in water? Which compounds are generous proton donors?</p>	<p>Unit 5 Types of Compounds Ionic and Covalent Polyatomic lone VSEPR ?? &amp; Bonding Oxidation number, Acids and Bases</p>	<p>Creating Covalent Compounds with candy Identifying unknown acids and bases Labs on properties of ionic and covalent compounds</p>	<p>Ionic/Covalent Compounds Oxidation Chemical Bonding U.S.E.P.R Acids/Bases</p>
<p>January @ 20 days</p>	HS-PS1-7; HS-PS1-2	Unit 1 Unit 3	<p>How can products of reactions be predicted? Why are solubility important? Why should we apply laws of conservation rules important in</p>	<p>Unit 6 - Chemical Reactants Balancing Types of Reactions Aqueous ??? (CIE, NIE) Mid-term</p>	<p>Rxn rate labs Double displacement lab Combustion Lab Activity Series</p>	<p>Types of Rxn's Reactants/Product s/Yield Aqueous CIE/NIE Solubility</p>

			balancing equations?			
February @ 19 days **3 of these days are ½ days	HS- LS1-5 HS-LS1-6 HS-ESS2-6	Unit 4 Unit 6	How does process of photosynthesis convert light Energy to stored Energy? How can changes of Energy and matter in a system be described in terms of energy and matter flowing in or out of a system?  How are reaction changes due to plants and other organisms that capture CO <sub>2</sub> and release O <sub>2</sub> ?	Unit 6 CIE and NJE (Single and double replacements and Activity se?? Unit 7 Introduction to organics chemistry, functional groups Ref. to photosynthesis, cell respiration, HO <sub>2</sub> , C and N cycles ,	Students will predict the physical state of the products formed in double/single replacement reactions using solubility rules Design an experiment to show O <sub>2</sub> is given out	Solubility rules Photosynthesis, Cell respiration Bio-chemical cycles Organic chemistry Hydrocarbons and functional groups
March @ 20 days	HS- LS1-7 HS- PS3-4	Unit 4 Unit 2b	How are chemical elements recombined in different ways to form different products?	Introduction to thermochemistry and colorimetry PARCC exam	Lab on Calorimetry Solving problems on Colorimetry	Thermochemistry Calirimetry
April Easter is April 1 @ 16 days ***Assuming Easter break is March 31 - April 6	HS- PS1-7	Unit 3	How does the Law of Conservation of matter apply to balance chemical equations?  How is the mole and avogadro number used to find the molecular	PARCC Exam Unit 8 Conversions and stoichiometry Molar mass Mole conversions	Design a flowchart to calculate the molar mass and conversions ->mass ->molecular moles -> mass -avogadro number Solving problems on mole	Molar mass Moles % composition and yield avogadro number

			mass of each element?		conversions Lab on calculation of molar mass of an unknown compound	
May @ 22 days	HS- PS1-7 HS- PS3-4	Unit 3 Unit 2b	How does the law of conservation of matter allow you to determine the empirical/molecular formula of a compound? How can chemical processes, their rates and whether or not energy is stored /released be understood in terms of collisions of molecules? What patterns exist when $\Delta T$ of concentration of particles?	Unit 8 Empirical formula, molecular formula Stoichiometric problems  Unit 9 Gas laws Basic 3 gas laws Charles, Boyles and Avogadro  Unit 10 Intro to Nuclear	Design a flowchart to calculate the empirical and molecular formulas Solving problems on empirical and molecular formulas Solving problems using gas laws	Empirical formula Molecular formula Gas Laws Charles and Boyle's Law
June @ 10 days This does not include the last week of school	HS- PS1-8	Unit 5	Which nuclear process (fusion or fission) involves release/absorption of energy?	Chemistry final	Writing and balancing nuclear reactions	Nuclear chemistry Fission and fusion nuclear reactions