

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

LESSON 1: THE NATURE OF SCIENCE

Study: Science and Scientists

Learn about science and scientists; learn about why scientific processes and discoveries require time and careful work.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Science and Scientists

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: The Scientific Process

Learn about the scientific method and associated processes that lead to reliable data; learn about scientific controversy.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: The Scientific Process

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Using the Scientific Process

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 2: THE IMPORTANCE OF CHEMISTRY

Study: Chemistry over Time

Learn what chemistry is and the history of chemistry.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Chemistry over Time

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Chemistry in the World

Learn about how chemistry is used in various careers and in medicine and technology, and about how the use of chemicals has impacted the environment both for good and bad.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Chemistry in the World

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: The Work of Chemists

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 3: DOING SCIENCE: CHEMISTRY AND SOCIETY

Project: Semester 1 Honors Chemistry Project, Part 1

Students choose their project.

Duration: 0 hrs 30 mins Scoring: 20 points

Study: Introduction to Engineering

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

Quiz: Introduction to Engineering

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Observing and Inferring

Use the scientific method and scientific skills to perform a lab experiment.

Duration: 1 hr 30 mins Scoring: 50 points

Discuss: Observing and Inferring

Discuss the results of your lab.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 4: CHEMISTRY AND SOCIETY WRAP-UP

Practice: Chemistry and Society

Practice problem-solving skills related to concepts in the lesson.

Duration: 1 hr 15 mins Scoring: 40 points

Review: Unit Review

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Computer-Scored Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Teacher-Scored Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 2: ATOMIC STRUCTURE

LESSON 1: MATTER, FORCES, AND ENERGY

Study: Matter and Forces

Learn about matter, the law of conservation of matter, and the forces that act on matter.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Matter and Forces

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Energy

Learn about the different types of energy and how energy changes form.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Energy

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: ATOMS**Study: Atomic Structure**

Learn about how all matter is made of atoms; learn about the history of atomic theory; understand the Bohr atom and the differences between neutrons, protons, and electrons.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Atomic Structure

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: The Periodic Table

Learn how to navigate the periodic table and use it to find numbers of protons, electrons, and neutrons.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: The Periodic Table

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: A History of the Elements

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 3: ELEMENTS**Study: Organization and History of the Periodic Table**

Learn about the history of the periodic table; the information in the periodic table; and how the table shows the unity, diversity, and organization of life.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Organization and History of the Periodic Table

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Elements on the Periodic Table

Learn about the elements of the periodic table.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Elements on the Periodic Table

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Momentary Elements

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 4: DOING SCIENCE: ATOMIC STRUCTURE

Project: Semester 1 Honors Chemistry Project, Part 2

Students submit research for their project.

Duration: 0 hrs 30 mins Scoring: 20 points

Study: Civil Engineering

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

Quiz: Civil Engineering

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Mass, Volume, and Density

Use the scientific method and scientific skills to perform a lab experiment.

Duration: 1 hr 30 mins Scoring: 50 points

Discuss: Mass, Volume, and Density

Discuss the results of your lab.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 5: ATOMIC STRUCTURE WRAP-UP

Practice: Atomic Structure

Practice problem-solving skills related to concepts in the lesson.

Duration: 1 hr 15 mins Scoring: 40 points

Review: Unit Review

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Computer-Scored Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Teacher-Scored Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 3: BONDING IN MATTER

LESSON 1: ELECTRONS AND PERIODICITY

Study: Electrons and Orbitals

Learn about energy levels of electrons, electron configurations, and the filling of orbitals.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Electrons and Orbitals

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Predictions and the Periodic Table

Learn about the patterns in the periodic table and the information that can be gained by using the table.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Predictions and the Periodic Table

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Defining Electronegativity

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 2: BONDING AND FORCES

Study: Intramolecular Forces

Learn about forces within molecules, draw Lewis structures, and make predictions about the type of bond formed between two atoms.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Intramolecular Forces

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Intermolecular Forces

Learn about the forces between molecules and how they determine properties of substances.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Intermolecular Forces

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: COMPOUNDS AND MOLECULES

Study: Molecular Shape

Learn how to predict molecular shape.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Molecular Shape

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Naming Substances

Learn about naming and writing formulas for compounds.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Naming Substances

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Protein Folding

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 4: DOING SCIENCE: BONDING IN MATTER

Project: Semester 1 Honors Chemistry Project, Part 3

Students submit a plan for their project.

Duration: 1 hr 40 mins Scoring: 20 points

Study: Food: More, Better, Longer

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

Quiz: Food: More, Better, Longer

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Periodic Properties

Use the scientific method and scientific skills to perform a lab experiment.

