Chemistry offers a curriculum that emphasizes students' understanding of fundamental chemistry concepts while helping them acquire tools to be conversant in a society highly influenced by science and technology.

The course provides students with opportunities to learn and practice critical scientific skills within the context of relevant scientific questions. Topics include the nature of science, the importance of chemistry to society, atomic structure, bonding in matter, chemical reactions, redox reactions, electrochemistry, phases of matter, equilibrium and kinetics, acids and bases, thermodynamics, quantum mechanics, nuclear reactions, organic chemistry, and alternative energy.

Scientific inquiry skills are embedded in the direct instruction, wherein students learn to ask scientific questions, form and test hypotheses, and use logic and evidence to draw conclusions about the concepts. Lab activities reinforce critical thinking, writing, and communication skills and help students develop a deeper understanding of the nature of science.

Throughout this course, students are given opportunities to understand how chemistry concepts are applied in technology and engineering. Practice activities provide additional opportunities for students to apply learned concepts and practice their writing skills. Exploration activities challenge Honors students to deconstruct scientific claims, analyze scientific articles, and suggest follow-up experiments or topics for further research. Finally, Project activities allow Honors students to use scientific process skills to delve deeper into topics.

This course is built to state standards, the American Association for the Advancement of Science (AAAS) Project 2061 benchmarks, and the National Science Education Standards (NSES).

Length: Two Semesters

Unit 1: Chemistry and Society

- The Nature of Science
- The Importance of Chemistry
- Doing Science: Chemistry and Society
- Chemistry and Society Wrap-Up

Unit 2: Atomic Structure

- Matter, Forces, and Energy
- Atoms
- Elements
- Doing Science: Atomic Structure

Copyright© Edmentum Inc. All Rights Reserved.

- Atomic Structure Wrap-Up

Unit 3: Bonding in Matter

- Electrons and Periodicity
- Bonding and Forces
- Compounds and Molecules
- Doing Science: Bonding in Matter
- Bonding in Matter Wrap-Up

Unit 4: Chemical Reactions

- The Mole
- Changes in Matter
- Balancing Chemical Reactions
- Doing Science: Chemical Reactions
- Chemical Reactions Wrap-Up

Unit 5: Chemistry at Work

- Redox Reactions
- Electrochemistry
- Tying It Together
- Doing Science: Chemistry at Work
- Chemistry at Work Wrap-Up

Unit 6: Semester 1 Review and Exam

Unit 7: Energy in Matter

- Phases of Matter
- Liquids and Solutions
- Gases
- Doing Science: Energy in Matter
- Energy in Matter Wrap-Up

Unit 8: Equilibrium and Kinetics

- Equilibrium
- Acids and Bases
- Kinetics
- Doing Science: Equilibrium and Kinetics
- Equilibrium and Kinetics Wrap-Up

Unit 9: Transferring Energy

- Transferring Heat
- Enthalpy
- Entropy and Spontaneity
- Doing Science: Transferring Energy
- Transferring Energy Wrap-Up

Unit 10: Quantum and Nuclear Chemistry

Copyright© Edmentum Inc. All Rights Reserved.

- Quantum Mechanics
- Energy in Electrons and Nuclei
- Nuclear Reactions
- Doing Science: Quantum and Nuclear Chemistry
- Quantum and Nuclear Chemistry Wrap-Up

Unit 11: Energy in Organic Molecules

- Foundations of Organic Chemistry
- Introductory Biochemistry
- Energy in the World
- Doing Science: Energy in Organic Molecules
- Energy in Organic Molecules Wrap-Up

Unit 12: Semester 2 Review and Exam

Copyright© Edmentum Inc. All Rights Reserved.