

CURRICULUM MAP

SUBJECT: Honors Chemistry

GRADE: 10

Month	Essential Question	Content (Chapter/ Unit Description)	Skills (Standards/Learning outcomes)	Materials and Resource	Assessment
September	<ul style="list-style-type: none"> • What is Chemistry? • What is matter? • How does matter change? 	<ul style="list-style-type: none"> • Define chemistry. • List examples of the branches of chemistry. • Distinguish between the physical properties and chemical properties of matter. • Classify changes of matter as physical or chemical. • Explain the gas, liquid, and solid states in terms of particles. • Distinguish between a mixture and a pure substance. • Use a periodic table to name elements, given their symbols. • Use a periodic table to write the symbols of elements, given their names. 	<p>1.1 Identify and explain physical properties (e.g., density, melting point, boiling point, conductivity, malleability) and chemical properties (e.g., the ability to form new substances). Distinguish between chemical and physical changes.</p> <p>1.2 Explain the difference between pure substances (elements and compounds) and mixtures. Differentiate between heterogeneous and homogeneous mixtures.</p> <p>1.3 Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle motion, and phase transitions.</p>	<p>Modern Chemistry Textbook chapter 1</p> <p>Online moodle</p>	<p>Lab/report</p> <ul style="list-style-type: none"> • Mixture separation • Chromatography lab <p>Practice problems Quizzes Test</p>
September	<ul style="list-style-type: none"> • What are metric measurements? • How do you convert units? • How do you evaluate the results of an experiment? 	<ul style="list-style-type: none"> • Distinguish between qualitative and quantitative observations. • Distinguish between a quantity, a unit, and a measurement standard. • Name SI units for length, mass, time, volume, and density. • Perform density calculations. • Transform a statement of equality to a conversion factor. • Distinguish between accuracy and precision. • Determine the number of significant figures in measurements. • Perform mathematical operations involving significant figures. • Convert measurements into scientific notation. 	<ul style="list-style-type: none"> ✓ Construct and use tables and graphs to interpret data sets. ✓ Solve simple algebraic expressions. ✓ Perform basic statistical procedures to analyze the center and spread of data. ✓ Measure with accuracy and precision (e.g., length, volume, mass, temperature, time) ✓ Convert within a unit (e.g., centimeters to meters). ✓ Use common prefixes such as milli-, centi-, and kilo-. ✓ Use scientific notation, where appropriate. ✓ Use ratio and proportion to solve problems. ✓ Determine the correct number of 	<p>Modern Chemistry Textbook chapter 2</p> <p>Online moodle</p>	<p>Lab/report</p> <ul style="list-style-type: none"> • Density lab <p>Practice problems Quizzes Test</p>

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			<ul style="list-style-type: none"> significant figures. ✓ Determine percent error from experimental and accepted values. ✓ Use appropriate metric/standard international (SI) units of measurement for mass (g); length (cm); and time (s). ✓ Use the Celsius and Kelvin scales 		
September/ October	<ul style="list-style-type: none"> • What are the building blocks of matter? • What is a mole? 	<ul style="list-style-type: none"> • Explain the law of conservation of mass, the law of definite proportions, and the law of multiple proportions. • Summarize the five essential points of Dalton's atomic theory. • Explain the relationship between Dalton's atomic theory and the law of conservation of mass, the law of definite proportions, and the law of multiple proportions. • Summarize the observed properties of cathode rays that led to the discovery of the electron. • Summarize the experiment carried out by Rutherford and his co-workers that led to the discovery of the nucleus. • List the properties of protons, neutrons, and electrons. • Explain what isotopes are. • Define atomic number and mass number, and describe how they apply to isotopes. • Given the identity of a nuclide, determine its number of protons, neutrons, and electrons. • Define mole in terms of Avogadro's number, and define molar mass. • Solve problems involving mass in grams, amount in moles, and number of atoms of an element. 	<p>2.1 Recognize discoveries from Dalton (atomic theory), Thomson (the electron), Rutherford (the nucleus), and Bohr (planetary model of atom), and understand how each discovery leads to modern theory.</p> <p>2.2 Describe Rutherford's "gold foil" experiment that led to the discovery of the nuclear atom. Identify the major components (protons, neutrons, and electrons) of the nuclear atom and explain how they interact.</p> <p>2.3 Interpret and apply the laws of conservation of mass, constant composition (definite proportions), and multiple proportions.</p> <p>5.3 Use the mole concept to determine number of particles and molar mass for elements and compounds.</p>	<p>Modern Chemistry Textbook chapter 3</p> <p>Online moodle</p>	<p>Lab/report</p> <ul style="list-style-type: none"> • Introductory lab with probes <p>Practice problems Quizzes Test</p>
October	<ul style="list-style-type: none"> • What are the 	<ul style="list-style-type: none"> • Explain the mathematical relationship 	2.4 Write the electron	Modern	Lab/report

