Course Name: Chemistry
School Year: 2025-2026

Course Purpose and Relevance:

This Chemistry course aims to provide students with a foundational understanding of chemical principles and their real-world applications. Through engaging in hands-on experiments and critical analysis, students will explore the structure and behavior of matter, chemical reactions, and the energy changes associated with these processes. The course emphasizes the relevance of chemistry in everyday life, including its impact on technology, environmental science, and health. By studying topics such as atomic structure, chemical reactions, and solution chemistry, students will develop practical skills and analytical thinking necessary for solving complex problems. Understanding these chemical concepts prepares students for advanced study in science and engineering and equips them with the knowledge to make informed decisions about issues involving chemistry.

Honors Chemistry: Honors Chemistry explores advanced chemical principles. Emphasizing rigorous analytical and experimental techniques, this course challenges students with complex problem-solving and fosters a deeper understanding of chemistry's role in technology, industry, and the environment.

In this Chemistry course, students, for at least 40% of instructional time, will gain a comprehensive understanding of fundamental concepts and practices in chemical science through hands-on experiments and critical analysis. The course emphasizes key chemistry topics, including:

- **Atomic and Molecular Structure:** Students will explore the atomic model, chemical bonding, and molecular geometry. They will study the periodic table's organization, predict chemical reactivity based on atomic structure, and understand the nature of covalent, ionic, and metallic bonds.
- **Chemical Reactions and Stoichiometry:** Students will learn to balance chemical equations, perform stoichiometric calculations, and analyze reaction mechanisms. They will investigate various types of chemical reactions, including synthesis, decomposition, and combustion, and apply these concepts to real-world chemical processes.
- **Thermodynamics and Kinetics:** The course covers principles of thermodynamics, including enthalpy, entropy, and Gibbs free energy, and their roles in predicting reaction spontaneity. Students will also study reaction rates and factors affecting the speed of chemical reactions.
- **Solution Chemistry:** Students will examine the properties of solutions, including concentration calculations, solubility, and colligative properties. They will perform experiments to understand how different factors, such as temperature and pressure, influence solution behavior.
- **Acids and Bases:** Students will explore the nature of acids and bases, pH calculations, and acid-base titrations. They will understand the concept of equilibrium in acid-base reactions and apply this knowledge to practical scenarios.

Students will engage in a variety of investigations—descriptive, comparative, and experimental—using scientific and engineering practices. They will develop models, analyze data, and communicate their findings effectively.

Science is viewed through recurring themes of systems, models, and patterns. Students will learn to analyze systems in terms of their components and their interactions, using models to make predictions and understand scientific concepts. This approach helps students grasp how systems function and interact with their environment, providing a strong foundation for further scientific study and application.

Available Support for Student Learning:

Refer to the teacher's Course Syllabus for resources and course specific opportunities.
Student textbook and/or digital version are available through the CCISD Student Portal.

Link to Course TEKS on State website:

Chemistry TEKS Link

Year-at-a-Glance 25-26	Grade Level	Chemistry (On Level and Honors)

	First Semester Instruction
1st Nine Weeks	**Unit 1: Scientific and Engineering Practices** BB 1: Lab Safety in Chemistry (1C) BB 2: Exploring Phenomena through Inquiry (1-4) ***TEKS 1-4 will be embedded throughout each unit supporting the implementation of 3-Dimensional Instruction.***
	Unit 2: Intro to Periodic Table and Atoms BB 1: Atomic Theory & Structure (6A, 6B) BB 2: Development & Organization of the Periodic Table (5A, 5B) BB 3: Isotopes (6D)
	Unit 3: Electrons BB 1: Electrons and Light (6C) BB 2: Electron Models (6E)
	Unit 4: Period Trends BB 1: Atomic Mass and Atomic Radius(5C) BB 2: Electronegativity, Ionization Energy and Reactivity (5C)
2nd Nine Weeks	**Unit 5: Bonding** BB 1: Electronegativity to predict the type bonds (7A) BB 2: Name and write formulas for Covalent Compounds (7B) BB 3: Name and write formulas for Ionic Compounds (7B)
	Unit 6: VSEPR and Inter/Intramolecular Forces BB 1: Molecular Shapes (7C) BB 2: Intra/Intermolecular Forces (7D)
	Unit 7: Moles BB 1: Concept of a Mole (8A) BB 2: Mole Conversions (8A, 8B) BB 3: Percent Composition (8C) BB 4: Empirical & Molecular Formulas (8D)
	Semester Exam/District Created CBA Early Release 12/19

Year-at-a-Glance 25-26	Grade Level	Chemistry (On Level and Honors)

	Second Semester Instruction
3rd Nine Weeks	**Unit 8: Chemical Reactions** BB 1: Chemical Equations (9A) BB 2: Types of Reactions (9A, 9B)
	Unit 9: Stoichiometry BB 1: Stoichiometric Calculations (9C) BB 2: Limiting Reactants (9D)
	Unit 10: Gas Laws BB 1: Kinetic Molecular Theory (10A) BB 2: Relationships Between Gas Variables (10B) BB 3: Combined Gas Laws (10B [calculations]) BB 4: Ideal Gas Laws (10B [calculations]) BB 5: Partial Pressure (10C)
4th Nine Weeks	**Unit 11: Solutions** BB 1: Unique Role of Water (11A) BB 2: Factors that Affect Rate of Dissolution (11C) BB 3: Factors that Affect Solubility (11C [solubility curve]) BB 4: Types of Solutions (11B) BB 5: Solubility Rules (11D, 9B) BB 6: Molarity and dilutions calculations (11E, 11F)
	Unit 12: Acids & Bases BB 1: Properties & Definitions of Acids and Bases (12B) BB 2: pH Scale and Calculations (12E) BB 3: Strength (12C) BB 4: Naming Acids & Bases (12A) BB 5: Acid-Base Reactions (12D)
	Unit 13: Thermal Chemistry BB 1: Laws of Thermodynamics (13A) BB 2: Heat Calculations (13D) BB 3: Calorimetry (13B) BB 4: Endo/exothermic (13C)
	Unit 14: Nuclear BB 1: Characteristics of Nuclear Particles and Equations (14A) BB 2: Fission & Fusion (14B) BB 3: Applications of Nuclear Phenomena (14C, 4C)
	Semester Exam **Early Release 5/21**