AP Chemistry Unit 1 Outline: Basic Chemistry

Chapter 1: Chemistry - The Study of Change

Class	Topics	Suggested Reading	✓	Assignments	✓
1	Course Outline	Bulletin Board on Blackbaud		**Print Necessary Documents**	
2 & 3	**Lab #1: Sugar Content in Beverages** (August 22 & 24, Monday & Wednesday)	Lab #1: Sugar Content in Beverages Handout			
3	***Lab #1: Post Lab Discussion***	Using and Graphing with Spreadsheets, Line of Best Fit, Regression Equation, Correlation Coefficient		**Lab #1 Due: September 9, Friday**	
4	Lab Writeup, Scientific Method, Theory, Scientific Law, Accuracy, Reliability, Classification of Matter (Pure Substance and Mixture, Elements and Compounds), Three States of Matter, Physical, Chemical, Extensive and Intensive Properties, Mass, Volume, Density, Microscopic and Macroscopic Properties, SI Units, Scientific (Exponential) Notations, Precision, Percent Error and Percent Yield, Exact Numbers, Uncertainty, Significant Digits, Weight, Temperature Scales, Density Calculations, Unit Factor (Analysis) Method	1.1 Chemistry: A Science for the 21st Century (pg. 4 – 7) 1.2 The Study of Chemistry (pg. 7 – 8) 1.3 The Scientific Method (pg. 8 – 10) 1.4 Classification of Matter (pg. 11 – 13) 1.5 The Three States of Matter (pg. 13 – 14) 1.6 Physical and Chemical Properties of Matter (pg. 14 – 15) 1.7 Measurement (pg. 15 – 21) 1.8 Handling Numbers (pg. 22 – 27) 1.9 Dimensional Analysis in Solving Problems (pg. 27 – 30)		pg. 32 #12 to 15 pg. 33 #21 to 26 pg. 33–34 #28 to 38 pg. 34 #39 to 52	

Chapter 2: Atoms, Molecules and Ions

Class	Topics	Suggested Reading	✓	Assignments	✓
4	History of Chemistry, Law of Conservation of Mass, Law of Definite and Multiple Proportions, Atomic Theories (Dalton, J.J Thomson, Nuclear, Quantum), Millikan Oil drop Experiment, Atomic Structures and Subatomic Particles, Radioactivity and particles, Isotopes, Atomic Number and Mass Number, Valence Electrons, Atomic Orbitals, Periodic Table of Elements (Mendeleev), Molecules, Ions (Cations and Anions), Metals, Non-Metals, Ionic and Covalent Compounds, Groups (Families), Periods, Binary and Polyatomic Elements and Molecules, Chemical and Molecular Formulas, Allotrope, Structural Formula, Empirical Formulas, Nomenclature of Ionic Compounds, Polyatomic Ions and Oxoanions Nomenclature of Hydrates, Nomenclature of Molecular Compounds, Names and Formulas of some Common Molecular Compounds, Nomenclature of Acids	2.1 The Atomic Theory (pg. 42 – 43) 2.2 The Structure of Atom (pg. 43 – 49) 2.3 Atomic Number, Mass Number & Isotopes (pg. 49 – 50) 2.5 Molecules and Ions (pg. 53 – 54) 2.4 The Periodic Table (pg. 51 – 53) 2.6 Chemical Formulas (pg. 55 – 59) 2.7 Naming Compounds (pg. 59 – 68) 2.8 Introduction to Organic Compounds (pg. 68 – 70) *(Read only: won't be tested until Unit 2)*		pg. 71 #3, 5, 8 pg. 71– 72 #12, 14, 16, 18; pg. 74 #68 pg. 72 #30 to 34, 36 pg. 72 #20, 23, 24, 26 pg. 72–73 #37, 40 to 50 (even) pg. 73–74 #51, 55, 57 to 60, 67, 68, 71, 74 **Memorize Table 2.3 *(Common Cations and Anions)* on pg. 61** **Memorize Figure 2.4 *(Greek Prefixes)* on pg. 63** **Memorize *Names of Common Molecular Compounds* (Notes)**	