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	characteristics of electrons?	<p>between the speed, wavelength, and frequency of electromagnetic radiation.</p> <ul style="list-style-type: none"> • Discuss the significance of the photoelectric effect and the line-emission spectrum of hydrogen to the development of the atomic model. • Describe the Bohr model of the hydrogen atom. • Compare and contrast the Bohr model and the quantum model of the atom. • Explain how the Heisenberg uncertainty principle and the Schrödinger wave equation led to the idea of atomic orbitals. • List the four quantum numbers, and describe their significance. • Relate the number of sublevels corresponding to each of an atom's main energy levels, the number of orbitals per sublevel, and the number of orbitals per main energy level. • List the total number of electrons needed to fully occupy each main energy level. • State the Aufbau principle, the Pauli exclusion principle, and Hund's rule. • Describe the electron configurations for the atoms of any element using orbital notation, electron-configuration notation, and, when appropriate, noble-gas notation. 	configurations for the first twenty elements of the periodic table.	<p>Chemistry Textbook chapter 4</p> <p>Online moodle</p>	<ul style="list-style-type: none"> • Flame test <p>Practice problems Quizzes Test</p>
November	<ul style="list-style-type: none"> • How is the periodic table organized? 	<ul style="list-style-type: none"> • Explain the roles of Mendeleev and Moseley in the development of the periodic table. • Describe the modern periodic table. • Explain how the periodic law can be used to predict the physical and chemical properties of elements. 	<p>3.1 Explain the relationship of an element's position on the periodic table to its atomic number. Identify families (groups) and periods on the periodic table.</p> <p>3.2 Use the periodic table to identify the three classes of elements: metals,</p>	<p>Modern Chemistry Textbook chapter 5</p> <p>Online moodle</p>	<p>Lab/report</p> <p>Practice problems Quizzes Test</p>

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		<ul style="list-style-type: none"> Describe how the elements belonging to a group of the periodic table are interrelated in terms of atomic number. Describe the relationship between electrons in sublevels and the length of each period of the periodic table. Locate and name the four blocks of the periodic table. Explain the reasons for these names. Discuss the relationship between group configurations and group numbers. Describe the locations in the periodic table and the general properties of the alkali metals, the alkaline-earth metals, the halogens, and the noble gases. . Define atomic and ionic radii, ionization energy, electron affinity, and electronegativity. Compare the periodic trends of atomic radii, ionization energy, and electronegativity, and state the reasons for these variations. Define valence electrons, and state how many are present in atoms of each main-group element. Compare the atomic radii, ionization energies, and electronegativities of the d-block elements with those of the main-group elements. 	<p>nonmetals, and metalloids.</p> <p>3.3 Relate the position of an element on the periodic table to its electron configuration and compare its reactivity to the reactivity of other elements in the table.</p> <p>3.4 Identify trends on the periodic table (ionization energy, electronegativity, and relative sizes of atoms and ions).</p>		
November/ December	<ul style="list-style-type: none"> Why do compounds form? What are the different types of bonds? What are the characteristics of different types of compounds? 	<ul style="list-style-type: none"> Define chemical bond. Explain why most atoms form chemical bonds. Describe ionic and covalent bonding. Explain why most chemical bonding is neither purely ionic nor purely covalent. Classify bonding type according to electronegativity differences. Define molecule and molecular 	<p>4.1 Explain how atoms combine to form compounds through both ionic and covalent bonding. Predict chemical formulas based on the number of valence electrons.</p> <p>4.2 Draw Lewis dot structures for simple molecules and ionic compounds.</p> <p>4.3 Use electronegativity to explain the difference between polar and</p>	<p>Modern Chemistry Textbook chapter 6</p> <p>Online moodle</p>	<p>Lab/report</p> <ul style="list-style-type: none"> Molecular geometry Intermolecular attraction and evaporation <p>Practice problems Quizzes Test</p>

