

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

Course: 6th Grade Adv

Course Code: 2002050

Quarter: 1

[RESOURCES](#)

[COMMON CORE](#)

[SCIENCE CENTER](#)

[SYLLABUS](#)

<p>Topic of Study: Thinking and Working like a Scientist <i>(Fusion Units #1 & #5)</i></p> <p>Bodies of Knowledge: Nature of Science</p> <p>Big Ideas: 1. The Practice of Science; 2. Characteristics of Scientific Knowledge; 3 The Role of Theories, Laws, Hypotheses, and Models 12. Motion of Objects</p> <p>Essential Questions: How is science different from other fields of study? (1-3) How do we know about the world we live in? (1-2) How do scientists work? (1-3) In what ways can you organize data to fully understand them? (1-4) How does science affect our lives? (1-5) How is mechanical energy conserved? (5-1) How are distance, time, and speed related? (5-2)</p>
<p>Vocabulary: science, empirical evidence, theory, model, law, experiment, observation, hypothesis, variable, data, model, energy, kinetic energy, potential energy, mechanical energy, law of conservation of energy, position, reference point, motion, speed, vector, velocity</p>
<p>Common Inquiry Labs:</p> <ul style="list-style-type: none"> ➤ SC.6.N.2.2-Science Charades: Quick Lab/Lab Manual p.1 (1-1) ➤ S.C.6.N.3.2-Scientific Law Game TE Exploration Lab p.31 (1-2) ➤ SC.6.N.1.2-The Importance of Replication: Quick Lab/Lab Manual p.16 (1-3) ➤ SC.6.N.1.1/SC.6.N.1.4-Measuring Speed TE p.17 (1-1) ➤ SC.6.P.11.1-Bungee Jumping: TE p.393 (5-1) ➤ SC.6.P.12.1-Video Lab: Animals in Motion: Online www.Thinkcentral.com

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

Teacher's Links to Online Guides:		
Above Level	On Level	Below Level

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

Course: 6th Grade Adv

Course Code: 2002050

Quarter: 1

NGSSS	Outline of Content	Target(s)
<p>SC.6.N.2.1 Distinguish science from other activities involving thought. (1-1)</p> <p>SC.6.N.1.5 Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence. (1-1)</p> <p>SC.6.N.1.3 Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each. (1-3)</p>	<p><u>Unit 1 Lesson 1 (N.1.5, N.2.1) Distinguishing Science from Other Forms of Inquiry</u></p> <ol style="list-style-type: none"> 1. Science is a systematic way of studying the world. 2. Scientists base their explanations on evidence. <p><u>Scientific Explanations and Habits of Mind</u></p> <ol style="list-style-type: none"> 1. Facts are supported by empirical evidence. <p><u>Science & Creativity</u></p> <ol style="list-style-type: none"> 1. Scientists use their imagination. 	<ul style="list-style-type: none"> • Explain the difference between an experiment and other types of scientific investigations. • Describe the creative means scientists must use to design an investigation. • Recognize systematic inference as one form of scientific investigation. • Explain that science is based on factual based evidence. • Use appropriate reference materials to support scientific investigations of various types, such as systematic observation or experiments.

NGSSS	Outline of Content	Target(s)
<p>.6.N.2.2 Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered. (1-2)</p> <p>SC.6.N.3.1 Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life. (1-2)</p> <p>SC.6.N.3.2 Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws. (1-2)</p> <p>SC.6.N.3.3 Give several examples of scientific laws. (1-2)</p>	<p><u>Unit 1 Lesson 2 (N.2.2, N.3.1-3.3)</u> <u>Types of scientific explanations</u></p> <p>1. Science knowledge is explained through scientific theories, models, and scientific laws.</p> <p><u>Assessing Scientific Information</u></p> <p>1. Reliability of scientific information can be assessed by its source.</p> <p><u>Lab Safety</u></p> <p>A. TEACHER NOTE: download and refer to safety contract on resource page.</p> <p>B. Identify and discuss lab safety equipment in classrooms.</p> <p>C. Lab Safety Plan (refer to objective).</p>	<ul style="list-style-type: none"> • Compare and contrast the terms that describe examples of scientific knowledge such as: theory, law, hypothesis, and model. • Cite examples of scientific laws. • Distinguish between laws and theories by understanding that laws describe <i>the what</i> and theories explain <i>the why</i>. • Give examples of how advances in technology have affected scientific theories and laws. • Distinguish the difference between a scientific law and theory vs. a societal law. • Distinguish between a scientific theory and a general claim. • Recognize, identify and know how to safely and accurately use lab equipment. • Explain appropriate science lab behavior (no playing or pushing, no food/drink, no running, do not touch anything until told, etc...). • Describe the importance of following all written or oral directions of the teacher when conducting an investigation. • Identify protective clothing worn in the lab: safety goggles, aprons, gloves. • Recognize that different types of wastes are disposed of in specific ways. • Create a lab safety plan for the classroom.