Chapter 3: Mass Relationships in Chemical Reactions

Class	Topics	Suggested Reading	✓	Assignments	✓
4	Atomic Mass., Atomic Mass Unit (amu), Average Atomic Mass and Relative Abundance, Mole, Avogadro's Number, Molar Mass, Conversions between Mass, Mole, and Molar Mass, Mass Spectrometer, Mass Percent, Determination of Empirical Formulas and Molecular Formulas and Hydrates, Chemical Reactions, Reactants, Products, Coefficients, Classifying and Balancing Different Types of Chemical Reactions (Composition, Decomposition, Single and Double Replacements, Hydrocarbon Combustion), Stoichiometry, Mole Ratio, Gravimetric Stoichiometry, Excess and Limiting Reagents Calculations, Reaction Yield	3.1 Atomic Masses (pg. 80 – 81) 3.2 Avogadro's Number and Molar Mass of an Element (pg. 81 – 85) 3.3 Molecular Mass (pg. 85 – 87) 3.4 The Mass Spectrometer (pg. 88) 3.5 Percent Composition of Compounds (pg. 88 – 92) 3.6 Experimental Determination of Empirical Formulas (pg. 92 – 94) 3.7 Chemical Reactions and Chemical Equations (pg. 94 – 99) 3.8 Amounts of Reactants and Products (pg. 99 – 103) 3.9 Limiting Reagent (pg. 103 – 106) 3.10 Reaction Yield (pg. 106 – 107)		pg. 110 #5, 7, 8 pg. 110 #13 to 22 pg. 110−111 #24, 25, 26, 28, 30 pg. 111−112 #40 to 54 (even) pg. 112 #59, 60 pg. 112−113 #63, 64 to 78 (even) pg. 114 #81 to 86 pg. 114−118 #90, 92, 94, 95, 96, 98, 142, 148	

Chapter 4: Reactions in Aqueous Solutions

Class	Topics	Suggested Reading	✓	Assignments	✓
4	Aqueous Solutions, Dissociations, Hydration, Strong and Weak Electrolytes, Nonelectrolytes, Reversible Reactions, Solute, Solvent, Solubility, General Rules for Solubility, Precipitation, Strong and Weak Acids and Bases, Metathesis Reactions, Molecular Equations, Complete Ionic Equations, Net-Ionic Equations, General Properties of Acids and Bases, Brønsted-Lowry Acids and Bases, Hydronium ion, Acid-Base Neutralizations, Acid Decompositions to Gases, Molarity or Molar Concentration, Dilution ($C_1V_1 = C_2V_2$) and Dilution Technique, Pipet, Volumetric Flask, Predicting Amounts of Precipitate Produced or Minimum Limiting Reagent Needed, Neutralization, Volumetric Analysis, Indicator, Equivalence (Stoichiometric) Point, Endpoint, Titration Technique, Titrant, Analyzed, Using Burets	4.1 General Properties of Aqueous Solutions (pg. 122 – 124) 4.2 Precipitation Reactions (pg. 124 – 128) 4.4 Acid-Base Reactions (pg. 129 – 134) 4.5 Concentration of Solution (pg. 147 – 151) 4.6 Gravimetric Analysis (pg. 151 – 153) 4.7 Acid-Base Titrations (pg. 153 – 156)		pg. 160−161 #1 to 14 pg. 161 #17, 18, 20 to 24; pg. 166 #127, 132 **Memorize Table 4.2 (Solubility Rules) on pg. 125** pg. 161−162 #26, 27, 28, 30 to 34 pg. 163 #58, 60, 62, 64, 66, 67, 70, 72, 74 pg. 163 #76, 78, 80 pg. 164 #82, 84 to 86, 88; pg. 166 #128; pg, 167 #145 to 148	
5	**Chapter 1 to 3 Quiz (August 29, Monday)**				
6	**Unit 1 Test (covers Chapters 1 to 4) (September 6, Tuesday)**			**Chapter 1 to 4 Homework Due (August 29, Monday)**	