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		<p>formula.</p> <ul style="list-style-type: none"> • State the octet rule. • Explain how to determine Lewis structures for molecules containing single bonds, multiple bonds, or both. • Compare and contrast a chemical formula for a molecular compound with one for an ionic compound. • List and compare the distinctive properties of ionic and molecular compounds. • Describe the electron-sea model of metallic bonding, and explain why metals are good electrical conductors. • Explain characteristics of metallic substances • Explain VSEPR theory. • Predict the shapes of molecules or polyatomic ions using VSEPR theory. • Describe dipole-dipole forces, hydrogen bonding, induced dipoles, and London dispersion forces. 	<p>nonpolar covalent bonds.</p> <p>4.4 Use valence-shell electron-pair repulsion theory (VSEPR) to predict the molecular geometry (linear, trigonal planar, and tetrahedral) of simple molecules.</p>		
December	<ul style="list-style-type: none"> • How do you name compounds? 	<ul style="list-style-type: none"> • Explain the significance of a chemical formula. • Determine the formula of an ionic compound formed between two given ions. • Name an ionic compound given its formula. • Using prefixes, name a binary molecular compound from its formula. • Write the formula of a binary molecular compound given its name. • List the rules for assigning oxidation numbers. • Give the oxidation number for each element in the formula of a chemical compound. • Name binary molecular compounds 	<p>4.6 Name and write the chemical formulas for simple ionic and molecular compounds, including those that contain the polyatomic ions: ammonium, carbonate, hydroxide, nitrate, phosphate, and sulfate.</p> <p>5.3 Use the mole concept to determine number of particles and molar mass for elements and compounds.</p> <p>5.4 Determine percent compositions, empirical formulas, and molecular formulas.</p>	<p>Modern Chemistry Textbook chapter 7</p> <p>Online moodle</p>	<p>Lab/report</p> <ul style="list-style-type: none"> • % water in a hydrate <p>Practice problems Quizzes Test</p>

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		<p>using oxidation numbers and the Stock system.</p> <ul style="list-style-type: none"> • Calculate the formula mass or molar mass of any given compound. • Use molar mass to convert between mass in grams and amount in moles of a chemical compound. • Calculate the number of molecules, formula units, or ions in a given molar amount of a chemical compound. • Calculate the percentage composition of a given chemical compound. • Define empirical formula, and explain how the term applies to ionic and molecular compounds. • Determine an empirical formula from either a percentage or a mass composition. • Explain the relationship between the empirical formula and the molecular formula of a given compound. • Determine a molecular formula from an empirical formula. 			
January	<ul style="list-style-type: none"> • How can you predict the products of a reactant? 	<ul style="list-style-type: none"> • List three observations that suggest that a chemical reaction has taken place. • List three requirements for a correctly written chemical equation. • Write a word equation and a formula equation for a given chemical reaction. • Balance a formula equation by inspection. • Define and give general equations for synthesis, decomposition, single-replacement, and double-replacement reactions. • Classify a reaction as synthesis, decomposition, single-replacement, double-replacement, or combustion. • List three types of synthesis reactions 	<p>5.1 Balance chemical equations by applying the laws of conservation of mass and constant composition (definite proportions).</p> <p>5.2 Classify chemical reactions as synthesis (combination), decomposition, single displacement (replacement), double displacement, and combustion.</p>	<p>Modern Chemistry Textbook chapter 8</p> <p>Online moodle</p>	<p>Lab/report</p> <ul style="list-style-type: none"> • Single replacement reaction lab <p>Practice problems Quizzes Test</p>

