St. Johns County School District
2013-2014 School Year
Course: 2002050

Advanced Grade 6 Science

Curriculum Map Terms and Use (6/25)

Text: Pearson Interactive Science Course 1. Supplement with additional materials.

Quarter: Refers to the time period during which the standard(s) should be taught.

Unit/Organizing Strand: The overarching organizational structure used to group content and concepts within the curriculum map.

Common Core Standards for Math and Literacy: (**CCLS**) Are to be incorporated into instruction, see notes in the map for suggestions. Best practice is to provide time for close reading and analytical writing, pushing students to evaluate/analyze information. Visit www.cpalms.org for correlation of Common Core standards to Science.

Essential Questions: If present, these serve to guide instruction and to push the student to higher levels of thinking. These questions should guide students to the heart of the content.

Benchmark: Refers to the benchmark classification system number: subject area, grade level, body of knowledge, big idea and benchmark are given in the benchmark. **Ex: SC.912.P.12.1**

Standard: The information that the student is expected to learn.

Student Tasks: Expected behavior that the student will demonstrate if they have acquired the knowledge from the standard.

Key Terms: Students should demonstrate fluency in vocabulary that is intrinsic to the course.

Highlighted item: DOE indicates that this content will be tested on the 8th grade FCAT 2.0 Science exam.

SC.912.P… These are your advanced standards, they are NOT FCAT tested items. The examples ("ex") are state clarification statements for the standard.

Resources/Activities: Are suggested. Best practice is to provide inquiry and/or follow up labs or activities, non-fiction text and/or enrichment activities for important and foundational topics for future learning. Standards that are foundational to future middle or high school required courses have comments beneath the benchmark. Visit cpalms.org for additional resources.

Course# 2002050	**Course: Grade 6 Advanced**	**Quarter**: 1 and ongoing throughout the year	**Pacing: Integrate throughout curriculum**
Unit/Organizing Strand: Language Arts Standards for Reading/Writing from Common Core			

Benchmarks and Student Task	**Standards**
LACC.68.RST.1.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
LACC.68.RST.2.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they're used in a specific scientific or technical context relevant to grades 6-8 texts and topics.
LACC.68.RST.3.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
LACC.68.RST.4.10	By end of grade 8, read and comprehend science/technical text in the grade 6-8 text complexity band independently and proficiently.
LACC.68.WHST.1.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting, graphics, and multimedia when useful to aid comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify relationships among ideas and concepts d. Use precise and domain specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style and objective tone. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.
LACC.68.WHST.3.9	Draw evidence from informational text to support analysis, reflection and research. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

Course# 2002050	**Course: Grade 6 Advanced**	**Quarter:** 1 and ongoing throughout the year	**Pacing:**
Unit/Organizing Strand:	Math Standards from the Common Core Standards		

Benchmarks and Student Tasks	**Standards**
MACC.6.EE.3.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between dependent and independent variables using graphs and tables and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d=65t to represent the relationship between distance and time.*
MACC.6.SP.1.3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
MACC.6.SP.2.5	**Summarize numerical data sets in relation to their context, such as by:** a. Reporting number of observations. b. Describing nature of attribute under investigation, including how it was measured and units of measurement. c. Giving quantitative measures of the center (median and/or mean) and variability (interquartile range and or mean or absolute deviation) as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which data was gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data was gathered.

Course# 2002050	**Course: Grade 6 Advance**	**Quarter:** 1 and ongoing throughout the year	**Pacing:** approximately 3.5-4 weeks for "N" standards
Unit/Organizing Strand: The Practice of Science			
Essential Question(s): How are observations different from inferences? What is the scientific method "process"? Why must scientific investigations be replicable?			

