St. Johns County School District
2013-2014 School Year
Course: 2002080

Advanced 7th Grade Science

St. Johns County Schools
Curriculum Map Terms & Use

Text: Pearson Interactive Science Course 2. Supplement with additional materials.

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

Common Core Standards for Math & 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 student to evaluate/analyze information. **For direct correlation of the standards to the standards within the map, visit:** http://www.cpalms.org/

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

Essential Questions: Overarching question(s) that will serve to guide instruction & to push the student to higher levels of thinking (critical 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 & benchmark are given in the benchmark. **Ex: SC.912.P.12.1**

Standard: The knowledge 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. The key terms listed in this map are the state suggested terms that may be part of a state test such as FCAT Science 2.0.

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

C.912.P… These are your advanced standards, they are NOT FCAT tested items. The remarks 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 foundational topics for future learning. Standards that are foundational to future middle or high school required courses have comments beneath the standard**. For resources on CPALMS, visit:** www.cpalms.org

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter:** 1 and all throughout the year	**Pacing: Integrate throughout the year**
Unit/Organizing Strand: Language Arts Standards for Reading/Writing from the Common Core Standards			
Benchmarks/Student Task:	**Standard**		
LACC.68.RST.1 **LACC.68.RST.1.3**	**Key Ideas and Details** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.		
LACC.68.RST.2 **LACC.68.RST.2.4**	**Craft and Structure** Determine the meaning of symbols, key terms, & other domain-specific words & phrases as they're used in a specific scientific or technical context relevant to grades 6-8 texts & topics.		
LACC.68.RST.3 **LACC.68.RST.3.7**	**Integration of Knowledge and Ideas** 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 **LACC.68.RST.4.10**	**Range of Reading and Text Complexity** By end of grade 8, read & comprehend science/technical text in the grade 6-8 text complexity band independently & proficiently.		
LACC.68.WHST.1 **LACC.68.WHST.1.2**	**Text Types and Purposes** Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.		
LACC.68.WHST.3 **LACC.68.WHST.3.9**	**Research to Build and Present Knowledge** Draw evidence from informational text to support analysis, reflection & research.		

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 1 and all throughout the year**	**Pacing:**
Unit/Organizing Strand: Math Standards from the Common Core Standards			
Benchmark/ student tasks	**Standards**		
MACC.6.SP.1 **MACC.6.SP.1.3**	**Develop understanding of statistical variability**. Recognize that a measure of center for a numerical data 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 **MACC.6.SP.2.5a** **MACC.6.SP.2.5b** **MACC.6.SP.2.5c** **MACC.6.SP.2.5d**	Summarize numerical data sets in relation to their context, such as by: Reporting the number of observations. Describing nature of the attribute under investigation, including how it was measured & its units of measurement. Giving quantitative measures of the center (median and/or mean) & variability (interquartile range & or mean or absolute deviation) as well as describing overall patterns & striking deviations from the overall pattern with reference to the context in which the data was gathered. Relating the choice of measures of center & variability to the shape of the data distribution & the context in which the data was gathered.		

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 1**	**Pacing:** approximately 2.5-3 weeks for "N" standards
Unit/Organizing Strand: The Practice of Science			
Essential Question(s): Why do scientists use a scientific method or process? How does one conduct a valid scientific experiment? What is the difference between replication by others & repetition or multiple trials?			
Benchmarks & Student Tasks	**Standards**		**Resources/Activities**
SC.7.N.1.1	Define a problem from 7th grade curriculum use appropriate reference materials to support scientific understanding, plan & carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect & organize data, interpret data in charts, tables & graphics, analyze information, make predictions & defend conclusions.		**Media:** BozemanScience.com: • Scientific Method
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).		
SC.7.N.1.3	Distinguish between an experiment involving identification & control of variables & other forms of scientific investigation & explain that not all knowledge is derived by experimentation.		