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		<p>and six types of decomposition reaction.</p> <ul style="list-style-type: none"> List four types of single-replacement reactions and three types of double-replacement reactions. Predict the products of simple reactions given the reactants. Explain the significance of an activity series. Use an activity series to predict whether a given reaction will occur and what the products will be. 			
January/ February	<ul style="list-style-type: none"> How can you relate amounts of reactants and products? 	<ul style="list-style-type: none"> Define stoichiometry. Describe the importance of the mole ratio in stoichiometric calculations. Write a mole ratio relating two substances in a chemical equation. Calculate the amount in moles of a reactant or product from the amount in moles of a different reactant or product. Calculate the mass of a reactant or product from the amount in moles of a different reactant or product. Calculate the amount in moles of a reactant or product from the mass of a different reactant or product. Calculate the mass of a reactant or product from the mass of a different reactant or product. Describe a method for determining which of two reactants is a limiting reactant. Calculate the amount in moles or mass in grams of a product, given the amounts in moles or masses in grams of two reactants, one of which is in excess. Distinguish between theoretical yield, actual yield, and percent yield. 	<p>5.5 Calculate the mass-to-mass stoichiometry for a chemical reaction.</p> <p>5.6 Calculate percent yield in a chemical reaction.</p>	<p>Modern Chemistry Textbook chapter 9</p> <p>Online moodle</p>	<p>Lab/report</p> <ul style="list-style-type: none"> S'more activity limiting reactant lab <p>Practice problems Quizzes Test</p>

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		<ul style="list-style-type: none"> Calculate percent yield, given the actual yield and quantity of a reactant. 			
February	<ul style="list-style-type: none"> How do gases behave? 	<ul style="list-style-type: none"> State the kinetic-molecular theory of matter, and describe how it explains certain properties of matter. List the five assumptions of the kinetic-molecular theory of gases. Define the terms ideal gas and real gas. Describe each of the following characteristic properties of gases: expansion, density, fluidity, compressibility, diffusion, and effusion. Describe the conditions under which a real gas deviates from "ideal" behavior. Define pressure, and relate it to force. Describe how pressure is measured. Convert units of pressure. State the standard conditions of temperature and pressure. Use Boyle's law to calculate volume-pressure changes at constant temperature. Use Charles's law to calculate volume-temperature changes at constant pressure. Use Gay-Lussac's law to calculate pressure-temperature changes at constant volume. Use the combined gas law to calculate volume-temperature-pressure changes. Use Dalton's law of partial pressures to calculate partial pressures and total pressures. 	6.1 Using the kinetic molecular theory, explain the behavior of gases and the relationship between pressure and volume (Boyle's law), volume and temperature (Charles's law), pressure and temperature (Gay-Lussac's law), and the number of particles in a gas sample (Avogadro's hypothesis). Use the combined gas law to determine changes in pressure, volume, and temperature.	Modern Chemistry Textbook chapter 10 Online moodle	Lab/report: <ul style="list-style-type: none"> Graphing the atmosphere Practice problems Quizzes Test
February	<ul style="list-style-type: none"> How do gases combine in chemical reactions? 	<ul style="list-style-type: none"> State the law of combining volumes. State Avogadro's law and explain its significance. Define standard molar volume of a gas, and use it to calculate gas masses and volumes. 		Modern Chemistry Textbook chapter 11 Online	Lab/report: <ul style="list-style-type: none"> molar volume of a gas Practice problems Quizzes Test