Benchmarks	**Standard**	**Activities/Resources**
SC.6.N.1.1	Define a problem from the 6th grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables and graphics, analyze information, make predictions, and defend conclusions.	**Resource:** **Media:** BozemanScience.com: • "Scientific Method" **Activity:** • Have students plan and create a "mock" experiment. They can write out the steps and predict an outcome, showing data collection. Graph the result and analyze.
SC.6.N.1.2	Explain why scientific investigations should be replicable.	
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.	
	Teach "N" standards throughout the quarter, but, will not be tested in qtr. 1 **"N"STANDARDS TESTED ON MIDTERM (quarter 2)**	

Course# 2002050	**Course: Grade 6 Advanced**	**Quarter**: 1 and ongoing throughout the year	**Pacing:**
Unit/Organizing Strand:	The Practice of Science /Characteristics of Scientific Knowledge		
Benchmarks	**Standards**		**Activities/Resources**
SC.6.N.1.4	Discuss, compare and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.		**Activity:** Students can talk to a shoulder partner about the reasons why results and methods might vary when testing a hypothesis. Then, each should write a brief paragraph with an explanation, based on the conversation.
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.		
SC.6.N.2.1	Distinguish science from other activities involving thought.		
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.		
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. **Teach "N" standards throughout the qtr/year, but not tested in qtr. 1** **"N" STANDARDS TESTED ON MIDTERM (qtr 2)**		

Course# 2002050	**Course: Grade 6 Advanced**	**Quarter: 1**	**Pacing:**
Unit/Organizing Strand: The Role of Theories, Laws, Hypotheses, and Models			
Essential Question(s): How do scientists solve problems? How are theories different from laws? Why are models useful/important in science?			

Benchmarks and Student Tasks:	**Standards**	**Activities/Resources**
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.	**Activity:** Ask students to cite examples of both societal and scientific laws. Ask them to analyze how they differ and what similarities that they share, in terms of their construct.
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.	
SC.6.N.3.3	Give several examples of scientific laws.	
SC.6.N.3.4	Identify the role of models in the context of the 6th grade science benchmarks.	
	(NOTE: N.3.1-N3.3 will not be tested until Qtr3, but teach in this qtr with "N" standards)	

Course# 2002050	**Course: Grade 6 Advanced**	**Quarter: 1**	**Pacing:**
Unit/Organizing Strand: Organization and Development of Living Organisms			
Essential Question(s): What are characteristics of living things? **How do plant cells differ from animal cells**? How are living things organized? How do living things maintain homeostasis? **What are the components of the cell theory? How does the structure of major organelles accommodate the function of the organelle?**			
Benchmarks and Student Tasks	**Standards**	**Activities/Resource**	
SC.6.L.14.2 **Not taught again in MS, EXTREMELY important foundation for HS Biology. Also assesses SC.6.L.14.3.**	Investigate and explain the components of the scientific theory of cells (cell theory): all organisms are composed of cells (single celled or multi cellular), all cells come from pre-existing cells, and cells are the basic unit of life.	• Create a graphic comparing/contrasting cell organelles. Do the same for plant/animal cells. Write a brief explanation of structure to function for each**.**	
SC.6.L.14.3 **Assessed as SC.6.L.14.2.**	Recognize and explore how cells of all organisms undergo similar processes to maintain homeostasis, including extracting energy from food, getting rid of waste, and reproducing.	**Media:** Khanacademy.com: • "Parts of a Cell"	
SC.6.L.14.4 **Not taught again in MS, EXTREMELY important foundation for HS Biology.**	Compare and contrast the structure and function of major organelles of plantand animal cells, including cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria and vacuoles.	**BozemanScience.com:** • "The Wacky History of the Cell" • "Cellular Organelles" • "Classification of Life"	
SC.912.L.14.3	Compare/contrast the general structures of plant and animal cells. Compare and contrast general structures of prokaryotic and eukaryotic cells.	**Simulation:** http://www.cellsalive.com/cells/3dcell.htm • Cells	
SC.912.L.14.2	Relate structure to function for the components of plant and animal cells. Explain the role of the cell membrane as a highly selective barrier (passive and active transport).		

Course# 2002050	**Course: Grade 6 Advanced**	**Quarter: 1**	**Pacing:**
Unit/Organizing Strand: Organization and Development of Living Organisms			
Essential Question(s): What are characteristics of living things? **How do plant cells differ from animal cells**? How are living things organized? How do living things maintain homeostasis? **What are the components of the cell theory? How does the structure of major organelles accommodate the function of the organelle?**			
Benchmarks and Student Tasks	**Standards**		**Activities/Resource**
SC.912.L.16.14 **SC.6.L.15.1**	Describe the cell cycle, including the process of mitosis. Explain the role of mitosis in the formation of new cells and its importance in maintaining chromosome number during asexual reproduction. Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined **with the concept of Domains.** **END OF QUARTER 1** : **"N" standards tested at the end of qtr 2 (except N3.1-3.3)**		**Media:** **BozemanScience.com** • "Classification of Life" • "Cellular Organelles" • "Cell Division" • "Mitosis"

Course# 2002050	Course: Grade 6 Advanced	Quarter: 2	Pacing:
Unit/Organizing Strand: Diversity and Evolution of Living Organisms, Organization and Development of Living Organisms			
Essential Question(s): What characteristics do all living things share? How are living things organized? What are some of the major structures of the human body?			

