



Pearson

Science 4

Semester A Summary:

In this course, the student will explore multiple concepts related to energy and the structures of plants and animals. Topics include the transfer and forms of energy such as mechanical energy, speed, sound, light, heat, and electric currents. In addition, the student will study the internal structures of plants and animals. These comprise systems of reproduction and adaptation.

Throughout the course, the student will have many opportunities to plan, test hypotheses, experiment, organize and analyze data, and make real world connections.

Semester A Outline

1. Course Overview

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2. Mechanical Energy and Speed

1. Mechanical Energy and Speed Intro
2. Mechanical Energy
 - In this section, you will analyze where the mechanical energy of an object changes.
 - In this section, you will identify scientific and non-scientific questions.
3. Mechanical Energy and Speed
 - In this section, you will collect data from an experiment on the speed and energy of an object.
4. Energy and Speed
 - In this section, you will explain or show how an object's speed is related to its energy.
5. Energy and Collisions
 - In this section, you will ask questions and make predictions about what will happen when an object collides with another object.
 - In this section, you will start the design process for a bunk bed storage caddy by defining the design problem.
6. Mechanical Energy and Speed Apply
7. Mechanical Energy and Speed Review
8. Mechanical Energy and Speed Unit Test

3. Energy Transfer

1. Energy Transfer Introduction
2. Sound Waves
 - In this section, you will identify evidence that energy can be transferred through sound waves.
3. Light Energy
 - In this section, you will identify evidence that energy can be transferred

through light.

4. Heat Energy
 - In this section, you will identify evidence that energy can be transferred through heat.
5. Electric Currents
 - In this section you will identify evidence that energy can be transferred through electric currents.
6. Converting Energy Portfolio: Day 1
 - In this section, you will list some ideas for devices that can change energy from one form to another.
7. Converting Energy Portfolio: Design
 - In this section, you will plan a device that can change energy from one form to another.
8. Converting Energy Portfolio: Create
 - In this section, you will build a device that changes energy from one form to another.
9. Converting Energy Portfolio: Test
 - In this section, you will test a device that changes energy from one form to another.
10. Converting Energy Portfolio: Improve
 - In this section, you will modify the device you made.
11. Energy Transfer Review
12. Energy Transfer Unit Test

4. Waves and Light

1. Waves and Light Introduction
2. Describing Waves
 - In this section, you will use different media sources to describe waves.
3. Wave Patterns
 - In this section, you will investigate features of waves.
4. Waves and Movement
 - In this section, you will model how waves can affect the movement of an object.
5. Structures of the Human Eye
 - In this section, you will use different media sources to identify parts of the human eye.
6. Human Eye Inquiry
 - In this section, you will investigate what the human eye can see.
7. Light Pathway
 - In this section, you will use a visual to show how light travels through the eye to produce an image.
8. Transfer of Information
 - In this section, you will explore how technology devices can transfer information.
9. Technology and Information
 - In this section, you will compare different forms of technology that transfer information.
10. Waves and Light Apply
11. Waves and Light Review
12. Waves and Light Unit Test

5. Plant Structures

1. Plant Structures Introduction
2. Plant Parts
 - In this section, you will investigate the way that food webs show the energy flow within an ecosystem.
 - In this section, you will describe external structures and their functions that help plants grow and survive.
3. Internal Plant Structures
 - In this section, you will describe how a plant's internal structures help it to grow and survive.
4. Plant Adaptations
 - In this section, you will investigate how changes in an organism's niche and habitat may occur at various stages in its life cycle.
 - In this section, you will identify external structures and their functions that help plants respond to their environment.
5. Plant Reproduction
 - In this section, you will Investigate how classification can be used to identify organisms.
 - In this section, you will show how plant structures allow plants to reproduce.
6. Plant Structure Portfolio: Plan
 - In this section, you will use evidence to make a claim about how a plant's structures help it to survive, grow, respond, or reproduce.
7. Plant Structure Portfolio: Investigate
 - In this section, you will plan an investigation that examines how a plant survives, grows, responds, or reproduces.
8. Plant Structure Portfolio: Communicate
 - In this section, you will plan and carry out an investigation that examines how a plant survives, grows, responds, or reproduces. You will also collect data from your investigation and use it to support a claim about how plants use certain structures to function.
9. Plant Structures Review
10. Plant Structures Unit Test

6. Animal Structures

1. Animal Structures Introduction
2. External Animal Structures
 - In this section, you will identify external parts of animals that help them to survive and grow.
3. Internal Animal Structures
 - In this section, you will identify internal structures and their functions that help animals survive and grow.
4. Environmental Adaptations
 - In this section, you will identify external structures that help animals respond to their environment.
5. Adaptations for Reproduction
 - In this section, you will identify structures and behaviors that help animals reproduce.
6. Animal Structures Apply
 - In this section, you will use evidence to make a claim about how animal structures affect their survival, growth, behavior, or reproduction.
7. Animal Structures Review
8. Animal Structures Unit Test

Semester B Summary:

In this course, the student will study the brain in animals and explore multiple areas of earth science. This includes the senses, how the brain processes information, weathering and erosion, Earth's layers and features, the solar system and how movements affect the Earth, natural disasters, and their impact on life. Students will examine natural energy resources including resource conservation and the environment.

Throughout the course, the student will have many opportunities to plan, test hypotheses, experiment, organize and analyze data, and make real world connections.