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		<ul style="list-style-type: none"> • Use standard molar volume to calculate the molar mass of a gas. • State the ideal gas law. • Derive the ideal gas constant and discuss its units. • Using the ideal gas law, calculate pressure, volume, temperature, or amount of gas when the other three quantities are known. • Using the ideal gas law, calculate the molar mass or density of a gas. • Reduce the ideal gas law to Boyle's law, Charles's law, and Avogadro's law. Describe the conditions under which each applies. • Explain how Gay-Lussac's law and Avogadro's law apply to the volumes of gases in chemical reactions. • Use a chemical equation to specify volume ratios for gaseous reactants or products, or both. • Use volume ratios and the gas laws to calculate volumes, masses, or molar amounts of gaseous reactants or products. 		moodle	
March	<ul style="list-style-type: none"> • What is the differences between particles in a liquid and a solid? • How and why do phase changes occur? 	<ul style="list-style-type: none"> • Describe the motion of particles in liquids and the properties of liquids according to the kinetic-molecular theory. • Discuss the process by which liquids can change into a gas. Define vaporization. • Discuss the process by which liquids can change into a solid. Define freezing. • Describe the motion of particles in solids and the properties of solids according to the kinetic-molecular theory. 	<p>6.3 Using the kinetic molecular theory, describe and contrast the properties of gases, liquids, and solids. Explain, at the molecular level, the behavior of matter as it undergoes phase transitions.</p> <p>7.3 Identify and explain the factors that affect the rate of dissolving (e.g., temperature, concentration, surface area, pressure, mixing).</p> <p>7.6 Predict the shift in equilibrium when a system is subjected to a stress (LeChatelier's principle) and identify the factors that can cause a shift in</p>	<p>Modern Chemistry Textbook chapter 12</p> <p>Online moodle</p>	<p>Lab/report:</p> <ul style="list-style-type: none"> • heat of fusion of ice <p>Practice problems Quizzes Test</p>

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		<ul style="list-style-type: none"> Explain the relationship between equilibrium and changes of state. Predict changes in equilibrium using Le Châtelier's principle. Explain what is meant by equilibrium vapor pressure. Describe the processes of boiling, freezing, melting, and sublimation. Interpret phase diagrams. Calculate the amount of heat energy absorbed or released when a quantity of water changes state. 	equilibrium (concentration, pressure, volume, temperature).		
March	<ul style="list-style-type: none"> How do solutes dissolve in a solvent? How do you measure the concentration of a solution? 	<ul style="list-style-type: none"> Distinguish between heterogeneous and homogeneous mixtures. Distinguish between electrolytes and nonelectrolytes. List and explain three factors that affect the rate at which a solid solute dissolves in a liquid solvent. Explain solution equilibrium, and distinguish among saturated, unsaturated, and supersaturated solutions. Explain the meaning of "like dissolves like" in terms of polar and nonpolar substances. List the three interactions that contribute to the heat of solution, and explain what causes dissolution to be exothermic or endothermic. Given the mass of solute and volume of solvent, calculate the concentration of a solution. Given the concentration of a solution, determine the amount of solute in a given amount of solution. Given the concentration of a solution, determine the amount of solution that contains a given amount of solute. 	<p>6.4 Describe the law of conservation of energy. Explain the difference between an endothermic process and an exothermic process.</p> <p>7.1 Describe the process by which solutes dissolve in solvents.</p> <p>7.2 Calculate concentration in terms of molarity. Use molarity to perform solution dilution and solution stoichiometry.</p>	<p>Modern Chemistry Textbook chapter 13</p> <p>Online moodle</p>	<p>Lab/report –</p> <ul style="list-style-type: none"> Beer's law, <p>Practice problems Quizzes Test</p>