Benchmarks and Student Tasks	Standards	Activities/Resource
SC.6.L.14.1 **This standard is not taught again in MS.**	Describe and identify patterns in the hierarchical organization of organisms from atoms to molecules and cells to tissues to organs to organ systems to organisms.	**Media:** BozemanScience.com • "Classification of Life" • "Viruses" • "Bacteria" • "Nervous system" • "Circulatory system" • "Immune system" • "Respiratory system" • "Digestive system"
SC.6.L.14.5 **The parts of the brain, immune system and reproductive system are emphasized topics in HS Biology. Also assesses SC.6.L.14.6.**	Identify and investigate the **general** functions of the major systems of the human body (digestive, respiratory, circulatory, reproductive, excretory, immune, nervous, and musculoskeletal) and describe ways that these systems interact with each other to maintain homeostasis.	
SC.6.L.14.6 **Also assesses SC.6.L.14.5.**	Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi and parasites.	**Activity:** • Create a graphic that shows the flow from atoms to organisms.
HE.6.C.1.3	Identify environmental factors that affect personal health.	
HE.6.C.1.8	Explain how body systems are impacted by hereditary factors and infectious agents.	
	END QUARTER 2/SEMESTER	

Course# 2002050	**Course: Grade 6 Advanced**	**Quarter: 3**	**Pacing:**
Unit/Organizing Strand: Energy Transfer and Transformations, Forces and Changes in Motion			
Essential Question(s): What is energy? What does the law of conservation of energy tell us? How is motion observed, described, measured? What affects the motion of an object?			
Benchmark/Student Tasks:	**Standards**		**Activities/Resource**
SC.6.P.11.1 **Assessed as SC.7.P.11.2**	Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.		Science conference folder: • "Graph: Position vs. time", and assorted gravity prompts for writing in MS **Writing** prompts folder on Science conference.
SC.6.P.12.1 **Assessed as SC.6.P.13.3**	Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship.		**Simulations:** http://phet.colorado.edu/ • "Energy Forms and Changes" • "Energy Skate Park" • "Forces and Motion"

Course# 2002050	**Course: Grade 6 Advanced**	**Quarter: 3**	**Pacing:**
Unit/Organizing Strand: Energy Transfer and Transformations, Forces and Changes in Motion			
Essential Question(s): What is energy? What does the law of conservation of energy tell us? How is motion observed, described, measured? What affects the motion of an object? What is a force? How do some forces act from a "distance"?			

Benchmarks and Student Tasks:	**Standards**	**Activities/Resource**
SC.6.P.13.1 **This standard will not be taught again in middle school. Also assesses SC.6.P.13.2.**	Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic and gravitational.	**Media:** **BozemanScience.com** "Newton's 3 Laws of Motion" "Speed, Velocity, and Acceleration".
SC.6.P.13.2 **Assessed as SC.6.P.13.1.**	Explore the Law of Gravity by recognizing that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are.	**www.NBClearn.com** "Newton's Three Laws of Motion"
SC.6.P.13.3 **This standard will not be taught again in MS. Also assesses SC.6.P.12.1.**	Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both.	**Simulation:** http://phet.colorado.edu/ **"**Gravity Force Lab"
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.	
SC.6.N.3.2	Recognize and explain that a scientific law is a description of specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.	
SC.6.N.3.3	Give several examples of scientific laws.	
	END OF THIRD QUARTER	

Course# 2002050	Course: Grade 6 Advanced	Quarter: 4	Pacing:
Unit/Organizing Strand:	**Forces and Changes in Motion**, **Earth Patterns and Systems**		
Essential Question(s): What are the ways in which energy (as heat) transfers? What are the biogeochemical cycles of the earth and how do they impact our weather?			