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 1**	**Pacing:**
Unit/Organizing Strand: The Practice of Science			
Essential Question(s): Why do scientists use a scientific method/process? How does one conduct a valid scientific experiment? What is the difference between observation and inference?			
Benchmarks & Student Tasks	**Standards**		**Resources/Activities**
SC.7.N.1.4	Identify test variables (independent) and outcome variables (dependent) in an experiment.		
SC.7.N.1.5 **Also assesses SC.7.N.3.2**	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology and physics.		
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.		
	TEACH "N" STANDARDS, HOWEVER, "N" STANDARDS WILL NOT BE TESTED UNTIL MIDTERM		

Course # 2002080	**Course**: **Advanced 7th Grade Science**	**Quarter**: 1	**Pacing**:
Unit/Organizing Strand: The Characteristics of Scientific Knowledge, The Role of Theories, Laws, Hypotheses & Models			
Essential Question(s): How does new evidence or new interpretations impact scientific knowledge? How do ideas or discoveries in science change over time? How do laws, theories & hypotheses impact the body of scientific knowledge? Why do we use scientific models?			

Benchmarks/Student Tasks:	**Standards**	**Resources/Activities**
SC. 7.N.3.1 **SC.7.N.3.2** **Also assesses SC.7.N.1.5**	Recognize & explain the difference between theories & laws & give several examples of scientific theories & the evidence that supports them. Identify the benefits & limitations of the use of scientific models. **(NOT TESTED UNTIL Q2)**	**Writing:** • Ask students to write a paragraph in response to the prompt: A change of mind is sometimes seen as a sign of weakness. How is this different in science?

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 1**	**Pacing:**
Unit/Organizing Strand: Energy Transfer & Transformations			
Essential Question(s): How does addition or subtraction of heat affect a system? What is energy and how does it transform?			
Benchmark/ Student Tasks	**Standards**		**Resources/Activities**
SC.7.P.11.1 **Assessed as SC.7.P.11.4** **SC.912.P.10.5** **SC.7.P.11.2** **This standard will not be taught again in 8th grade.** **Also assesses SC.7.P.11.3** **SC.912.P.10.1** **SC.7.P.11.3** **Also assesses SC.7.P.11.2** **SC.7.P.11.4 This standard will not be taught again in 8th grade. Also assesses SC.7.P.11.1**	Recognize that adding heat to or removing heat from a system may result in a temperature change & possibly a change of state. Relate temperature to the average molecular kinetic energy. Ex: Recognize that the internal energy of an object includes the energy of random motion of the object's atoms & molecules, often referred to as thermal energy Investigate & describe the transformation of energy from one form to another. Differentiate among the various forms of energy & recognize that they can be transformed from 1 form to another. Ex: Differentiate between kinetic & potential energy. Recognize that energy cannot be created or destroyed, only transformed. Identify examples of transformation of energy: Heat to light in incandescent electric light bulbs, sound to electrical in microphones, etc. Cite evidence to explain that energy cannot be created or destroyed, only changed from one form to another. Observe & describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature. **END OF 1ST QUARTER**		**Article:** are in Middle School Articles folder on Science conference. • Heat-temperature **Simulations:** http://phet.colorado.edu/ • Energy Forms & Changes • Energy Skate Park

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 2**	**Pacing:**
Unit/Organizing Strand: Forms of Energy			
Essential Question(s): What is radiant energy & how does it travel? How do various wave lengths impact the energy? Do waves have different speeds? How does light behave?			
Benchmark/Student Task	**Standards**		**Resources/Activities**
SC.7.P.10.1 **This standard will not be taught again in 8th grade.**	Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible & ultraviolet, & that white light is made up of a spectrum of many different colors.		**Media:** **Bozemanscience.com:** • Light Waves • Sound Waves **Article:** are in Middle School Articles folder on Science conference. • Sound **Simulations:** http://phet.colorado.edu/ • Energy Forms & Changes • Energy Skate Park **NBClearn.com** **Science of Summer Olympics:** • Designing a Fast Pool (waves)
SC.7.P.10.3 **This standard will not be taught again in 8th grade.** **Also assesses SC.7.P.10.2**	Recognize that light waves, sound waves, & other waves move at different speeds in different materials.		
SC.7.P.10.2 **Assessed as SC.7.P.10.3**	Observe & explain that light can be reflected, refracted & or absorbed.		
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate & confirmation within the science community.		

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 2**	**Pacing:**
Unit/Organizing Strand: Earth Structures			
Essential Question(s): How are the Earth's layers structured? How does matter move within the rock cycle? How do the patterns relate to landforms and surface or subsurface events?			

