

Physical Science 2

SCIH024055

Credits: 0.5 units / 5 hours | NCAA Approved

Course Description

This course is the second 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 properties and classification of matter, solids, liquids, and gases, chemical bonds and reactions, radioactivity and nuclear reactions, applications of chemistry, solutions, acids, bases, and salts, and organic compounds. 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. When you have completed this course you should have:

1. Developed an understanding of the structure and properties of matter, atoms, and subatomic particles.
2. Gained an understanding of the different states of matter and the changes in the arrangement and motion of particles as matter changes state.
3. Become familiar with the elements and their properties.
4. Increased your understanding of how matter can be classified by its composition, physical properties, and chemical properties.
5. Gained an understanding of organic compounds, including the importance of hydrocarbons.
6. Increased your understanding of acids, bases, and salts.
7. Gained an understanding of chemical bonds and chemical reactions.
8. Gained a deeper understanding of radioactivity and nuclear reactions.

Course Outline

Unit 1 Does Matter Really Matter?

Teacher Connect 1

Lesson 1: Solids, Liquids, and Gases

Lesson 2: Classification of Matter

Lesson 3: Properties of Atoms and the Periodic Table
Lesson 4: Elements and their Properties
Unit 1 Evaluation
Project 1
Progress Test 1

Unit 2 Reactions

Lesson 5: Chemical Bonds
Lesson 6: Chemical Reactions
Lesson 7: Nuclear Changes
Unit 2 Evaluation
Teacher Connect 2
Project 2
Progress Test 2

Unit 3 Chemistry

Lesson 8: Solutions
Lesson 9: Acids, Bases, and Salts
Lesson 10: Organic Compounds
Lesson 11: New Materials through Chemistry
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 2 SCIH024055 is the print version of the online course content. This print course content is **optional** for this course.

Required: SCIH024055 Lab Kit | PHYSICAL SCIENCE 2 LAB KIT CONTENTS:

- Celsius thermometer
- universal indicator strips (25)
- 8 balloons

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:

- 100-mL beaker (or glass container)
- 400-mL beaker (or glass container)
- large measuring cup or container (approx. 2 cups)
- ice cubes
- food coloring (a few drops)
- vegetable oil (10 mL)
- corn syrup (10 mL)
- aluminum foil
- steel nut (or other small metal object)
- whole peppercorn (or other small, similar seed)
- wool cloth (or item of wool clothing)
- hot plate (or kitchen stove)
- small box of baking soda
- vinegar (200 mL)
- 15 index cards (or paper rectangles)
- 3 empty 0.5 L plastic bottles
- 200 pennies (or other two-headed coins or tokens)
- shoe box (or other small box with a lid)
- 2 sugar cubes
- 400 mL distilled water
- table salt (about 72 g)
- white glue (10 mL)
- borax laundry soap (about 100 mL)
- permanent mark