Physical Science offers a focused curriculum designed around the understanding of critical physical science concepts, including the nature and structure of matter, the characteristics of energy, and the mastery of critical scientific skills.

Course topics include an introduction to kinematics, including gravity and two-dimensional motion; force; momentum; waves; electricity; atoms; the periodic table of elements; molecular bonding; chemical reactivity; gases; and an introduction to nuclear energy. Teacher-scored labs encourage students to apply the scientific method.

This course is built to state standards.

Length: Two Semesters

UNIT 1: SCIENCE AND ENGINEERING

LESSON 1: SCIENCE

Study: What is Science?
Learn about the nature of science.
Duration: 1 hr Scoring: 0 points

Quiz: What is Science?
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Study: Introduction to Physical Science
Learn concepts foundational to the study of physical science.
Duration: 1 hr Scoring: 0 points

Quiz: Introduction to Physical Science
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: SCIENTIFIC AND ENGINEERING PROCESSES

Study: Scientific Investigations
Learn how to design a scientific investigation.
Duration: 1 hr Scoring: 0 points

Quiz: Scientific Investigations
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Study: Modeling
Learn about different types of scientific models.
Duration: 1 hr Scoring: 0 points

Quiz: Modeling
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Study: Engineering
Learn what engineering is and about engineering design practices.
Duration: 1 hr Scoring: 0 points

Quiz: Engineering

Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: WRAP-UP: SCIENCE AND ENGINEERING

Review: Science and Engineering
Review what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Science and Engineering
Take a computer-scored test to assess what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 2: ENERGY

LESSON 1: WHAT IS ENERGY?

Study: Types of Energy
Learn about different types of energy.
Duration: 1 hr Scoring: 0 points

Quiz: Types of Energy
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Study: Conservation of Energy
Learn about the law of conservation of energy.
Duration: 1 hr Scoring: 0 points

Quiz: Conservation of Energy
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Conservation of Energy
Answer open-response questions to assess your understanding of the material.
Duration: 0 hrs 40 mins Scoring: 25 points

Project: Energy Conversions
Design, build, and refine an energy-conversion device.
Duration: 4 hrs Scoring: 50 points

LESSON 2: THERMAL ENERGY

Study: Thermal Energy and Matter
Learn how thermal energy is transferred.
Duration: 1 hr Scoring: 0 points

Quiz: Thermal Energy and Matter
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Transfer of Thermal Energy
Conduct a scientific investigation to explore the transfer of thermal energy.
Duration: 3 hrs Scoring: 0 points

Quiz: Transfer of Thermal Energy
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 25 mins Scoring: 40 points

Discuss: Transfer of Thermal Energy
Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 3: DOING SCIENCE: ENERGY

Project: Modeling the Energy of a System
Model the energy of a system.
Duration: 4 hrs Scoring: 50 points

LESSON 4: WRAP-UP: ENERGY

Review: Energy
Review what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Energy
Take a computer-scored test to assess what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 40 points

UNIT 3: FORCES

LESSON 1: FORCE AND MOTION

Study: Newton's Laws of Motion
Learn about Newton's laws of motion.
Duration: 1 hr Scoring: 0 points

Quiz: Newton's Laws of Motion
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Study: Noncontact Forces
Learn about noncontact forces, also known as the fundamental forces.
Duration: 1 hr Scoring: 0 points

Quiz: Noncontact Forces
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Project: Electric Fields
Develop a model of two objects interacting through electric fields.
Duration: 4 hrs Scoring: 50 points

LESSON 2: MOMENTUM AND COLLISIONS

Study: Momentum
Learn about momentum.
Duration: 1 hr Scoring: 0 points

Quiz: Momentum
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Project: Collisions
Design a device that minimizes the forces transferred during a collision.
Duration: 4 hrs Scoring: 50 points

LESSON 3: WRAP-UP: FORCES

Review: Forces
Review what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Forces
Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 40 points

UNIT 4: ELECTROMAGNETS

LESSON 1: ELECTRICITY AND MAGNETISM

Study: Electricity

Learn about electricity.

Duration: 1 hr Scoring: 0 points

Quiz: Electricity

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Magnetism

Learn about magnetism.

Duration: 1 hr Scoring: 0 points

Quiz: Magnetism

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: ELECTROMAGNETISM

Study: Electromagnetism

Learn about electromagnetism.

Duration: 1 hr Scoring: 0 points

Quiz: Electromagnetism

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Lab: Electromagnetism

Conduct a scientific investigation into the phenomenon of electromagnetism.

Duration: 3 hrs Scoring: 0 points

Quiz: Electromagnetism

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 40 points

Discuss: Electromagnetism

Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 3: WRAP-UP: ELECTROMAGNETS

Review: Electromagnets

Review what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Electromagnets

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

Duration: 0 hrs 30 mins Scoring: 40 points

UNIT 5: SEMESTER WRAP-UP

LESSON 1: SEMESTER WRAP-UP

Review: Semester Review

Review what you have learned in this semester.

Duration: 0 hrs 30 mins Scoring: 0 points

Exam: Semester Exam

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

Duration: 0 hrs 40 mins Scoring: 100 points

UNIT 6: WAVES

LESSON 1: WAVE PROPERTIES AND INTERACTIONS

Study: Wave Properties

Learn about properties that all waves share.