Duration: 1 hr 30 mins Scoring: 50 points

Discuss: Periodic Properties

Discuss the results of your lab.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 5: BONDING IN MATTER WRAP-UP

Practice: Bonding in Matter

Practice problem-solving skills related to concepts in the lesson.

Duration: 1 hr 15 mins Scoring: 40 points

Review: Unit Review

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Computer-Scored Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Teacher-Scored Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 4: CHEMICAL REACTIONS

LESSON 1: THE MOLE

Study: The Significance of the Mole

Learn about moles and their main uses and how to perform unit conversions.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: The Significance of the Mole

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Using the Mole

Learn how to use moles to determine mass percent composition, the empirical formula, and the molecular formula.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Using the Mole

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Single-Molecule Science

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 2: CHANGES IN MATTER

Study: Chemical Reactions

Learn how to define chemical reactions.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Chemical Reactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Types of Reactions

Learn about the main types of chemical reactions.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Types of Reactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Hard Water and Ion Exchange

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 3: BALANCING CHEMICAL REACTIONS**Study: Balancing Inorganic Reactions**

Learn about balancing inorganic chemical reactions.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Balancing Inorganic Reactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Balancing Organic Reactions

Learn about the significance of organic reactions, such as combustion, and how to balance organic reactions.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Balancing Organic Reactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 4: DOING SCIENCE: CHEMICAL REACTIONS**Project: Semester 1 Honors Chemistry Project, Part 4**

Students submit their completed project.

Duration: 0 hrs 45 mins Scoring: 140 points

Study: Engines, Fuel, and Green Design

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

Quiz: Engines, Fuel, and Green Design

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Precipitation Reactions

Use the scientific method and scientific skills to perform a lab experiment.

Duration: 1 hr 30 mins Scoring: 50 points

Discuss: Precipitation Reactions

Discuss the results of your lab.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 5: CHEMICAL REACTIONS WRAP-UP**Practice: Chemical Reactions**

Practice problem-solving skills related to concepts in the lesson.

Duration: 1 hr 15 mins Scoring: 40 points

Review: Unit Review

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Computer-Scored Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Teacher-Scored Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 5: CHEMISTRY AT WORK

LESSON 1: REDOX REACTIONS

Study: Understanding Redox Reactions

Learn about the significance of redox reactions.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Understanding Redox Reactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Balancing Redox Reactions

Learn about half-reactions and how to balance redox reactions.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Balancing Redox Reactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Fighting Free Radicals

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 2: ELECTROCHEMISTRY

Study: Galvanic Cells

Learn about galvanic cells, batteries, and cell voltages.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Galvanic Cells

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Electrolytic Cells

Learn how about spontaneous and nonspontaneous redox reactions, including electrolytic cells.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Electrolytic Cells

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: TYING IT TOGETHER

Study: Calculating with the Periodic Table

Learn how to calculate average atomic mass and theoretical yield of products, and how to determine the limiting reagent and the percent yield.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Calculating with the Periodic Table

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Scientific Themes

Learn about the themes that link chemistry to the other sciences.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Scientific Themes

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Using Scientific Themes

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 4: DOING SCIENCE: CHEMISTRY AT WORK**Study: Electrical Systems**

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

Quiz: Electrical Systems

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Oxidation-Reduction Reactions

Use the scientific method and scientific skills to perform a lab experiment.

Duration: 1 hr 30 mins Scoring: 50 points

Discuss: Oxidation-Reduction Reactions

Discuss the results of your lab.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 5: CHEMISTRY AT WORK WRAP-UP**Practice: Chemistry at Work**

Practice problem-solving skills related to concepts in the lesson.

Duration: 1 hr 15 mins Scoring: 40 points

Review: Unit Review

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Computer-Scored Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Teacher-Scored Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 6: SEMESTER 1 REVIEW AND EXAM**LESSON 1: SEMESTER 1 REVIEW AND EXAM****Review: Semester 1 Review**

Prepare for the semester exam by reviewing key concepts covered in Semester 1.

Duration: 1 hr Scoring: 0 points

Exam: Semester 1 Exam

Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in Semester 1.

Duration: 1 hr Scoring: 100 points

Final Exam: Chemistry Semester 1

Take a teacher-scored exam to demonstrate your mastery of concepts and skills covered in Chemistry Semester 1.

