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Introduction

Core Earth & Space Science II is one of the three courses in the Core Science II Collection. It is an introductory course that teaches about the universe, the solar system, the structure and history of Earth, Earth's moon, kinds of rocks, the rock cycle, plate tectonics, the role of water, weather, climate, biogeology, natural resources, natural hazards, human impacts on Earth's systems, and global climate change. The Course has 19 lessons organized in 5 Units and its learning objectives align with Common Core Science objectives for grades 3 to 5. There are 377 audio-supported instruction pages, 65 printable activity sheet pages, 202 defined vocabulary words, and a set of 285 Quiz and Unit Test questions.

Unit 1: The Earth's Position

Lesson 1: The Universe

Common Core Standards

- ESS1.A The Universe and Its Stars

Learning Objectives

- to learn about the nature of the Universe
- to learn that objects in the sky can be described and classified
- to learn that predictions can be made regarding the movement and interaction of the stars, moons, planets, and other things in the universe

Defined Vocabulary Words

- universe, telescope, star, planet, moon, revolve, galaxy

Activity Type

- Draw a picture of the Universe. Then write a paragraph to describe what you drew. Be sure to include as many details about what you find in a universe as possible.
- Interactive Activity: Star Brightness Tool

Lesson Components

Total Learning Objects – 34

Instruction Pages - 16

Activity Pages - 4

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 2: Our Solar System

Common Core Standards

- ESS1.B Earth and the Solar System

Learning Objectives

- to learn what a solar system is
- to learn what objects are in a solar system
- to learn some basic facts about the planets in our Solar System

Defined Vocabulary Words

- solar system, orbit, gravity, terrestrial, crater, atmosphere, revolve, satellite, telescope, star, planet, moon, comet, asteroid, meteor, meteoroid

Activity Type

- Pick three planets. Draw them and explain how they are unique.
- Interactive Activity: A Model Solar System - make a model of the Solar System using various balls to represent the different planets.

Lesson Components

Total Learning Objects – 40

Instruction Pages - 22

Activity Pages - 4

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 3: Our Planet Earth

Common Core Standards

- ESS1.B Earth and the Solar System

Learning Objectives

- to learn the ways in which the Earth moves
- to learn how shadows and the night sky are affected by the movement of the Earth
- to learn about constellations

Defined Vocabulary Words

- solar system, orbit, gravitational, revolve, revolution, rotate, rotation, axis, shadow, dawn, dusk, telescope, constellation, astronomer

Activity Type

- Draw a picture of the Earth revolving.
- Draw a picture of the Earth rotating.
- Interactive Activity: Constellations

Lesson Components

Total Learning Objects – 39

Instruction Pages - 21

Activity Pages - 4

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 4: Our Moon

Common Core Standards

- ESS1.B Earth and the Solar System

Learning Objectives

- to learn about the moon

- to learn the eight phases of the moon

Defined Vocabulary Words

- reflected light, moon phases, lunar, lunar month, waxing, waning, gibbous moon, crescent moon, new moon, full moon, First Quarter moon, Last Quarter moon, blue moon

Activity Type

- Match the names of the moon phases with the correct description.
- Interactive Activity: Moon in a Box

Lesson Components

Total Learning Objects – 38

Instruction Pages - 21

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 5: The Earth's History

Common Core Standards

- ESS1.C The History of Plant Earth

Learning Objectives

- to learn how forces including weathering and erosion, have changed the Earth over time
- to learn how fossils are formed
- to learn how the history of the Earth can be determined from looking at fossils

Defined Vocabulary Words

- earthquake, volcano, weathering, erosion, sediments, climate, fossils, decompose, sedimentary rock

Activity Type

- Two fossils are buried in the ground. Fossil A is found a little ways down into the ground. Fossil B is found much deeper in the ground.
 - Explain which fossil is probably older and why you think so.
 - What else can you tell from looking at the fossil?
 - What kind of rock is the fossil buried in?
- Interactive Activity: Fossil Casts and Molds

Lesson Components

Total Learning Objects – 32

Instruction Pages - 15

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Unit 2: Earth's Systems**Lesson 1: The Earth's Structure**

Common Core Standards

- ESS2.A Earth Materials and Systems

Learning Objectives

- to learn about the structure of the Earth
- to learn about the four main Earth systems; Geosphere, Hydrosphere, Atmosphere, and Biosphere

Defined Vocabulary Words

- sphere, North Pole, South Pole, equator, geosphere, hydrosphere, atmosphere, biosphere, molten, crust, mantle, outer core, inner core

Activity Type

- Label the parts of the Earth's Geosphere. Then complete the table at the bottom of the page by putting the answers in the correct spot.
- Interactive Activity: An Edible Earth

