St. Lucie County Public Schools Scope and Sequence 2012-2013

Course: 7th Grade Science **Course Code: 2002070** **Quarter: 2**

RESOURCES **COMMON CORE** **SCIENCE CENTER** **SYLLABUS**

Topic of Study: Earth's History, Human Impact, Waves & Light

Bodies of Knowledge: Earth Science, Physical Science

Big Ideas: Earth's Structure over Geologic Time, Forms of Energy

Essential Question: 1.How do we learn about Earth's history? **(3-1)** 2. How is the relative age of rock measured? **(3-2)**3. How is the absolute age of rock measured **(3-3)** 4. What are Earth's natural resources? **(4-1)** 5. What impact can humans have on land resources and soil quality? **(4-2)** 6. What impact can human activities have on water quality? **(4-3)** 7. What impact can human activities have on air quality? **(4-4)**8. How can Earth's resources be used wisely? **(4-5)** 9.What are waves? **(5-1)** 10. What are the defining properties of waves? **(5-2)** 11. What is the relationship between various EM waves? **(5-3)** 12.How does light interact with matter? **(5-4)**

Vocabulary: uniformitarianism, evolution, ice core, fossil, continental drift, trace fossil, climate, relative dating, superposition, geologic column, unconformity, absolute dating, half-life, radiometric dating, radioactive decay, natural resource, material resource, renewable resource, nonrenewable resource, energy resource, fossil fuel, urbanization, desertification, deforestation, land degradation, water pollution, point-source pollution, nonpoint-source pollution, reservoir, potable, eutrophication, thermal pollution, air quality, greenhouse effect, particulate, smog, air pollution, acid precipitation, conservation, stewardship

Common Inquiry Labs:

FUSION Lab Manual

- **SC.7.E.6.3** – Radioactive Decay pgs. 147 – 150
- **SC.7.E.6.4** – Fossil Flipbook pgs. 135 – 136
- **SC.7.E.6.6** - Renewable or Not? pgs. 163 – 166
- **SC.7.P.10.1** – White Light pgs. 253 – 256
- **SC.7.P.10.2** - Refraction with Water pgs. 265 – 268
- **SC.7.P.10.3** - Waves on a Spring pgs. 239-241

	Technology Links:	
Lab Assistance: *Scientific Methods Skills* *Writing in the Sciences* *Cooperative Learning Activities*	**Science Links:** *Vocabulary Strategies* *Graphic Organizers and Reading Strategies* *Fold Notes* *Rubrics and Integrated Assessments* *Test Taking Strategies*	**Science Fair Assistance:** *Math in Science* *Planning for Science Fair and Competitions*

Teacher's Links to Online Guides:

Above Level **On Level** **Below Level**

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NGSSS	Outline of Content (Concept)	Targets
SC.7.E.6.3 Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating (3-1, 3-2) . **Cognitive Complexity: Moderate** **SC.7.E.6.4** Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time. (3-1)**Cognitive Complexity: High**	**<u>Unit 3 Lesson 1 (E6.4, E6.3)</u>** **Geologic Change Over Time** Uniformitarianism and Fossils 1. State the principle of uniformitarianism. 2. Define fossils. 3. Describe the ways organisms can be preserved as fossils. 4. List examples of trace fossils. **The Rock Record** 1. Explain how fossils supply evidence of geologic change. 2. Relate the composition and texture of sedimentary rocks to the environment in which the rocks formed. 3. Define continental drift and summarize evidence for it. **Earth's Changing Climate** 1. List types of evidence that support that Earth's climate has changed over time. **<u>Unit 3 Lesson 2 (E6.3)</u>** **Dating Undisturbed Rock Layers** 1. Define relative dating. 2. Describe deposition of sedimentary rock layers. 3. Summarize and apply the law of superposition. **Fossils and Relative Dating** 1. Summarize how scientists can use fossils to determine the relative age of rock layers. **Geologic Columns** 1. Describe geologic columns and their use. Unit 4 Lesson 1 **Natural Resources** 1. Define natural resource. 2. List examples of natural resources. 3. Recognize that humans use natural resources to survive. **Renewable and Nonrenewable Resources** 1. Recognize that natural resources can be renewable or nonrenewable. 2. Define renewable and nonrenewable resources. 3. List renewable and nonrenewable resources. 4. Explain how renewable resources can become nonrenewable. **Material and Energy Resources** 1. Define material resource and energy resource. 2. Distinguish between material and energy resources. 3. List material and energy resources. **<u>Unit 4 Lesson 2 (E6.6)</u>** **How Humans Use Land** 1. Describe five ways in which humans use land. 2. Compare and contrast natural, rural, and urban land uses. 3. Define urbanization and urban sprawl.	• Explain how geologic time can be divided into units. • Sequence geologic time units (e.g., largest to smallest; smallest to largest). • Differentiate relative time between epochs, periods, eras and eons. • Compare relative and absolute age. • Explain how the discovery of radiometric dating changed scientists understanding of the Earth's age.

