

Chemistry is built to the Texas Essential Knowledge and Skills (TEKS) Chemistry Standards and Benchmarks. The course 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 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 an opportunity to understand how chemistry concepts are applied in technology and engineering. Journal and Practice activities provide additional opportunities for students to apply learned concepts and practice their writing skills.

This course is built to the TEKS Chemistry Standards and Benchmarks.

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

#### **Study: Laboratory Safety**

Learn how to recognize and avoid common laboratory hazards and interpret safety symbols.

Duration: 0 hrs 40 mins Scoring: 0 points

#### **Quiz: Laboratory Safety**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

#### **Journal: Science You Can Trust**

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 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: 1 hr 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

### Practice: Chemistry in the World

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

Duration: 1 hr Scoring: 25 points

### Explore: The Work of Chemists

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

Duration: 1 hr Scoring: 25 points

### Explore: Scientists' Contributions to Chemistry

Learn about the contributions of key scientists in the history of chemistry.

Duration: 1 hr Scoring: 25 points

## LESSON 3: DOING SCIENCE: CHEMISTRY AND SOCIETY

### 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

### Study: Organizing and Analyzing Experimental Results

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

### Quiz: Organizing and Analyzing Experimental Results

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

### Study: Understanding Scientific Notation

Learn about scientific notation and how to use it to describe wavelength.

Duration: 0 hrs 45 mins Scoring: 0 points

### Quiz: Understanding Scientific Notation

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

### Study: Using a Scientific Calculator

Learn how to use a scientific calculator to work with numbers written in scientific notation.

Duration: 0 hrs 45 mins Scoring: 0 points

### **Quiz: Using a Scientific Calculator**

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

### **Practice: Communicating Conclusions**

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

Duration: 1 hr Scoring: 25 points

## **LESSON 4: CHEMISTRY AND SOCIETY WRAP-UP**

### **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

#### **Practice: Energy Conversions**

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

Duration: 1 hr 30 mins Scoring: 25 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

### **Journal: Simplifying Your View of Chemistry**

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 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: 1 hr 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

### **Practice: Atomic Structure**

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

Duration: 1 hr Scoring: 25 points

### **Explore: Momentary Elements**

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

Duration: 1 hr Scoring: 25 points

## **LESSON 4: DOING SCIENCE: ATOMIC STRUCTURE**

### **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**

### **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: 1 hr 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

**Journal: Intermolecular Forces and You**

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 mins Scoring: 20 points

**Practice: Energy in Bonds**

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

Duration: 1 hr 30 mins Scoring: 25 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

**Practice: Bonding in Matter**

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

Duration: 1 hr Scoring: 25 points

**Explore: Interesting Molecular Shapes**

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

Duration: 1 hr Scoring: 25 points

**LESSON 4: DOING SCIENCE: BONDING IN MATTER****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****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: 1 hr 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

#### **Journal: Reactions Around You**

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 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: 1 hr 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

### **Practice: Chemical Reactions**

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

Duration: 1 hr Scoring: 25 points

### **Practice: Balancing Reactions**

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

Duration: 1 hr 30 mins Scoring: 25 points

## **LESSON 4: DOING SCIENCE: CHEMICAL REACTIONS**

### **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**

### **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

### **Journal: Redox Reactions in Your Day**

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 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: 1 hr 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

### **Practice: Cathodic Protection**

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

Duration: 1 hr 30 mins Scoring: 25 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

### **Practice: Chemistry at Work**

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

Duration: 1 hr Scoring: 25 points

### **Explore: Using Scientific Themes**

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

Duration: 1 hr 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

### 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: Semester 1 Exam

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

### **Journal: Phases Around You**

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 mins Scoring: 20 points

### **Practice: Resistivity and Conductivity**

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

Duration: 1 hr 30 mins Scoring: 25 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: 1 hr 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

### **Practice: Energy in Matter**

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

Duration: 1 hr Scoring: 25 points

**Explore: Mining Helium**

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

Duration: 1 hr Scoring: 25 points

**LESSON 4: DOING SCIENCE: ENERGY IN MATTER****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****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

**Journal: Maintaining Your Equilibrium**

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 mins Scoring: 20 points

**Practice: Solubility Product Constant**

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

## 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

### Journal: Acids in the Environment

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 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: 1 hr 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

### Practice: Equilibrium and Kinetics

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

Duration: 1 hr Scoring: 25 points

### Practice: Calculations with Rate Laws

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

Duration: 1 hr 30 mins Scoring: 25 points

## LESSON 4: DOING SCIENCE: EQUILIBRIUM AND KINETICS

### 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

### **Study: Evaluating Scientific Claims**

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

### **Quiz: Evaluating Scientific Claims**

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**

### **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

#### **Journal: Heat Transfer Around You**

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 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: 1 hr 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: 1 hr 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

### **Practice: Transferring Energy**

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

Duration: 1 hr Scoring: 25 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: 1 hr Scoring: 25 points

## **LESSON 4: DOING SCIENCE: TRANSFERRING ENERGY**

### **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

### **Study: Evaluating Scientific Conclusions**

Learn about the process of scientific inquiry.

Duration: 0 hrs 40 mins Scoring: 0 points

### **Quiz: Evaluating Scientific Conclusions**

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**

### **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: 1 hr 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

**Practice: Transitions Between Energy Levels**

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

Duration: 1 hr 30 mins Scoring: 25 points

**Journal: Reflecting on Quantum Mechanics and Nuclear Structure**

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 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

**Practice: Energy in Electrons and Nuclei**

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

Duration: 1 hr Scoring: 25 points

**Explore: Nuclear Medicine**

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

Duration: 1 hr Scoring: 25 points

**LESSON 4: DOING SCIENCE: QUANTUM AND NUCLEAR CHEMISTRY****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****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

### **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

#### **Journal: Molecules in You**

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 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

### **Practice: Energy in Organic Molecules**

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

Duration: 1 hr Scoring: 25 points

### **Journal: You Decide**

Write about topics in chemistry that connect to daily life.

Duration: 0 hrs 40 mins Scoring: 20 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: Prosthetics**

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**

### **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 REVIEW AND EXAM**

### **LESSON 1: SEMESTER REVIEW AND EXAM**

#### **Review: Semester Review**

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

Duration: 1 hr Scoring: 0 points

#### **Exam: Semester 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: Semester Exam**

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

Duration: 1 hr Scoring: 100 points