Lesson Components

Total Learning Objects – 36

Instruction Pages - 19

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 2: Kinds of Rocks

Common Core Standards

- ESS2.A Earth Materials and Systems

Learning Objectives

- to learn about the three types of rocks on Earth and how they are formed
- to learn some examples of each rock type

Defined Vocabulary Words

- igneous, molten, magma, lava, sedimentary, sediments, metamorphic

Activity Type

- Pick one rock type: igneous, sedimentary, or metamorphic. Draw a picture of how that type of rock is formed. Then write a paragraph to describe what you drew. Be sure to include as many details as possible.
- Interactive Activity: Rock Collection

Lesson Components

Total Learning Objects – 36

Instruction Pages – 18

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 3: The Rock Cycle

Common Core Standards

- ESS2.A Earth Materials and Systems

Learning Objectives

- to learn about the Rock Cycle: changes to rocks as they change from one rock type to another

Defined Vocabulary Words

- rock cycle, igneous, molten, magma, lava, sedimentary, sediments, metamorphic, crystallize, weathering, erosion

Activity Type

- For each step, write in the missing information.
- Interactive Activity: Homemade Sandstone

Lesson Components

Total Learning Objects – 33

Instruction Pages – 16

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 4: Plate Tectonics

Common Core Standards

- ESS2.B Plate Tectonics and Large-Scale System Interactions

Learning Objectives

- to learn about the tectonic plates that cover the Earth
- to learn about earthquakes
- to learn how mountains and trenches are formed

Defined Vocabulary Words

- crust, geosphere, molten, plate tectonics, plates, plate boundary, converge, diverge, fault, magma, earthquake, Richter scale, tsunami, trench

Activity Type

- Label a map of the world showing the major tectonic plates.
 1. Write S's on the map where the San Andreas fault is.
 2. Write T's on the map where you think there are trenches.
 3. Write M's on the map where you think there are mountain ranges. Remember, the mountains can be underwater.
 4. Write E's and V's on the map where you think there would be earthquakes and volcanoes.
 5. Write a short paragraph to explain why you put the marks on the map where you did.
- Interactive Activity: Tectonic Plates - simulate the way tectonic plates move, and consider the consequences of such movement.

Lesson Components

Total Learning Objects – 36

Instruction Pages - 18

Activity Pages - 4

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 5: Volcanoes

Common Core Standards

- ESS2.B Plate Tectonics and Large-Scale System Interactions

Learning Objectives

- to learn about volcanoes
- to learn where volcanoes can be found and how they are formed
- to learn how volcanoes are classified

Defined Vocabulary Words

- volcano, crater, crust, tectonic plates, mantle, magma, central pipe, chamber, lava, volcanic vent, Ring of Fire, hot spot, active volcano, intermittent volcano, dormant volcano, extinct volcano

Activity Type

- Draw a picture of a volcano. Then write a paragraph to describe what you drew. Be sure to include as many details about what you drew as possible.
- Interactive Activity: Erupting Volcano

Lesson Components

Total Learning Objects – 35

Instruction Pages - 18

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Unit 3: Water & Climate

Lesson 1: The Earth's Water

Common Core Standards

- ESS2.C the Roles of Water in Earth's Surface Processes

Learning Objectives

- to learn about the steps in the water cycle
- to learn the various forms water can take on Earth and where they are located

Defined Vocabulary Words

- water cycle, evaporation (evaporates), condensation (condenses), precipitation, collection (collects) , atmosphere, water vapor, humidity, clouds, fog, precipitation, run-off, salinity, ground water, aquifer, spring, well, polar ice cap, glacier, iceberg

Activity Type

- Place the words from the word box in the correct bubble on the bubble maps.
- Interactive Activity: Cloud in a Bottle

Lesson Components

Total Learning Objects – 37

Instruction Pages - 20

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 2: Oceans

Common Core Standards

- ESS2.C the Roles of Water in Earth's Surface Processes

Learning Objectives

- to learn about oceans
- to learn about the physical features of the ocean bottom
- to learn how currents are formed

Defined Vocabulary Words

- seas, continental shelf, coral reef, continental edge, continental slope, continental rise, ocean basin, abyssal plain, trench, tectonic plates, mid-ocean ridge, seamount, guyot, salinity, oxygen, current, surface current, trade winds, westerlies, Gulf Stream, California Current, deep ocean current, density, water pressure

Activity Type

- Fill in the blanks with one of the words from the word bank. Then draw a picture of each feature listed.
- Interactive Activity: An Ocean of Water

Lesson Components

Total Learning Objects – 43

Instruction Pages - 25

Activity Pages - 4

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 3: Weather

Common Core Standards

- ESS2.D Weather and Climate

Learning Objectives

- to learn about the nature of weather
- to learn about conditions in the atmosphere that contribute to weather and how they are measured.