Duration: 1 hr Scoring: 100 points

UNIT 7: ENERGY IN MATTER

LESSON 1: PHASES OF MATTER

Study: Kinetic Theory

Learn about how the kinetic theory explains phases.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Kinetic Theory

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Solids

Learn about the properties of solids, particularly metallic solids.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Solids

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: LIQUIDS AND SOLUTIONS

Study: Solutions

Learn about the properties of solutions, how mixtures are different from solutions, and what factors influence the rate of solution formation.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Solutions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Melting and Boiling

Learn about how intermolecular forces affect melting points, and how addition of solute affects melting and freezing points.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Melting and Boiling

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Food Colloids

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 3: GASES

Study: Changes in Gases

Learn about changes in gases, and about how to use graphs to explain what happens as gases change.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Changes in Gases

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: The Ideal Gas Law

Do calculations with absolute temperature, the ideal gas law, and partial pressures.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: The Ideal Gas Law

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Mining Helium

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 4: DOING SCIENCE: ENERGY IN MATTER**Project: Semester 2 Honors Chemistry Project, Part 1**

Students choose their project.

Duration: 0 hrs 30 mins Scoring: 20 points

Study: Aeronautical Engineering

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

Quiz: Aeronautical Engineering

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Freezing Point Depression

Use the scientific method and scientific skills to perform a lab experiment.

Duration: 1 hr 30 mins Scoring: 50 points

Discuss: Freezing Point Depression

Discuss the results of your lab.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 5: ENERGY IN MATTER WRAP-UP**Practice: Energy in Matter**

Practice problem-solving skills related to concepts in the lesson.

Duration: 1 hr 15 mins Scoring: 40 points

Review: Unit Review

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Computer-Scored Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Teacher-Scored Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 8: EQUILIBRIUM AND KINETICS**LESSON 1: EQUILIBRIUM****Study: The Equilibrium Constant**

Learn about the concept of equilibrium, and about what happens when equilibrium is disturbed.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: The Equilibrium Constant

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Acid and Base Equilibrium

Learn about acids and bases, and about the equilibria of acids and bases.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Acid and Base Equilibrium

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: ACIDS AND BASES**Study: The pH Scale**

Learn about common acids and bases, pH, and pOH.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: The pH Scale

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Acid-Base Reactions

Learn principles of acid-base reactions, predict products of acid-base reactions, and learn about buffers.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Acid-Base Reactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Acid Rain and Ecosystems

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 3: KINETICS**Study: Reaction Rate**

Learn about reaction rate.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Reaction Rate

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Calculating the Reaction Rate

Learn about how to calculate reaction rate.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Calculating the Reaction Rate

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 4: DOING SCIENCE: EQUILIBRIUM AND KINETICS**Project: Semester 2 Honors Chemistry Project, Part 2**

Students submit research for their project.

Duration: 0 hrs 30 mins Scoring: 20 points

Study: Drug Design

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

Quiz: Drug Design

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Disturbing Equilibrium

Use the scientific method and scientific skills to perform a lab experiment.

Duration: 1 hr 30 mins Scoring: 50 points

Discuss: Disturbing Equilibrium

Discuss the results of your lab.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 5: EQUILIBRIUM AND KINETICS WRAP-UP

Practice: Equilibrium and Kinetics

Practice problem-solving skills related to concepts in the lesson.

Duration: 1 hr 15 mins Scoring: 40 points

Review: Unit Review

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Computer-Scored Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Teacher-Scored Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 9: TRANSFERRING ENERGY

LESSON 1: TRANSFERRING HEAT

Study: Thermal Energy

Learn about thermal energy and heat flow.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Thermal Energy

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Calculating Heat

Learn about specific heat and heat calculations.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Calculating Heat

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Passive Solar Homes

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 2: ENTHALPY

Study: Enthalpy and Reactions

Learn about heat transfer in chemical reactions, about energy storage in chemical bonds, and about the enthalpy of reaction and the enthalpy of formation.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Enthalpy and Reactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Calculating Enthalpy

Learn about how to use Hess's law.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Calculating Enthalpy

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Calories and Calorimetry

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 3: ENTROPY AND SPONTANEITY

Study: Entropy

Learn about entropy and its relationship to physical and chemical changes.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Entropy

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Spontaneity of a Reaction

Learn about the spontaneity of a reaction.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Spontaneity of a Reaction

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Entropy and the Second Law of Thermodynamics

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 4: DOING SCIENCE: TRANSFERRING ENERGY

Project: Semester 2 Honors Chemistry Project, Part 3

Students submit a plan for their project.

Duration: 1 hr 40 mins Scoring: 20 points

Study: Up Into Space

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

Quiz: Up Into Space

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Heats of Reaction

Use the scientific method and scientific skills to perform a lab experiment.

