

AP® Chemistry builds students' understanding of the nature and reactivity of matter. After studying chemical reactions and electrochemistry, students move on to understand how the chemical and physical properties of materials can be explained by the structure and arrangements of the molecules and the forces between those molecules. Students will examine the laws of thermodynamics, molecular collisions, and the reorganization of matter in order to understand how changes in matter take place. Finally, students will explore chemical equilibria, including acid-base equilibria. The equivalent of an introductory college-level chemistry course, AP® Chemistry prepares students for the AP® exam and for further study in science, health sciences, or engineering.

The AP® Chemistry course provides a learning experience focused on allowing students to develop their critical thinking skills and cognitive strategies. Frequent no- and low-stakes assessments allow students to measure their comprehension and improve their performance as they progress through each activity. Students regularly engage with primary source materials, allowing them to practice the critical reading and analysis skills that they will need in order to pass the AP® exam and succeed in a college chemistry course. Students perform hands-on labs that give them insight into the nature of science and help them understand chemical concepts, as well as how evidence can be obtained to support those concepts. Students also complete several virtual lab studies in which they form hypotheses; collect, analyze, and manipulate data; and report their findings and conclusions. During both virtual and traditional lab investigations and research opportunities, students summarize their findings and analyze others' findings in summaries, using statistical and mathematical calculations when appropriate. Summative tests are offered at the end of each unit as well as at the end of each semester, and contain objective and constructed response items. Robust scaffolding, rigorous instruction, relevant material, and regular active learning opportunities ensure that students can achieve mastery of the skills necessary to excel on the AP® exam.

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Length: Two Semesters

Unit 1: Chemistry Foundations

- Chemical Reactions and the Mole
- Stoichiometry
- Chemistry Foundations Wrap-up

Unit 2: Chemical Reactions and Electrochemistry

- Chemistry Reactions
- Electrochemistry
- Chemical Reactions and Electrochemistry Wrap-up

Unit 3: Thermodynamics

- Energy Changes in Matter
- Thermodynamics
- Thermodynamics Wrap-up

Unit 4: Atomic Structure and Bonding

- Atomic Structure and Periodicity
- Bonding
- Atomic Structure and Bonding Wrap-up

Unit 5: Semester 1 Exam

Unit 6: Intermolecular Forces

- Intermolecular Forces and the Properties of Solids and Liquids
- Intermolecular Forces and the Properties of Gases
- Intermolecular Forces Wrap-Up

Unit 7: Kinetics

- Reaction Rates
- Reaction Mechanisms and Catalysis
- Kinetics Wrap-up

Unit 8: Chemical Equilibrium

- General Equilibrium
- Solubility Equilibrium
- Chemical Equilibrium Wrap-up

Unit 9: Acid-Base Equilibria

- Acid-Base Equilibria
- Buffers
- Acid-Base Equilibria Wrap-up

Unit 10: Semester 2 Exam