

Summer Assignment	Topics Covered	Related Textbook Chapters	APChemSolutions Lectures	Big Ideas
June-August (Independent Work)	This summer assignment is designed to allow incoming AP Chemistry students to review the key concepts covered in their previous chemistry course, as extensive remediation is NOT an option as we work towards our goal of being prepared for the AP Exam in early May.	Modern Chemistry 2012 (Honors Chemistry Textbook) Chapters 1-9	N/A	N/A
Course Outline	Topics Covered	Related Textbook Chapters	APChemSolutions Lectures	Big Ideas
Honors/Academic Chemistry Review	Summer Assignment Key Concept Review and Evaluation Quiz	Modern Chemistry 2012 (Honors Chemistry Textbook) Chapters 1-9	N/A	N/A
Unit 1: Atomic Theory	<ul style="list-style-type: none"> History of Atomic Theory Isotopes Atomic Mass Waves Light Electronic Structure Quantum Numbers Atomic Orbitals Electron Configurations Periodic Trends 	Chapter 2.1-2.5 Chapter 6 Chapter 7 Chapter 22	Atomic Theory I, II, and III	1 2
Unit 2: Nomenclature	<ul style="list-style-type: none"> Naming Ionic and Covalent Compounds Writing Ionic and Covalent Formulas Formula and Molecular Mass Mass Percent 	Chapter 2.6-2.8 Chapter 3.3-3.5	Nomenclature	
Unit 3: Chemical Bonding	<ul style="list-style-type: none"> Ionic and Covalent Bonding The Octet Rule and Exceptions Lewis Structures, Resonance Structures, and Formal Charges VSEPR Theory and Molecular Geometry Hybrid Orbital Theory Polar/Nonpolar Molecules Bond Length, Bond Energy, and Lattice Energy 	Chapter 8.1-8.7 Chapter 9	Chemical Bonding I, II, III, IV, V	1 2
Unit 4: Intermolecular Forces	<ul style="list-style-type: none"> Types of Intermolecular Forces Determining Relative Boiling Points Heat of Fusion and Vaporization Vapor Pressure 	Chapter 11 Chapter 23.5	Intermolecular I, II	2

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Unit 5: Chemical Reactions	<ul style="list-style-type: none"> Identifying, balancing, and predicting products for the types of chemical reactions (synthesis, decomposition, combustion, single replacement, and double replacement) Solubility rules Activity series Net ionic equations Oxidation numbers 	Chapter 3.1-3.2 Chapter 4.1-4.4	Chemical Reactions I, II, III	1 2 3
Unit 6: Stoichiometry and Solutions	<ul style="list-style-type: none"> The Mole Concept Stoichiometry Limiting/Excess Reactants and Percent Yield Types of Solutions Expressing Concentrations Solubility of Gases Solution Stoichiometry 	Chapter 3.4 and 3.6-3.7 Chapter 4.5-4.6 Chapter 13	Quantitative Chemistry I, II Solutions I, II	2 3
Unit 7: Gases	<ul style="list-style-type: none"> Gas Laws Ideal Gas Law Partial Pressure Mole Fraction Kinetic Molecular Theory 	Chapter 10	Gases I, II	2
Unit 8: Chemical Equilibrium	<ul style="list-style-type: none"> Equilibrium Constants Calculating Equilibrium Concentrations Manipulating K_{eq} The Reaction Quotient Le Chatelier's Principle 	Chapter 15	Equilibrium I, II, III	6
Unit 9: Acid/Base Equilibrium	<ul style="list-style-type: none"> Acids/Bases Conjugate Pairs Strengths K_a, K_b, pH, pOH, pK_a, pK_b Reactions Common Ion Effect Buffers Titrations 	Chapter 16 Chapter 17	Acid Base I, II, III, IV, V	1 3 6

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Unit 10: Kinetics	<ul style="list-style-type: none"> • Reaction Rates • Rate Order • Rate Laws • Half Life • Factors Affecting Reaction Rates • Activation Energy • Reaction Mechanisms • Catalysis 	Chapter 14	Kinetics I, II, III	4
Unit 11: Thermochemistry	<ul style="list-style-type: none"> • Enthalpy • Calorimetry • Hess's Law • Enthalpy of Formation • Bond Energy • Entropy Free Energy 	Chapter 5 Chapter 8.8 Chapter 19	Thermo I, II, III	3 5
Unit 12: Electrochemistry	<ul style="list-style-type: none"> • Voltaic Cells • Voltage • Standard Reduction Potentials • Standard Cell Potentials • Spontaneous Redox Reactions • Gibbs Free Energy • Concentration Cells • Electrolytic Cells 	Chapter 20	Electrochem I, II	4