Duration: 1 hr 30 mins Scoring: 50 points

Discuss: Heats of Reaction

Discuss the results of your lab.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 5: TRANSFERRING ENERGY WRAP-UP

Practice: Transferring Energy

Practice problem-solving skills related to concepts in the lesson.

Duration: 1 hr 15 mins Scoring: 40 points

Review: Unit Review

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Computer-Scored Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Teacher-Scored Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 10: QUANTUM AND NUCLEAR CHEMISTRY

LESSON 1: QUANTUM MECHANICS

Study: Waves

Learn about frequency, wavelength, velocity, and energy of light waves, and about the electromagnetic spectrum.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Waves

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Quantization

Learn about the quantization of light and electrons.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Quantization

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Particle-Wave Duality of Light

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 2: ENERGY IN ELECTRONS AND NUCLEI

Study: Spectra

Learn about flame tests, and about absorption and emission spectra.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Spectra

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Nuclear Structure

Learn about the structure of the nucleus, and the forces that act within the nucleus.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Nuclear Structure

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: NUCLEAR REACTIONS

Study: Fission, Fusion, and Radioactive Decay

Learn about fission and fusion reactions, and about radioactive decay.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Fission, Fusion, and Radioactive Decay

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Half-life

Learn about half-lives and radioactive dating.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Half-life

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Nuclear Medicine

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 4: DOING SCIENCE: QUANTUM AND NUCLEAR CHEMISTRY

Project: Semester 2 Honors Chemistry Project, Part 4

Students submit their completed project.

Duration: 0 hrs 45 mins Scoring: 140 points

Study: Nuclear Power

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

Quiz: Nuclear Power

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Radioactivity and Radiation

Use the scientific method and scientific skills to perform a lab experiment.

Duration: 1 hr 30 mins Scoring: 50 points

Discuss: Radioactivity and Radiation

Discuss the results of your lab.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 5: QUANTUM AND NUCLEAR CHEMISTRY WRAP-UP

Practice: Quantum and Nuclear Chemistry

Practice problem-solving skills related to concepts in the lesson.

Duration: 1 hr 15 mins Scoring: 40 points

Review: Unit Review

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Computer-Scored Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Teacher-Scored Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 11: ENERGY IN ORGANIC MOLECULES

LESSON 1: FOUNDATIONS OF ORGANIC CHEMISTRY

Study: Carbon Compounds

Learn about why carbon atoms form a wide variety of molecules; learn about the general structure and importance of organic compounds.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Carbon Compounds

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Hydrocarbons

Learn about the naming of simple hydrocarbons.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Hydrocarbons

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Protein Structure and Function

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 2: INTRODUCTORY BIOCHEMISTRY

Study: Functional Groups

Learn about the structures of the main functional groups on organic molecules.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Functional Groups

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Biological Molecules

Learn about the main biological macromolecules.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Biological Molecules

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: ENERGY IN THE WORLD

Study: Fossil Fuels

Learn about the chemistry of fossil fuels, and about the environmental issues connected to fossil fuels.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Fossil Fuels

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Alternative Fuels

Learn about biofuels, nuclear energy, and other alternative fuel sources.

Duration: 0 hrs 45 mins Scoring: 0 points

Quiz: Alternative Fuels

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Using Alternative Energies

Explore a topic that relates to the concepts in the lesson by applying scientific methods of analysis.

Duration: 0 hrs 30 mins Scoring: 25 points

LESSON 4: DOING SCIENCE: ENERGY IN ORGANIC MOLECULES**Study: Prosthetic Engineering**

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

Quiz: Prosthetic Engineering

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Molecular Models

Use the scientific method and scientific skills to perform a lab experiment.

Duration: 1 hr 30 mins Scoring: 50 points

Discuss: Molecular Models

Discuss the results of your lab.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 5: ENERGY IN ORGANIC MOLECULES WRAP-UP**Practice: Energy in Organic Molecules**

Practice problem-solving skills related to concepts in the lesson.

Duration: 1 hr 15 mins Scoring: 40 points

Review: Unit Review

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Computer-Scored Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Teacher-Scored Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 12: SEMESTER 2 REVIEW AND EXAM**LESSON 1: SEMESTER 2 REVIEW AND EXAM****Review: Semester 2 Review**

Prepare for the semester exam by reviewing key concepts covered in this semester.

Duration: 1 hr Scoring: 0 points

Exam: Semester 2 Exam

Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

Duration: 1 hr Scoring: 100 points

Final Exam: Chemistry Semester 2

Take a teacher-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

Duration: 1 hr Scoring: 100 points