Benchmarks & Student Tasks	**Standards**	**Resources/Activities**
SC.7.E.6.1 **Will be assessed as SC.7.E.6.5**	Describe the layers of the solid Earth including the lithosphere, the convecting mantle, the dense metallic liquid & solid cores.	**Model of Earth's Layers:** http://www.scec.org/education/k12/learn/ • Plate Tectonics to Structure of the Earth.
SC.912.E.6.1	Describe & differentiate the layers of earth & interactions between them. Ex: Recognize the importance of the study of seismic wave data & how it can be used to determine the internal structure, density variations, & dynamic processes between Earth's layers.	
SC.7.N.3.2	Identify the benefits & limitations of the use of scientific models.	
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.	
SC.7.E.6.2 **This standard will not be taught again in 8th grade.** **Also assesses SC.7.E.6.6**	Identify patterns within the rock cycle & relate them to surface events (weathering & erosion) & sub-surface events (plate tectonics & mountain building).	
SC.912.E.6.2	Connect surface features to surface processes that are responsible for their formation. Ex: Identify various landforms (eg: dunes, lakes, sinkholes) & describe how they form (erosion, physical/chemical weathering, & deposition)	

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 2**	**Pacing:**
Unit/Organizing Strand: Earth Structures			
Essential Question(s): How can we measure the age of the Earth, or parts of the Earth? What evidence do we have that shows that Earth has evolved and changed over geologic time & how does that evidence support scientific theories about Earth's geologic evolution? How is superposition & radioactive dating used to determine age of parts of the Earth?			
Benchmarks & Student Tasks	**Standards**		**Resources/Activities**
SC.7.E.6.3 **Assessed as SC.7.E.6.4**	Identify current methods for measuring the age of Earth & its parts, including the law of superposition & radioactive dating. **END OF 2nd QUARTER**		**Media:** BozemanScience.com: • Law of Superposition

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 3**	**Pacing:**
Unit/Organizing Strand: **Earth Structures**			
Essential Question(s): How are some of Earth's structures created? What causes earthquakes & volcanic eruptions?			
Benchmark/Student Task	**Standards**		**Resources/Activities**
SC.7.E.6.5 **This standard will not be taught again in 8th grade.** **Also assesses SC.7.E.6.1 & SC.7.E.6.7**	Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow & rapid changes in Earth's surface, including volcanic eruptions, earthquakes, & mountain building.		**Media:** BozemanScience.com: • Plate Tectonics **Web resources for plate tectonics:** http://pubs.usgs.gov/gip/dynamic/dynamic.html http://www.scec.org/education/k12/learn/ http://phet.colorado.edu/Plate Tectonics
SC.912.E.6.3	Analyze the scientific theory of plate tectonics & identify related major processes & features as a result of moving plates. Ex: Discuss the development of plate tectonic theory, which is derived from the combination of two theories: continental drift & seafloor spreading. Compare/contrast the 3 primary types of plate boundaries (convergent, divergent & transform). Explain the origin of geologic features & processes that result from plate tectonics (eg: earthquakes, volcanoes, trenches, mid-ocean ridges, island arccs& chains, hot spots, earthquake distribution, tsunamis, mountain ranges).		
SC.7. E.6.4 **This standard will not be taught again in 8th grade.** **Also assess SC.7.E.6.3**	Explain & give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.		
SC.7.E.6.7 **Assessed as SC.7.E.6.5**	Recognize that heat flow & movement of material within Earth causes earthquakes & volcanic eruptions, & creates mountains & ocean basins.		

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 3**	**Pacing:**
Unit/Organizing Strand: Heredity & Reproduction			
Essential Question(s): What is DNA? How does DNA pass traits from one generation to the next? How are genotypes & phenotypes important in the study of genetics/heredity? What does a Punnett square/Pedigree tell us?			
Benchmark/Student Task	**Standards**		**Resources/Activities**
SC.7.L.16.1 **This standard will not be taught again in 8th grade. Also assesses SC.7.L.16.2 & SC.7.L.16.3.**	Understand & explain that every organism requires a set of instructions that specifies its traits that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.		**Media:** BozemanScience.com: • Genetics • Chromosomal Genetics **Articles:** are in MS articles in Science teacher conference. • DNA-Human Genome • Genetics-Gregor Mendel **Web Resources:** DNA: http://www.yourgenome.org/landing_teachers.shtml **Virtual DNA extraction lab:** http://learn.genetics.utah.edu/content/labs/extraction/
SC.7.L.16.2 **Assessed as SC.7.L.16.1**	Determine the probabilities for genotype & phenotype combinations using Punnett Squares & pedigrees.		
SC.912.L.16.2	Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, co-dominant. Sex-linked, polygenic & multiple alleles.		