Defined Vocabulary Words

- weather, atmosphere, geosphere, hydrosphere, biosphere, temperature, thermometer, wind, weather vane, anemometer, evaporate, humidity, water vapor, condense, clouds, precipitation, rain gauge, atmospheric pressure, air pressure, barometer, front

Activity Type

- Crossword Puzzle
- Interactive Activity: Balloon Barometer

Lesson Components

Total Learning Objects – 40

Instruction Pages – 23

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 4: Climate

Common Core Standards

- ESS2.D Weather and Climate

Learning Objectives

- to learn about the nature of climate
- to learn why there are different climates on Earth and their effects on living things
- to learn the five main climate groups

Defined Vocabulary Words

- climate, weather, precipitation, temperature, humidity, wind, air pressure, clouds, equator, North Pole, South Pole, tropical climate, dry climate, temperate climate, cold climate, polar climate, tundra

Activity Type

- Write the descriptions below in the appropriate column.
- Interactive Activity: Glaciers Move

Lesson Components

Total Learning Objects – 38

Instruction Pages – 21

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 5: Biogeology

Common Core Standards

- ESS2.E Biogeology

Learning Objectives

- to learn the meaning of biogeology
- to learn examples of how plants and animals change the Earth

Defined Vocabulary Words

- biogeology, geosphere, hydrosphere, atmosphere, biosphere, erosion, carbon dioxide, oxygen, phytoplankton, weathering, microscopic, pyrite, bacteria, fossil fuel, petroleum, coal, dam, environment, wetland

Activity Type

- Pick one living thing that has an impact on how the Earth looks or what happens on Earth. Draw a picture of how it does so. Then write a paragraph to explain what you drew.
- Interactive Activity: On the Trail of Erosion

Lesson Components

Total Learning Objects – 38

Instruction Pages – 21

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Unit 4: Changes to the Earth**Lesson 1: Natural Resources**

Common Core Standards

- ESS3.A Natural Resources

Learning Objectives

- to learn what is a natural resource
- to learn about specific natural resources and how each is important to us

Defined Vocabulary Words

- natural resource, air, wind, current, weathering, minerals, mine, gems, fossil fuels, petroleum oil, coal, cellulose, timber, lumber, renewable resources, non-renewable resources, inexhaustible resources

Activity Type

- In the left hand column, draw five different natural resources. In the right hand column, explain why that natural resource is important to us.
- Interactive Activity: Homemade Perfume

Lesson Components

Total Learning Objects – 40

Instruction Pages - 22

Activity Pages - 4

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 2: Natural Hazards

Common Core Standards

- ESS3.B Natural Hazards

Learning Objectives

- to learn what are natural hazards
- to learn the negative effects of natural hazards on the Earth

Defined Vocabulary Words

- earthquake, tectonic plate, aftershock, tsunami, volcano, magma, lava, weathering, hurricanes, tornado, blizzard, flood, drought, coastal erosion

Activity Type

- Match the natural hazard with the description of the hazard.
- Interactive Activity: Simulated Tornado

Lesson Components

Total Learning Objects – 39

Instruction Pages - 22

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 3: Human Impacts on Earth Systems

Common Core Standards

- ESS3.C Human Impacts on Earth Systems

Learning Objectives

- to learn how people's use of natural resources impacts the four systems of the Earth
- to learn about conservation and the ways people can practice conservation

Defined Vocabulary Words

- agriculture, industry, ecosystem, pollution, run-off, sewage, sewage treatment plant, mining, erosion, emissions, biosphere, overfish, conservation, extinct, endangered, 3 R's, reduce, reuse, recycle

Activity Type

- What is something people around you could do to practice conservation? Draw a poster to encourage people to do it. Then write a short paragraph to explain what you drew.
- Interactive Activity: Recycling at Home

Lesson Components

Total Learning Objects – 39

Instruction Pages - 22

Activity Pages - 3

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 4: Global Climate Change

Common Core Standards

- LS4.A Evidence of Common Ancestry and Diversity

Learning Objectives

- to learn about the concept of world climates and global warming
- to learn the impact global warming has on the world

Defined Vocabulary Words

- climate, global climate change, global warming, hurricane, drought, flood, polar ice, glacier

Activity Type

- Global warming will cause many things to happen. Write the letter of the effect it will have on the Earth in the column beside the effect.
- Interactive Activity: Melting Polar Ice Caps

Lesson Components

Total Learning Objects – 35

Instruction Pages - 17

Activity Pages - 4

Quiz Questions – 10 total questions; 5 randomly selected to populate quiz

Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test