

Chemistry I

Eleventh Grade

UNIT TITLE	CORE TOPICS (Key Concepts & Real World Contexts)	UNIT BENCHMARKS	SUGGESTED ASSESSMENT	POSSIBLE RESOURCES
MATTER AND CHANGE	Compare and contrast basic research, applied research, and technological development. Distinguish between physical and chemical properties. Classify changes of matter as physical or chemical. Classify matter, solutions, substances.	II.1.HS.5		
MEASUREMENTS AND CALCULATIONS	Scientific method, density, mass, weight, temperature, length, units, conversions.	I.1.HS.3		
ATOMS, BUILDING BLOCKS OF MATTER	Laws of conservation of mass, energy, mass-energy, Dalton's Atomic Theory, isotopes, moles, molar mass, average atomic mass.	IV.1.HS.3 IV.2.HS.2		
QUANTUM MODEL	List and describe significance of 4 Quantum numbers, electron configurations.			
PERIODIC LAW AND THE PERIODIC TABLE	Chemical groups, ionization energy, electronegativity	IV.1.HS.2		
CHEMICAL BONDING	Describe and identify covalent and ionic bonding. Octet Rule, Lewis Structures	IV.2.HS.1		
CHEMICAL FORMULAS	Writing chemical formulas; naming chemicals			
CHEMICAL EQUATIONS	Balancing equations; types of chemical reactions.	IV.2.HS.1		

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STOICHIOMETRY	Limiting reagents; excess reagents; % yield.			
PHYSICAL CHARACTERISTICS OF GASES	Boyles' Law Charles' Law Gay-Lussac's Law Avogadro's Law Combined Gas Law			
IDEAL GAS LAW	Using law to solve problems; ideal versus real gases			
PROPERTIES OF ACIDS AND BASES	Strong versus weak acids and bases, 3 different definitions of an acid and base. Arrhenius, Bronsted-Lowry, and Lewis.			
TITRATIONS AND PH	Explain and use pH scale; describe self-ionization of H ₂ O; carry out a titration.			
THERMOCHEMISTRY AND REACTION RATES	Perform specific heat calculations; solve problems; involves heats of formation, combustion, Hess's Law.	IV.2.HS.5		
OXIDATION-REDUCTIONS REACTIONS	Explain what an oxidation-reduction reaction is; assign oxidation numbers to a reactant and product species; balance redox reactions using half-reaction method.			