Benchmarks and Student Tasks	Standards	Activities/Resource
SC.6.E.7.1 **Assessed as SC.6.E.7.5.** **SC.912.P.10.4** **SC.6.E.7.2** **Assessed as SC.6.E.7.4.** **SC.6.E.7.5** **This standard will not be taught again in MS. Also assesses SC.6.E.7.1.**	Differentiate among radiation, conduction and convection, the three mechanisms by which heat is transferred through Earth's system. Describe heat as the energy transferred by convection, conduction, and radiation, and explain the connection of heat to change in temperature or states of matter. Ex: Explain the mechanisms of heat transfer (convection, conduction, radiation). Explain how heat is transferred (energy in motion) from an area of higher temperature to a region of lower temperature until equilibrium is established. Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate. Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water and land.	**Critical Thinking Questions:** • "Conduction, Convection, Etc." on Science Teachers Conference: Grade 6 Activities **MS article:** • "Biogeochemical Cycles in the MS articles folder in MS **Writing** prompts folder—on Science conference **BozemanScience.com:** • "Biogeochemical Cycles"

Course# 2002050	**Course: Grade 6 Advanced**	**Quarter: 4**	**Pacing:**
Unit/Organizing Strand: Earth Systems and Patterns			
Essential Question(s): How does matter interact/cycle through earth? How does energy drive changes on our planet? What is the source of all energy?			
Benchmark/ Student Tasks	**Standards**		**Activities/Resources**
SC.6.E.7.3 **Assessed as SC.6.E.7.4.** **SC.6.E.7.4** **This standard will not be taught again in middle school. Also assesses SC.6.E.7.2, SC.6.E.7.3,SC.6.E.7.6 and SC.6.E.7.9.** **SC.912.E.7.3** **SC.6.E.7.6** **Assessed as SC.6.E.7.4.** **SC.912.E.7.6**	Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation. Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere. Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere, geosphere, and biosphere. Ex: Interactions include transfer of energy (biogeochemical cycles, water cycle, ground and surface waters, photosynthesis, radiation, plate tectonics, conduction and convections) storms, winds, waves, erosion, currents, deforestation and wildfires, hurricanes, etc. Differentiate between weather and climate. Relate the formation of severe weather to the various physical factors. Ex: Identify the causes of severe weather. Compare and contrast physical factors that affect formation of severe weather events(hurricanes, tornadoes, drought, flash floods)		• Write about how global patterns would be influenced if less radiant energy were able to reach Earth. They can predict the ecological/economic effects of this. • Choose a biogeochemical cycle and explain its mechanism. What drives the cycle? **www.NBClearn.com:** • Science Behind the News: "Tornadoes" **http://science360.gov** • "Modeling our Future Climate" **www.NBClearn.com** • Changing Planet: "Ocean Temperatures" **Article:** • MS Articles folder on Science conference: Biogeochemical cycles

Course# 2002050	**Course: Grade 6 Advanced**	**Quarter: 4**	**Pacing:**
Unit/Organizing Strand: Earth Systems and Patterns			
Essential Question(s): What types of natural disasters are a concern for Florida and why? How is the earth "self protective"?			

Benchmark/Student Tasks	**Standards**	**Activities/Resources**
SC.912.E.7.5	Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties of such predictions. Ex: Use models, weather maps and other tools to predict weather conditions and differentiate between accuracy of short-range and long-range weather forecasts.	**Article**: • "Severe Weather" in MS article folder on Science conference. **Media: http://science360.gov** • "Modeling our Future Climate"
SC.6.E.7.7	Investigate how natural disasters have affected human life in Florida.	
SC.6.E.7.8	Describe ways that human beings protect themselves from hazardous weather and sun exposure.	
SC.6.E.7.9 **Assessed as SC.6.E.7.4.**	Describe how the composition and structure of the atmosphere protects life and insulates the planet.	

Course# 2002050	**Course: Grade 6 Advanced**	**Quarter: 4**	**Pacing:**
Unit/Organizing Strand: Earth Structures			
Essential Question(s): How has/ is Earth's surface continually changed by constructive and destructive forces?			

Benchmark/ Student Tasks	**Standards**	**Activities/Resource**
SC.6.E.6.1 **SC.6.E.6.2**	Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion and deposition. Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas and lakes and relate these landforms as they apply to Florida.	**Activity:** • Have students research and briefly present a feature of Florida caused by weathering, erosion, or deposition. They should specify how the feature occurred and explain why this specifically occurred in Florida.