Semester B Outline

1. Senses and the Brain

1. Senses, Sight, and Hearing
 - In this section, you will describe how animals use their ears and eyes.
2. Smell and Touch
 - In this section, you will describe how animals use their nose and skin.
3. Taste
 - In this section, you will describe how animals use their taste buds.
4. Processing Information
 - In this section, you will explain how an animal's brain uses information from the sense organs.
5. Information Pathways
 - In this section, you will use a model to show how animals take in and use information from their environment.
6. Senses and the Brain Apply
7. Senses and the Brain Review
8. Senses and the Brain Unit Test

2. Weathering and Erosion

1. Weather Conditions and Phenomena
 - In this lesson, you will investigate how weather measurements create a record that can be used to make weather predictions.
 - In this section, you will investigate how common and extreme weather events affect ecosystems.
 - In this lesson, you will investigate how long-term seasonal weather trends determine the climate of a region.
2. Constructive Forces
 - In this section, you will describe some examples of constructive forces.
3. Constructive Forces and Landforms
 - In this section, you will identify and describe landforms created by constructive forces.
4. Weathering and Erosion
 - In this section, you will explain the difference between two forms of destructive forces, weathering and erosion.
5. Destructive Forces and Landforms
 - In this section you will describe landforms created by destructive forces.
6. Physical Weathering
 - In this section you will describe the process of weathering.
7. Erosion and Soil

- In this section, you will explain the difference between two forms of constructive forces, weathering and erosion.
- 8. Earth's Layers Portfolio: Research
 - In this section, you will analyze data that shows evidence of erosion and weathering.
- 9. Earth's Layers Portfolio: Investigate
 - In this section, you will collect data about how Earth layers are impacted by water erosion.
- 10. Earth's Layers Portfolio: Analyze
 - In this section, you will investigate how erosion changes the layers of Earth.
- 11. Weathering and Erosion Apply
 - In this section, you will illustrate the journey of destructive and constructive forces that led a piece of soil of your choosing to its current resting place.
- 12. Weathering and Erosion Review
- 13. Weathering and Erosion Unit Test

3. Earth's Layers and Features

1. Earth, Moon, and Sun
 - In this section, you will investigate the relative size, position, age, and makeup of Earth.
 - In this section, you will investigate the relative size, position, age, and makeup of Earth's moon.
 - In this section, you will investigate the relative size, position, age, and makeup of the sun.
2. Planetary Motion
 - In this section, you will investigate the characteristics and order of the planets in our solar system.
 - In this section, you will investigate the sizes of the sun and planets.
 - In this section, you will investigate how planets rotate on their axes and revolve around the sun.
 - In this section, you will investigate the causes for Earth's seasons.
3. Tides and the Ocean
 - In this section, you will investigate the movement of the Earth, the moon, and the sun.
 - In this section, you will investigate the connection between moon phases and ocean tides.
 - In this section, you will investigate the physical properties and movement of ocean water.
 - In this section, you will investigate how plants and animals in the ocean depend on each other.
4. Patterns and Fossil Identification
 - In this section, you will describe patterns and fossils in rock layers.
5. Rock Layers
 - In this section, you will investigate how rock layers change over time.
6. Changes in Environment
 - In this section, you will observe and make predictions about fossils and rock formations.
7. Earth's Features
 - In this section, you will identify several different landscape features on a map.
8. Identify Patterns
 - In this section, you will analyze a map to identify patterns in Earth's features.

9. Earth's Layers and Features Apply
 - In this section, you will hypothesize how tectonic plates might have interacted to form the Andes Mountains.
10. Earth's Layers and Features Review
11. Earth's Layers and Features Unit Test

4. Impact on Humans

1. Earthquakes
 - In this section, you will describe how earthquakes have affected humans.
2. Volcanic Eruptions
 - In this section, you will describe how volcanic eruptions have affected humans.
3. Floods and Tsunamis
 - In this section, you will describe how floods or tsunamis have affected humans.
4. Technology and Earth's Process
 - In this section, you will use print and non-print sources to describe how technology has made the effects of natural Earth events less severe.
5. Impact on Humans Portfolio: Research
 - In this section, you will gather ideas to lessen the effects of natural Earth events.
6. Impact on Humans Portfolio: Analyze
 - In this section, you will compare different plans for reducing the effects of natural Earth events.
7. Impact on Humans Portfolio: Design
 - In this section, you will identify several plans for reducing the impact of natural Earth events on humans.
8. Impact of Humans Review
9. Impact on Humans Unit Test

5. Natural Energy Resources

1. Renewable Resource
 - In this section, you will explain how human use renewable resources to make energy.
2. Nonrenewable Resources
 - In this section, you will explain how humans use nonrenewable resources to make energy.
3. Natural Resources and the Environment
 - In this section, you will explain how using natural resources as fuels affects the environment.
4. Virginia's Natural Resources
 - In this section, you will investigate Virginia's watersheds and water as important natural resources.
 - In this section, you will investigate Virginia's plants and animals as important natural resources.
 - In this section, you will investigate rock and mineral resources in Virginia.
 - In this section, you will investigate land and forest resources in Virginia.
5. Efficiency of Energy Resources
 - In this section, you will look at how much energy can be produced from a resource and the cost of different types of energy resources.
6. Comparison of Energy Resources
 - In this section, you will compare and contrast the advantages and disadvantages of different energy resources.

- In this section, you will compare two different representations of the same data.
7. Evaluate Energy Resources
 - In this section, you will use evidence to decide which energy resource would be the best fit for a real-life example.
 8. Resource Conservation
 - In this section, you will explain why Earth's resources need to be conserved.
 9. Natural Energy Resources Apply
 - In this section, you will analyze the different renewable and nonrenewable energy choices for a new home.
 10. Natural Energy Resources Review
 11. Natural Energy Resources Unit Test