SC.7.E.6.6 Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, and changing the flow of water.(4-2) **Cognitive Complexity: Moderate**	**Land Degradation** 1. Define land degradation. 2. Identify three factors that lead to land degradation. 3. Identify the effects of urbanization on land. **<u>Unit 4 Lesson 3</u>** **Water as a Resource** 1. Tell why humans need water. 2. Tell why fresh water is a limited resource. 3. Explain the importance of water quality. 4. Compare supply and quality. **Water Pollution** 1. Define water pollution, point-source and nonpoint source pollution. 2. Explain how humans can cause water pollution. 3. Define eutrophication and acid rain. **Water Quality** 1. Discuss water quality measures and monitoring. 2. Explain how water quality is maintained in the U. S. 3. Tell how urbanization can affect water quality. **Water Supply and Flow** 1. Define reservoir and urbanization. 2. Tell how humans affect the fresh water flow and supply. Unit 4 Lesson 4 **Air and Air Pollution** 1. Explain why the atmosphere is important. 2. Define air pollution, and identify its sources. 3. Summarize how smog forms. 4. Define particulates. **Effects of Human Activities on Atmosphere** 1. Summarize vehicle emissions' effects on air. 2. Explain how air pollution can lead to acid precipitation. 3. Describe the effect of acid precipitation. **Air Quality and Health** 1. Define air quality, and tell how it is measured. 2. Tell how air pollution affects health. **Air Pollution and Earth** 1. Describe how air pollution might be affecting our planet.	• Analyze ways in which human actions (development, industrialization) have altered Earth's landscape (e.g. desertification, deforestation, pollution, changing the flow of water). • Describe how development has contributed to increased erosion of Florida beaches.
SC.7.P.10.1 Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors. **Cognitive Complexity: Low** **SC.7.P.10.2** Observe	**<u>Unit 5 Lesson 1</u>** **What Is a Wave?** 1.Define wave. 2. Distinguish between a wave and 1. its medium. **Classifying Waves** 1. Differentiate between longitudinal and transverse waves. **Mechanical Waves** 1. Describe properties and give examples of mechanical waves. **Electromagnetic Waves** 1. Explain the major differences between mechanical and electromagnetic waves. **Parts of a Wave**	• Distinguishes between the forms of radiant energy (light and heat). • Illustrates the various ways that radiation, light, and heat improve the quality of life (e.g., cooking,food, treating disease, and providing energy).

and explain that light can be reflected, refracted, and/or absorbed. **Cognitive Complexity: High** **SC.7.P.10.3** Recognize that light waves, sound waves, and other waves move at different speeds in different materials. **Cognitive Complexity: Low**	1. Define the parts of a wave: amplitude, wavelength, frequency, and wave period. **Wave Energy** 1. Describe how the energy of a wave varies over time. **Behavior and Speed of Waves** 1. Relate the wavelength, frequency, and speed of a wave. 2. Explain how the properties of the medium affect the speed of a mechanical wave. 3. Compare speed of sound in air (at standard pressure and temperature) with speed of sound in other materials. Unit 5 Lesson **EM Radiation** 1. Describe properties of electromagnetic radiation. **The EM Spectrum** 1. Associate the color and wavelength frequency of visible light. 2. Order EM radiation by wavelength frequency. **Energy in the EM Spectrum** 1. Describe how the energy of the sun reaches Earth in the form of EM radiation. 2. Compare the energy levels of different parts of the EM spectrum. **<u>Unit 5 Lesson 4</u>** **Light Can Interact with Matter** 1. Explain that light can be reflected, refracted, or absorbed. 2. Explain what determines the color of a (nonradiating) object. **Light in Media** 1. Explain how scattering occurs. 2. Describe what happens to the speed of EM waves in media. 3. Describe what happens to the direction of EM waves in media.	• Experiment to find how waves travel through various media. • Investigates the various ways waves interact with each other (interference) and other substances (reflection, refraction, and diffraction). • Experiment to produce a spectrum from white light. • Describe the types of waves in the electromagnetic spectrum. • Categorizes the uses of each type of wave in the electromagnetic spectrum (e.g., radio, infrared). • Classify the waves of the electromagnetic spectrum according to wavelength and frequency.