<p>SC.6.N.1.2 Explain why scientific investigations should be replicable. (1-3)</p>	<p>Unit 1 Lesson 3 (N.1.1, N.1.2, N.1.3, N.1.4) <u>Types of Scientific Investigations</u> 1. Scientists investigate to learn about the natural world. <u>Conducting a Scientific Experiment</u> 1. Well-planned investigations use accepted methods. <u>Characteristics of Good Scientific Investigations</u> 1. Replication and review have value.</p>	<ul style="list-style-type: none"> • Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals. • Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered. • Justify conclusions based upon all the available evidence, not on expressed opinions. • Distinguish science from other activities involving thought.
--	---	---

NGSSS	Outline of Content	Target(s)
<p>SC.6.N.3.4 Identify the role of models in the context of the sixth grade science benchmarks. (1-4)</p> <p>SC.6.N.2.3 Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals. (1-1,5)</p>	<p>Unit 1 Lesson 4 (N.1.1, N.3.4) <u>Tables</u> 1. Data tables are used for recording and organizing data. <u>Graphs</u> 1. Graphs are used to analyzing data. <u>Models</u> 1. Models allow scientists to study an object or process in greater detail.</p>	<ul style="list-style-type: none"> • Explain why models are used in science to observe processes that happen too slowly, too quickly, or are too small or vast for direct observation. • Give examples of visual/physical, mathematical, and conceptual models as used in science.

<p>SC.6.P.11.1 Explore the <u>law of Conservation of energy</u> by differentiating between potential and kinetic <u>energy</u>. Identify situations where kinetic <u>energy</u> is transformed into potential <u>energy</u> and vice versa. (5-1)</p> <p>SC.6.P.12.1 Measure and graph distance versus time for an object moving at a constant <u>speed</u>. Interpret this relationship. (5-2)</p>	<p><u>Unit 5 Lesson 1 (P.11.1)</u> <u>Kinetic Energy</u></p> <ol style="list-style-type: none"> 1. Energy is the ability to cause change or do work. 2. Kinetic Energy <p><u>Potential Energy</u></p> <ol style="list-style-type: none"> 1. Potential Energy <p><u>Mechanical Energy and Energy Conservation</u></p> <ol style="list-style-type: none"> 1. Mechanical energy includes both kinetic and potential energy and is conserved within a closed system. 2. The Law of Conservation of Energy <p><u>Unit 5 Lesson 2 (P.12.1)</u> <u>Motion</u></p> <ol style="list-style-type: none"> 1. Motion occurs when an object travels from one point to another. <p><u>Speed</u></p> <ol style="list-style-type: none"> 1. Distance and time are used to calculate speed. <p><u>Distance-Time Graphs</u></p> <ol style="list-style-type: none"> 1. You can analyze speed with a distance-time graph. <p><u>Velocity</u></p> <ol style="list-style-type: none"> 1. Velocity consists of speed and direction. 	<ul style="list-style-type: none"> • Explain what energy is and provide an example. • Compare and contrast potential and kinetic energy. • Identify and describe instances where potential energy is transformed to kinetic energy. • Identify and describe instances where kinetic energy is transformed to potential energy. • Apply concepts of potential and kinetic energy in an investigation activity. • Differentiate between a theory and a law using a graphic organizer. • Diagram the transfer of energy and apply it in a real world scenario. • Explain the Law of Conservation of Energy in a real life example. • Describe the time in history in which the law of conservation was discovered. • Define a problem using the law of conservation. • Make observations on how motion occurs with respect to a particular reference point. • Measure the distance objects move using SI units. • Record the time it takes for and object to move a given distance. • Tabulate speed and average speed solving for different variables. • Interpret and analyze various motion graphs. • Record various distances and times through an inquiry activity. • Construct a distance versus time graph using student collected data. • Calculate and compare multiple speeds over time on a line graph. • Differentiate between average speed and constant speed to describe a trip.
---	---	---

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

Course: 6th Grade Adv

Course Code: 2002050

Quarter: 1

NGSSS	Outline of Content	Target(s)
<p>SC.6.N.1.1 Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific <u>investigation</u> of various types, such as systematic <u>observations</u> or <u>experiments</u>, identify <u>variables</u>, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. (1-3,4)</p> <p>SC.6.N.1.4 Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation. (1-3)</p>	Science Fair	<ul style="list-style-type: none"> • Define a scientific problem or question from the sixth grade curriculum. • Develop a hypothesis with one testable independent variable. • Explain why scientific investigations should be replicable. • Conduct, discuss, and compare similar investigations by working cooperatively in groups. • Collect and organize data in charts, tables, and graphics. • Present individual or group data after a scientific investigation, analyze the evidence, and reach a class consensus. • Justify conclusions based upon all the available evidence, not on expressed opinions.
<p>MA.6.A.3.6 Construct and analyze tables, graphs and equations to describe linear functions and other simple relations using both common language and algebraic notation. Cognitive Complexity: High</p>	Science Fair	