GBCS Curriculum Guide			GRADE: 11-12		SUBJECT: AP Chemistry			
Topic	**Pacing**	**Unit**	**Standards**	**Enduring Understandings & Essential Questions**	**Learning Targets**	**Vocabulary/Concepts**	**Materials**	**Assessments**
General Chemistry Review	1 Week	Unit 1	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) How are experiments designed and analyzed 2) How are chemical formulas used?	1) How do you design an experiment 2) What does a lab report look like 3) How is dimensional analysis used in Chemistry? 4) What is the difference between accuracy and precision? 5) What are significant figures? 6) How do you use atomic numbers/atomic mass, and mass numbers 7) How do you write and name chemical formulas	1) Experimental Design 2) Laboratory Report Write-Ups 3) Dimensional Analysis a. Units of measurement b. Accuracy/Precision 4) Significant Figures a. Calculations with significant figures 5) Atomic Numbers, Mass Numbers, and Isotopes 6) Molecules and Molecular Compounds 7) Ions and Ionic Compounds 8) Naming Inorganic Compounds	Chemistry (AP® Edition), 9th Edition Zumdahl/Zumdahl Bubble Gum Electronic Balance Weigh Paper	**Formative:** **Homework Questions:** Chapter 1: 27, 29, 31, 39, 45, 51, 55, 69, 71 Chapter 2: 39, 43, 45, 55, 57 **Summative:** Unit 1-3 Exam Lab: Experimental Design Inquiry Lab- Sugar Content in Gum- [CR-6]
Stoichiometry	1 Week	Unit 2	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR3b The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 2: Properties of matter-characteristics, states, and forces of attraction. CR3c The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 3: Chemical reactions. CR4 The course provides students with the opportunity to connect their knowledge of chemistry and science to major societal or technological components (e.g., concerns, technological advances, innovations) to help them become scientifically literate citizens. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7	1) How do you write and balance chemical equations 2) How are balanced chemical equations used to determine the amounts of products produced/reactants needed? 3) How do limitations on amount of reactants effect the outcome of a chemical reaction? 4) How are empirical formulas determined and used?		1) Balancing equations 2) Empirical Formulas from Analyses 3) Quantitative Information from Balanced Equations 4) Limiting Reactants 1) Balancing equations 2) Empirical Formulas from Analyses 3) Quantitative Information from Balanced Equations 4) Limiting Reactants		**Formative:** Chapter 3: 33, 39, 53, 57, 65, 69, 71, 83, 89, 91, 99, 101, 107, 115 **Summative:** Stoichiometry Exam

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Aqueous Reactions and Solution Stoichiometry	2 Weeks	Unit 3	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR3b The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 2: Properties of matter-characteristics, states, and forces of attraction. CR3c The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 3: Chemical reactions. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) What is a solution? 2) How do you write Net Ionic Equations? 3) How can you use the reactants in an equation to predict what the products will be? 4) How does stoichiometry apply in aqueous systems?		1) General Properties of Aqueous Solutions 2) Concentration of Solutions 3) Precipitation Reactions 4) Solution Stoichiometry 5) Acid Base Reactions 6) Oxidation-Reduction Reactions	Red Dye #40 Blue Dye #2 Electronic Balance Spectrophotometer (Spec 200) Chemical Glassware Blue and Red Gatorade/Powerade	**Formative:** Net Ionics Practice Ch. 4 Online Quiz Chapter 4: 13, 19, 21, 23, 25, 29, 35, 37, 39, 43, 47, 55, 59, 61, 67, 71, 73, 83, 87 **Summative:** Ch. 4 Exam Lab: Analysis of Food Dyes in Sports Drink