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March	<ul style="list-style-type: none"> • How do ions react in solution? • What are colligative properties? 	<ul style="list-style-type: none"> • Write equations for the dissolution of soluble ionic compounds in water. • Predict whether a precipitate will form when solutions of soluble ionic compounds are combined, and write net ionic equations for precipitation reactions. • Compare dissociation of ionic compounds with ionization of molecular compounds. • Draw the structure of the hydronium ion, and explain why it is used to represent the hydrogen ion in solution. • Distinguish between strong electrolytes and weak electrolytes. • List four colligative properties, and explain why they are classified as colligative properties. • Calculate freezing-point depression, boiling-point elevation, and solution molality of nonelectrolytic solutions. • Calculate the expected changes in freezing point and boiling point of an electrolytic solution. <p>Discuss causes of the differences between expected and experimentally observed colligative properties of electrolytic solutions.</p>	7.4 Compare and contrast qualitatively the properties of solutions and pure solvents (colligative properties such as boiling point and freezing point).	<p>Modern Chemistry Textbook chapter 14</p> <p>Online moodle</p>	<p>Lab/report –</p> <ul style="list-style-type: none"> • ions in aqueous solution, • colligative properties of electrolytes and nonelectrolytes <p>Practice problems Quizzes Test</p>
April	<ul style="list-style-type: none"> • What is the difference between an acid and a base? • What are the different kinds of acids? 	<ul style="list-style-type: none"> • List five general properties of aqueous acids and bases. • Define acid and base according to Arrhenius's theory of ionization. • Explain the differences between strong and weak acids and bases. • Define and recognize Brønsted-Lowry acids and bases. • Define a Lewis acid and a Lewis base. • Name compounds that are acids under the Lewis definition but are not acids under the Brønsted-Lowry definition. • Describe a conjugate acid, a conjugate 	8.1 Define the Arrhenius theory of acids and bases in terms of the presence of hydronium and hydroxide ions in water and the Brønsted-Lowry theory of acids and bases in terms of proton donors and acceptors.	<p>Modern Chemistry Textbook chapter 15</p> <p>Online moodle</p>	<p>Lab/report:</p> <ul style="list-style-type: none"> • characteristic reactions of acids <p>Practice problems Quizzes Test</p>

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		base, and an amphoteric compound.			
April	<ul style="list-style-type: none"> How do you measure the strength of an acid or base? 	<ul style="list-style-type: none"> Describe the self-ionization of water. Define pH, and give the pH of a neutral solution at 25°C. Explain and use the pH scale. Given [H₃O⁺] or [OH⁻], find pH. Given pH, find [H₃O⁺] or [OH⁻]. Describe how an acid-base indicator functions. Explain how to carry out an acid-base titration. Calculate the molarity of a solution from titration data. 	8.2 Relate hydrogen ion concentrations to the pH scale and to acidic, basic, and neutral solutions. Compare and contrast the strengths of various common acids and bases (e.g., vinegar, baking soda, soap, citrus juice).	Modern Chemistry Textbook chapter 16 Online moodle	Lab/report: <ul style="list-style-type: none"> titrations Practice problems Quizzes Test
April	<ul style="list-style-type: none"> What is thermo chemistry? How can you predict if a reaction will occur? 	<ul style="list-style-type: none"> Define temperature, and state the units in which it is measured. Define heat and state its units. Perform specific-heat calculations. Explain heat of reaction, heat of formation, heat of combustion, and enthalpy change. Solve problems involving heats of reaction, heats of formation, and heats of combustion. Explain the relationship between enthalpy change and the tendency of a reaction to occur. Explain the relationship between entropy change and the tendency of a reaction to occur. Discuss the concept of free energy, and explain how the value of this quantity is calculated and interpreted. Describe the use of free energy change to determine the tendency of a reaction to occur. 	6.4 Describe the law of conservation of energy. Explain the difference between an endothermic process and an exothermic process. 6.5 Recognize that there is a natural tendency for systems to move in a direction of disorder or randomness (entropy). 7.5 Identify the factors that affect the rate of a chemical reaction (temperature, mixing, concentration, particle size, surface area, catalyst).	Modern Chemistry Textbook chapter 17 Online moodle	Lab/report: <ul style="list-style-type: none"> hess's law, enthalpy of reactions Practice problems Quizzes Test
May	<ul style="list-style-type: none"> What is equilibrium? What is a buffer? 	<ul style="list-style-type: none"> Define chemical equilibrium. Explain the nature of the equilibrium constant. Write chemical equilibrium expressions 	8.3 Explain how a buffer works.	Modern Chemistry Textbook Chapter 18	Lab/report: <ul style="list-style-type: none"> buffer lab Practice problems Quizzes

