AP Chemistry
Year at a Glance (YAG)
2024-2025

First Semester		Second Semester	
1st Nine Weeks		**3rd Nine Weeks**	
AP Topic Chemical Foundations (10 days)	Students will express measurements in chemistry utilizing rules for significant figures, scientific notation, and dimensional analysis. Students will organize matter based on class, phase, and chemical properties.	AP Topic Thermochem (10 days)	Students will represent a chemical reaction as endothermic or exothermic, calculate the q from a calorimetry experiment, and explain changes in q. Students will calculate the enthalpy change of a reaction using Hess's Law and standard enthalpy of formation values.
Atoms, Ions, and Molecules (14 days)	Students will apply fundamental chemical laws to identify quantitative composition of compounds. Students explain how experimentation led to the development of atomic models and periodic trends. Students will write chemical formulas and name chemical compounds that are ionic and covalent. Students will perform calculations related to average atomic mass, molar mass, moles, percent composition and empirical formulas. Student will complete calculations related to stoichiometric quantities for a balanced chemical reaction.	Equilibrium (10 days)	Students will explain the occurrence of a reversible reaction to establish equilibrium. Students will represent and calculate the equilibrium constant and the reaction quotient for a chemical reaction. Students will show how the size of an equilibrium constant determines reaction relative concentrations. Students will apply Le Chatelier's Principle to a reaction stress.
		Solubility (5 days)	Students will calculate the solubility of a salt based on a Ksp value, use the common ion effect to determine ion concentration.
Periodicity and Bonding (14 days)	Students will determine periodic trends such as ionization energy, atomic radii and bond strength based on attractions, repulsions, and shielding. Students will diagram a Lewis structure for a molecule based on comparisons of formal charges. Students will show resonance structures given a molecular compound. Students will predict molecular structures based on VSEPR theory and hybridization.	Acid-Base (20 days)	Students will calculate pH and pOH bases on Kw values, ion concentrations, Ka and Kb values for given solutions. Students will graph titration reactions and use the Henderson-Hasselbalch Equation to identify the pH and properties of a buffer.
2nd Nine Weeks		**4th Nine Weeks**	
Gases (8 days)	Students will state the tenets of the kinetic molecular theory. Students will explain the properties of a gas sample identified in the Ideal Gas Law and Dalton's Law of PP, and calculate the values for a gas sample.	Thermodyn-amics (18 days)	Students will identify the sign and magnitude of entropy for a reaction and calculate the entropy change. Students will designate a reaction's thermodynamic favorability based on a Gibbs free energy value, and the use of K, G, and T for a given process.
Solutions (6 days)	Students will calculate concentration values given solution components. Students will identify factors that affect solubility and explain how a colligative property impacts a physical property of a solution.		Students will relate external sources of energy or coupled reactions to their ability to drive an unfavorable reaction.
		Electrochem-istry (18 days)	Students will explain the relationship between physical components of a cell and overall operation principles.

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Types of Reactions (13 days) Kinetics (14 days)	Students will identify 5 types of reactions based on reactants used and products formed. Students will write formula and net ionic equations for precipitation, acid-base, and redox reactions. Student will apply stoichiometric calculations to reaction with solution molarity as a variable. Students will explain the relationship between reaction rate and experimental parameters. Students will write a differential and integrated rate law given data and calculate appropriate values for that data. Students will create models to explain elementary steps, reaction mechanisms, rate determining step, activation energy, and catalysts.	Practice Exam, Final Review (4 days)	Students will diagram components of voltaic cells and electrolytic cells. Students will calculate cell potentials from half-reactions within a cell. Students will calculate charge flow based on Faraday's Law. Exam guidelines, strategies, scoring, use of PT and formula sheet.

Resources

1st Nine Weeks	2nd Nine Weeks	3rd Nine Weeks	4th Nine Weeks
-Zumdahl 11ed Chem text with Powerpoints -AP Chem Course and Exam Description -AP Chem Guided Inquiry lab manual -Vernier LabQuest2 experiments -AP Central Released FRQs -Bozeman AP Chem Videos -NMSI Chapter notes -AP Classroom, assignments, quizzes, exams, progress checks	-Zumdahl 11ed Chem text with Powerpoints -AP Chem Course and Exam Description -AP Chem Guided Inquiry lab manual -Vernier LabQuest2 experiments -AP Central Released FRQs -Bozeman AP Chem Videos -NMSI Chapter notes -AP Classroom, assignments, quizzes, exams, progress checks	-Zumdahl119ed Chem text with Powerpoints -AP Chem Course and Exam Description -AP Chem Guided Inquiry lab manual -Vernier LabQuest2 experiments -AP Central Released FRQs -Bozeman AP Chem Videos -NMSI Chapter notes -AP Classroom, assignments, quizzes, exams, progress checks	-Zumdahl 11ed Chem text with Powerpoints -AP Chem Course and Exam Description -AP Chem Guided Inquiry lab manual -Vernier LabQuest2 experiments -AP Central Released FRQs -Bozeman AP Chem Videos -NMSI Chapter notes -AP Classroom, assignments, quizzes, exams, progress checks

Texas State Plan for the Education of Gifted Talented Students

District meets the needs of GT Students by modifying **depth, complexity and pacing** of the CI ordinarily provided (9)

- **Depth**: Exploration of concrete to abstract/familiar to unfamiliar/details, patterns, trends, ethical considerations (18)
- **Complexity**: **Extension** in **b/t and across disciplines** through themes/problems/issues from multiple POV (18)
- **Flexible pacing**: Students at an appropriate instructional level and allowing them to move forward in the curriculum as they master content and skills. Achieved by continuous progress, compacted courses, **advanced level courses**, grade skipping, early entrance, CBE (19)
- **Diversity:** The presence of difference between individuals and among groups including but not limited to age, socioeconomics, education, race and ethnicity, gender, sexual orientation, culture, and religious beliefs (18)
- **Acceleration:** Academic intervention that matches the level, complexity and pace of the curriculum with the **readiness and motivation** of the student. Mastering TEKS at a rate faster or at an age earlier than the norm (18)
- 3.4 Opportunities to **work together as a group, work with other students, and work independently** during the school day (7)
- 4.3 A continuum of learning experiences is provided that leads to the development of **adv-level products** and/or **performances** TPSP (9)
- 4.5 **Opportunities** are provided to accelerate in areas of **student** strength (individual) (9)
- 4.7 Scheduling mods are implemented in order to meet the identified needs of **individual** students (9)