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The Gas Laws	2 Weeks	Unit 4	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR3c The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 3: Chemical reactions. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) How does Kinetic Molecular Theory explain the behavior of ideal gases? 2) How do ideal gases behave differently than real gases? 3) What is the mathematical relationship between pressure, volume, temperature, and number of moles of gas? 4) How do mixtures of gases behave? 5) How does stoichiometry apply in gaseous systems?		1) The Gas Laws 2) The Ideal-Gas Equation 3) Gas Law Stoichiometry 4) Gas Mixtures and Partial Pressures 5) Molecular Effusion and Diffusion 6) Kinetic Molecular Theory 7) Real Gasses: Deviations from Ideal Behavior	Eudiometer Electronic Balance Butane Lighters	**Formative:** Chapter 5 Online Quiz Chapter 5: 27, 29, 33, 35, 37, 41, 51, 53, 57, 63, 67, 71, 77, 83, 85, 89 **Summative:** Lab: Determination of Molar Mass of a Gas Chapter 5 Exam
Thermodynamics	2-3 Weeks	Unit 5	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR3e The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 5: Thermodynamics. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) What is the law of conservation of energy? 2) How is the energy of a reaction determined? 3) How does Hess' law relate to chemical reactions? 4) What is entropy? 5) How can you determine if a reaction is spontaneous or not?		1) Enthalpy 2) Enthalpies of Reaction 3) Calorimetry 4) Hess's Law 5) Enthalpies of Formation 6) Spontaneous Reactions 7) Entropy and the Second Law of Thermodynamics 8) Entropy Changes in Chemical Reactions 9) Gibbs Free Energy 10) Free Energy and Temperature 11) Free Energy and the Equilibrium Constant	Flaming Hot Cheetos Balance Calcium Chloride Magnesium Sulfate Copper (II) Sulfate Sodium Acetate Sodium Chloride Sodium Carbonate Lithium Chloride	**Formative:** Chapter 6 Online Quiz Chapter 17 Online Quiz Chapter 6: 25, 31, 35, 37, 41, 45, 47, 53, 55, 59, 65, 71, 75, 79, 81, 83,89, 95 Chapter 17: 33, 35, 41, 43, 53, 55, 57, 69 Lab: Analysis of energy content in food **Summative:** Chapter 6 and 18 Exam Lab: Hand warmer Challenge

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Atomic Structure and Periodicity	1-2 Weeks	Unit 6	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) How are electrons arranged in the atom? 2) What causes electromagnetic radiation to be emitted from an atom? 3) How an the identity of an element be determined based upon the light given on by an element? 4) What causes the periodic trends to occur on the periodic table? 5) Why are the elements on the periodic table grouped the way they are?		1) Nature of Matter 2) Line Spectra and the Bohr Model 3) Quantum Mechanics and Atomic Orbitals 4) Representation of Orbitals 5) Many-Electron Atoms 6) Electron Configurations 7) Electron Configurations and the Periodic Table 8) Periodic Properties a. Effective Nuclear Charge b. Sizes of Atoms and Ions c. Ionization Energy d. Electron Affinities e. Metals, Non-metals, Metalloids f. Group Trends for the Active Metals g. Group Trends for Selective Nonmetals		**Formative:** Chapter 7: 39, 43, 45, 51, 55, 57, 63,83, 89, 93, 99, 109, 111, 115, 119, 125, Electrcon Configuration POGIL **Summative:** Chapter 7 Exam
Photon Emission Spectroscopy	2-3 Days	Subunit 6-a	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) How is Photon Emission Spectroscopy used to determine the identity of elements		1) Photon Emission Spectroscopy (PES)	PES POGIL Activity	**Formative:** PES POGIL **Summative:** Integrated into Chapter 7 Exam

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General Concepts of Bonding	2 Weeks	Unit 7	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) What types of Chemical Bonds to different chemical species form? 2) How does electronegativity determine if a bond is ionic or covalent? 3) What are resonance structures and how do you determine which structure is more prevalent? 4) What is Valence Shell Electron Repulsion Theory 5) What are hybrid orbitals and why do they form?		1) Chemical Bonds and the Octet Rule 2) Ionic Bonding 3) Bond Polarity and Electronegativity 4) Bonding Energies 5) Covalent Bonding 6) Lewis Structures 7) Exceptions to the Octet Rule 8) Resonance Structures 9) Strengths of Covalent Bonds 10) The VSEPR Model 11) Molecular Shape and Bond Polarity 12) Covalent Bonds and Orbital Overlap 13) Hybrid Orbitals 14) Multiple Bonds	Chromatography Paper 8 Different FD&C Food Dyes Sodium Chloride Solution	**Formative:** Chapter 8: 15, 25, 29, 35, 37, 39, 43, 53, 55, 57, 61, 65, 69, 83, 85, 87, 89, 91, 101. 113, 115, Chapter 9: 27, 29 **Summative:** Ch. 8,9,10 Exam Lab: Separation of Food Dyes by Chromatography
Chemical Kinetics	2 Weeks	Unit 8	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR3d The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 4: Rates of chemical reactions. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) What is rate of reaction? 2) What is a rate law and how can it be determined experimentally? 3) What is a reaction mechanism? 4) What effect does a catalyst have on a chemical system?		1) Factors that Affect Reaction Rates 2) Types of Rates 3) Determining Rate Laws 4) Integrated Rate Law a. First Order i. Half Life b. Second Order c. Zero Order 5) Reaction Mechanisms 6) Catalysis	Potassium Iodide Solution Sodium Bisulfate Solution Sulfuric Acid Solution Starch Solution	**Formative:** Chapter 12: 23, 25, 29, 31, 33, 35, 39, 41, 43, 45, 47, 49, 55, 59, 61, 65,85 Iodine Clock Reaction Lab Kinetics POGIL **Summative:** Chapter 12 Exam