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		<p>and carry out calculations involving them.</p> <ul style="list-style-type: none"> • Discuss the factors that disturb equilibrium. • Discuss conditions under which reactions go to completion. • Describe the common-ion effect. • Explain the concept of acid-ionization constants, and write acid-ionization equilibrium expressions. • Explain buffering. 		Online moodle	Test
May	What is an oxidation reduction reaction?	<ul style="list-style-type: none"> • Assign oxidation numbers to reactant and product species. • Define oxidation and reduction. • Explain what an oxidation-reduction reaction (redox reaction) is. • Explain what must be conserved in redox equations. • Balance redox equations by using the half-reaction method. • Relate chemical activity to oxidizing and reducing strength. • 	8.4 Describe oxidation and reduction reactions and give some everyday examples, such as fuel burning and corrosion. Assign oxidation numbers in a reaction.	<p>Modern Chemistry Textbook chapter 19</p> <p>Online moodle</p>	<p>Lab/report:</p> <ul style="list-style-type: none"> • % H₂O₂ <p>Practice problems Quizzes Test</p>
May	What is a nuclear reaction?	<ul style="list-style-type: none"> • Explain why nuclear reactions occur, and know how to balance a nuclear equation. • Define and relate the terms radioactive decay and nuclear radiation. • Describe the different types of radioactive decay and their effects on the nucleus. • Define the term half-life, and explain how it relates to the stability of a nucleus. 	<p>2.4 Write the electron configurations for the first twenty elements of the periodic table.</p> <p>2.5 Identify the three main types of radioactive decay (alpha, beta, and gamma) and compare their properties (composition, mass, charge, and penetrating power).</p> <p>2.6 Describe the process of radioactive decay by using nuclear equations, and explain the concept of half-life for an isotope (for example, C-14 is a powerful tool in determining the age of objects).</p> <p>2.7 Compare and contrast nuclear fission and nuclear fusion.</p>	<p>Modern Chemistry Textbook</p> <p>Online moodle</p>	<p>Lab/report:</p> <ul style="list-style-type: none"> • half life activity <p>Practice problems Quizzes Test</p>

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June	What are organic compounds? How are organic compound classified?	<ul style="list-style-type: none"> • Explain how the structure and bonding of carbon lead to the diversity and number of organic compounds. • Explain the importance and limitations of molecular and structural formulas. • Compare structural and geometric isomers. • Recognize the important structural feature of saturated hydrocarbons, alkanes. • Be able to name and write structural formulas for alkanes. • Explain how structures of alkanes relate to their properties and how those properties affect the uses of specific alkanes. • Distinguish between the structures of alkenes, alkynes, and aromatic hydrocarbons. • Be able to name and write structural formulas for unsaturated hydrocarbons. • Explain how structures of unsaturated hydrocarbons relate to their properties and how those properties affect the uses of specific hydrocarbons. 		Modern Chemistry Textbook chapter 20 Online moodle	Practice problems Test
June	What happens when a reaction occurs?	<ul style="list-style-type: none"> • Explain the concept of reaction mechanism. • Use the collision theory to interpret chemical reactions. • Define activated complex. • Relate activation energy to heat of reaction. • Define chemical kinetics, and explain the two conditions necessary for chemical reactions to occur. • Discuss the five factors that influence reaction rate. • Define catalyst, and discuss two different types. 			Practice problems

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June	Why do precipitates form?	<ul style="list-style-type: none"> • Explain what is meant by solubility-product constants, and calculate their values. • Calculate solubilities using solubility-product constants. • Carry out calculations to predict whether precipitates will form when solutions are combined. 			Lab/report: <ul style="list-style-type: none"> • Solubility lab Practice problems Quizzes Test
June	What is an electrochemical cell? How do batteries work?	<ul style="list-style-type: none"> • Explain what is required for an electrochemical cell. • Describe the nature of voltaic cells. • Describe the nature of electrolytic cells. • Explain the process of electroplating. • Describe the chemistry of a rechargeable cell. • Calculate cell potentials from a table of standard electrode potentials. 			Lab/report: <ul style="list-style-type: none"> • electrochemical cells Practice problems Quizzes Test