Duration: 1 hr Scoring: 0 points

Quiz: Wave Properties

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Wave Interactions

Learn what happens when waves interact with matter and other waves.

Duration: 1 hr Scoring: 0 points

Quiz: Wave Interactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: ELECTROMAGNETIC WAVES

Study: Electromagnetic Radiation

Learn about electromagnetic radiation.

Duration: 1 hr Scoring: 0 points

Quiz: Electromagnetic Radiation

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Electromagnetic Radiation

Research claims about electromagnetic radiation.

Duration: 3 hrs Scoring: 25 points

Study: Wave-Particle Duality

Learn about the dual nature of light waves.

Duration: 1 hr Scoring: 0 points

Quiz: Wave-Particle Duality

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Wave-Particle Duality

Answer open-response questions to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 25 points

LESSON 3: APPLICATIONS OF WAVES

Study: Introduction to Wave Technology

Learn about types of technology that make use of waves.

Duration: 1 hr Scoring: 0 points

Quiz: Introduction to Wave Technology

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Digital Technology

Learn the differences between digital and analog technologies.

Duration: 1 hr Scoring: 0 points

Quiz: Digital Technology
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Applications of Waves
Answer open-response questions to assess your understanding of the material.
Duration: 0 hrs 40 mins Scoring: 25 points

LESSON 4: WRAP-UP: WAVES

Review: Waves
Review what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Waves
Take a computer-scored test to assess what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 7: STRUCTURE AND PROPERTIES OF MATTER

LESSON 1: STRUCTURE OF MATTER

Study: Types of Matter
Learn about the structure of matter.
Duration: 1 hr Scoring: 0 points

Quiz: Types of Matter
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Study: The Periodic Table
Learn how the periodic table is used to organize elements.
Duration: 1 hr 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

Study: Chemical Bonds
Learn the different ways that atoms and ions can form bonds.
Duration: 1 hr Scoring: 0 points

Quiz: Chemical Bonds
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: PROPERTIES OF MATTER

Study: Properties of Matter
Learn about physical and chemical properties of matter.
Duration: 1 hr Scoring: 0 points

Quiz: Properties of Matter
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Explore: Properties of Matter
Analyze, evaluate, and critique scientific explanations regarding the functioning of designed materials.
Duration: 3 hrs Scoring: 25 points

Lab: Properties of Matter
Plan and conduct an investigation to infer the strength of electrical forces between particles that make up various

substances.

Duration: 3 hrs Scoring: 0 points

Quiz: Properties of Matter

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 40 points

Discuss: Properties of Matter

Discuss your lab results.

Duration: 0 hrs 20 mins Scoring: 15 points

LESSON 3: WRAP-UP: STRUCTURE AND PROPERTIES OF MATTER

Review: Structure and Properties of Matter

Review what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Structure and Properties of Matter

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

Duration: 0 hrs 30 mins Scoring: 40 points

UNIT 8: CHEMICAL REACTIONS

LESSON 1: DESCRIBING CHEMICAL REACTIONS

Study: Chemical Equations

Learn how to write and interpret chemical equations.

Duration: 1 hr Scoring: 0 points

Quiz: Chemical Equations

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Types of Chemical Reactions

Learn about different types of chemical reactions.

Duration: 1 hr Scoring: 0 points

Quiz: Types of Chemical Reactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Describing Chemical Reactions

Answer open-response questions to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 25 points

LESSON 2: FACTORS AFFECTING CHEMICAL REACTIONS

Study: Energy of Chemical Reactions

Learn about endothermic and exothermic chemical reactions.

Duration: 1 hr Scoring: 0 points

Quiz: Energy of Chemical Reactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Project: Bond Energies

Develop a model to illustrate that a chemical reaction system's release or absorption of energy depends upon the changes in total bond energy.

Duration: 4 hrs Scoring: 50 points

Study: Reaction Rates

Learn the factors that affect the rate of a chemical reaction.

Duration: 1 hr Scoring: 0 points

Quiz: Reaction Rates
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Study: Dynamic Equilibrium
Learn about chemical reactions that are reversible.
Duration: 1 hr Scoring: 0 points

Quiz: Dynamic Equilibrium
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: WRAP-UP: CHEMICAL REACTIONS

Review: Chemical Reactions
Review what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Chemical Reactions
Take a computer-scored test to assess what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 9: NUCLEAR REACTIONS

LESSON 1: FISSION, FUSION, AND RADIOACTIVE DECAY

Study: Fission and Fusion
Learn about the processes of fission and fusion.
Duration: 1 hr Scoring: 0 points

Quiz: Fission and Fusion
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Study: Radioactive Decay
Learn about the process of radioactive decay.
Duration: 1 hr Scoring: 0 points

Quiz: Radioactive Decay
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: MODELING NUCLEAR REACTIONS

Project: Modeling Nuclear Reactions
Model nuclear reactions.
Duration: 4 hrs Scoring: 50 points

LESSON 3: WRAP-UP: NUCLEAR REACTIONS

Review: Nuclear Reactions
Review what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Nuclear Reactions
Take a computer-scored test to assess what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 30 points

UNIT 10: SEMESTER WRAP-UP

LESSON 1: SEMESTER WRAP-UP

Review: Semester Review

Review what you have learned in this semester.

Duration: 0 hrs 30 mins Scoring: 0 points

Exam: Semester Exam

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

Duration: 0 hrs 40 mins Scoring: 100 points