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Chemical Equilibrium	1 Week	Unit 9	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR3f The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 6: Equilibrium. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) What is happening on the molecular level when a system is at equilibrim? 2) How is the equilibrium constant calculated? 3) How does a system at equilibrium react when a stress is applied to it?		1) The Equilibrium Constant 2) Heterogeneous Equilibria 3) Applications of Equilibrium Constants 4) Solving Equilibrium Problems 5) Le Chatelier's Principle		**Formative:** Chapter 13: 17, 21, 23, 33, 37, 39, 43, 45, 51, 59, 61, 63 Lab: Standardization of a Solution **Summative:** Equilibrium Exam
Acid Base Equilibria	1-2 Weeks	Unit 10	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR3f The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 6: Equilibrium. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) What are the key properties of acids and bases? 2) What are pH and pOH and how are they determined? 3) What is the difference between a weak and strong acid/base? 4) How are Ka and Kb calculated? 5) How can you use Ka and Kb to determine the pH of a solution? 6) How does the Henderson-Hasslebach equation help you solve acid/base chemical systems?		1) Nature of Acids and Bases 2) Acid Strength a. Water as Acid and Base 3) The pH Scale 4) Calculating pH of Strong Acids and Bases 5) Calculating pH of Weak Acids 6) Bases 7) Polyprotic Acids a. Phosphoric Acid b. Sulfuric Acid 8) Relationship Between Ka and Kb 9) Acid-Base Properties of Salt Solutions 10) Acid-Base Behavior and Chemical Structure 11) Lewis Acids and Bases		**Formative:** Chapter 14:9, 33, 37, 41, 45, 47, 49, 51, 55, 57, 71, 77, 81, 85, 93, 99, 101, 107, 119, 123 **Summative** Acid/Base Exam Lab: Inquiry Battle of the Acids

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Additional Aspects of Equilibrium	1 Week	Unit 11	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR3f The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 6: Equilibrium. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) How is the solubility of a substance effected by the presence of a common ion? 2) What is a titration?		1) The Common Ion Effect 2) Buffered Solutions 3) Acid-Base Titrations 4) Solubility Equilibria 5) Factors that Affect Solubility		**Formative:** Chapter 15: 23, 27, 29, 31, 41, 53, 57, 65, 75, 77, 81, 87, 97 **Summative:** Combined Equilibrium Exam
Electrochemistry	2 Weeks	Unit 12	CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) What is an oxidation-reduction reaction? 2) How do you balance redox equations? 3) How do you use balanced redox reactions to determine the voltage of a chemical cell? 4) What happens to the voltage of a cell as a reaction approaches equilibrium?		1) Oxidation-Reduction Reactions 2) Balancing Oxidation-Reduction Equations 3) Standard Reduction Potentials a. Line notation 4) Voltaic Cells 5) Dependence of Cell Potential on Concentration a. Nernst Equation b. Calculation of Equilibrium Constants for Redox Reactions 6) Electrolysis		**Formative:** Chapter 18: 25, 31, 35, 45, 47, 51, 53, 57, 77, 79 Lab: Actviity Series Lab **Summative:** Chapter 18 Exam

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Nuclear Chemistry	1 Week		CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) Why are some isotopes unstable? 2) What are the 3 main types of nuclear radiation? 3) How do you write nuclear chemical reactions?		1) Radioactivity 2) Types of Radioactive Decay a. Alpha b. Beta c. Gamma 3) Kinetics of Radioactive Decay a. Half-life		**Formative:** Chapter 19: 11, 13, 19, 25, 29, 31, 33, 41 **Summative**: Chapter 19 Exam
Organic Chemistry	.5 Weeks		CR1 Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook. CR2 The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework. CR3a The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter. CR5a Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time. CR5b Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework. CR6 The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format. CR7 The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.	1) Why is carbon able to form so many different types of molecules? 2) What are functional groups? 3) How are organic molecules named?		1) General Characteristics of Organic Molecules 2) Alkanes 3) Alkenes and Alkynes 4) Hydrocarbon Derivatives. (Functional Groups)		**Formative:** Chapter 22: 22- 17, 21, 25, 31, 33, 47 **Summattive:** Organic Exam