

Physical Science 1

SCIH023055

Credits: 0.5 units / 5 hours | NCAA Approved

Course Description

This course is the first in a two semester series that provides an introduction to the basic principles of physics and chemistry. Students will use basic mathematics in these areas as well as logical methods and practical applications. Topics covered include the nature of science, motion, velocity and momentum, standards of measurement, forces, Newton's Laws, energy, work and machines, electricity, magnetism, energy sources, waves, light, sound. Hands-on labs that allow students to experience the application of concepts, interactions, and processes are included.

Note: Lab kit is optional if student has access to all materials listed.

Graded Assessments

3 Unit Evaluations; 3 Projects; 3 Proctored Progress Tests; 3 Teacher Connect Activities

Course Objectives

There are more specific objectives listed individually in each lesson, but the ultimate goal is that, by the end of the course, you will know and use these facts, concepts, principles, theories, and models to gain a better grasp on the following and be able to:

1. Understand the scientific method and how it is used in scientific inquiry.
2. Understand the connections between science and technology and the ways in which they complement each other.
3. Use various standards of measurement and the applicable formulas and apply them to principles of both physical science and Earth science.
4. Develop an awareness of the forces of motion and gain an ability to explain how these forces affect our world and the interactions that take place in it.
5. Evaluate different types of machines and explain the connections between work, machines, and energy.
6. Recognize the difference between temperature and thermal energy and recognize how thermal energy is transferred and used in our world.
7. Understand electrical charge and current electricity, and recognize the relationship between magnetism and electricity.
8. Understand energy transfer by waves and recognize the properties of sound and light waves.

Course Outline

Unit 1 Motion and Forces

Teacher Connect 1
Lesson 1: The Nature of Science
Lesson 2: Science and Technology
Lesson 3: Motion
Lesson 4: Forces and Newton's Laws of Motion
Unit 1 Evaluation
Project 1
Progress Test 1

Unit 2 Energy

Lesson 5: Energy
Lesson 6: Work and Machines
Lesson 7: Thermal Energy and States of Matter
Lesson 8: Electricity
Lesson 9: Magnetism
Lesson 10: Energy Sources and the Environment
Unit 2 Evaluation
Teacher Connect 2
Project 2
Progress Test 2

Unit 3 Waves

Lesson 11: Waves
Lesson 12: Sound
Lesson 13: Electromagnetic Waves
Lesson 14: Light
Lesson 15: Mirrors and Lenses
Unit 3 Evaluation
Teacher Connect 3
Project 3
Progress Test 3

Required Textbook and Materials

(available through Follett virtual bookstore at <http://highschool.nebraska.bkstr.com>)

Textbook: *Glencoe Physical Science*, 2017 (ISBN: 9780076774562)

Physical Science 1 SCIH021059 is the print version of the online course content. This print course content is **optional** for this course.

Required: SCIH023055 Lab Kit | PHYSICAL SCIENCE 1 LAB KIT CONTENTS:

- 100-mL graduated cylinder
- stopwatch
- 1 measuring tape (or folding meterstick)
- 1 small bar magnet
- 1 coiled-spring toy (like a "slinky")

Additional Items Needed for Labs, Not Included in Above Kit:

The lab experiments in this course are designed so that they may be successfully completed using the items listed. If you do not have access to the exact items on this list, you may substitute comparable items in the experiments. Suggested household and other common materials necessary to complete the labs in this course are:

- 1 pencil
- 10-12 sheets of graph paper
- ice cubes

- a ruler that is marked in both inches and centimeters (or the folding meterstick)
- a rock
- an eraser
- a small block of wood
- a square of aluminum foil (approx. 3" x 3")
- 1 metal or plastic tray (like a cookie sheet or cake pan)
- 4 sheets of paper (equal sizes)
- 1 meterstick (or yardstick also marked in centimeters, or measuring tape at least 1.5 meters in length) *a measuring tape is available in the optional lab kit
- scissors
- masking tape or other colored tape you can write on
- 1 500-mL beaker (or heat-proof container that holds approx. 500 mL)
- 1/4 tsp. of ground black pepper (or other non-soluble, fine-grained spice)
- 1 candle
- 1 roll transparent tape
- 1 sewing needle
- 4 pieces of cloth of equal size (of the same type)
- 1 plastic foam cup
- 1 empty plastic water or soda bottle 1 meter length of rope or hose (If you do not have a rope, hose, or a long spring, you can substitute heavy string. You will need a length of at least 1 meter to adequately perform this experiment.)
- 1 penny or other small denomination of coin
- 1 small, opaque cup (like a coffee mug)
- 2 plane mirrors (flat mirrors)
- 1 protractor (or other means of measuring 90° and 120°)
- 1 paper clip