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 3**	**Pacing:**
Unit/Organizing Strand: Heredity & Reproduction, Health Promotion & Disease Prevention to Enhance Health.			
Essential Question(s): How are the processes of mitosis & meiosis crucial for the transfer of genetic information? How does genetic engineering & artificial selection impact us?			
Benchmark/Student Task	**Standards**	**Resources/Activities**	
SC.7.L.16.3 **Important topic for HS Biology Assessed as SC.7.L.16.1** **SC.912.L.16.16** **SC.7.L.16.4** **HE.7.C.1.4** **END QUARTER 3**	Compare and contrast the general processes of sexual reproduction requiring meiosis & asexual reproduction requiring mitosis. Describe the process of meiosis including independent assortment & crossing over. Explain how reduction division results in the formation of haploid gametes or spores. Recognize & explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society & the environment. Describe how heredity can affect personal health.	BozemanScience.com: • Mitosis • meiosis **Simulations:** www.cellsalive.com: • Mitosis • Cell Cycle • meiosis	

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 4**	**Pacing:**
Unit/Organizing Strand: Diversity & Evolution of Living Organisms			
Essential Question(s): How is fossil evidence consistent with the scientific theory of evolution? How do genetic variations & environmental factors contribute to evolution? Why is natural selection important to the evolution & survival of a species? How does inability of a species to adapt contribute to the extinction of that species?			
Benchmark/Student Task	**Standards**	**Resources/Activities**	
SC.7.L.15.1 **Important HS Biology topic, will not be taught again in 8th grade. Assessed as SC.7.L.15.2** **SC.7.L.15.2** **Important HS Biology topic, will not be taught again in 8th grade. Also assesses SC.7.L.15.1 & SC.7.L.15.3.** **SC.7.L.15.3** **Assessed as SC.7.L.15.2.** **SC.912.L.15.13**	Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species. Explore the scientific theory of evolution by recognizing & explaining ways in which genetic variation & environmental factors contribute to evolution by natural selection & diversity of organisms. Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species. Describe the conditions required for natural selection, including overproduction of offspring, inherited variation, & the struggle to survive, which results in differential reproductive success.	**Media:** BozemanScience.com: • The Origin of Life Behavior & Natural Selection • Examples of Natural Selection **Khanacademy.com:** • Evolution **Articles:** are in the MS articles in Science conference. • Charles Darwin • Darwin's Theory of Evolution	

Course# 2002080	**Course: Advanced 7th Grade Science**	**Quarter: 4**	**Pacing:**
Unit/Organizing Strand: Interdependence			
Essential Question(s): What are the roles and relationships among producers, consumers, and decomposers? How do mutualism, predation, parasitism, etc. affect relationships between organisms in an ecosystem? How do limiting factors impact native populations including food, shelter, water, space, disease, predation, nesting sites?			
Benchmark/Student task	**Standards**	**Resources/Activities**	
SC.7.L.17.1 **Assessed as SC.7.L.17.2** **SC.912.L.15.6** **SC.912.L.17.9** **SC.7.L.17.2** **This standard will not be taught again in 8th grade. Also assesses SC.7.L.17.1 & SC.7.L.17.3.** **SC.912.L.17.6** **SC.7.L.17.3** **Assessed as SC.7.L.17.2.** **SC.7.E. 6.6** **Assessed as SC.7.E.6.2**	Explain & illustrate the roles of & relationships among producers, consumers, & decomposers in the process of energy transfer in a food web. Discuss distinguishing characteristics of the domains & kingdoms of living organisms. Use a food web to identify & distinguish producers, consumers & decomposers. Explain the pathway of energy transfer through the trophic levels & the reduction of available energy at successive trophic levels. Compare & contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism. Compare/contrast the relationships among organisms, including predation, parasitism, competition, commensalism, & mutualism. Describe & investigate various limiting factors in the local ecosystem & their impact on native populations, including food, shelter, water, space, disease, parasitism, predation & nesting sites. Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air & water quality, changing the flow of water.	**Media:** BozemanScience.com: • Speciation and Extinction • Populations **Articles:** are in the MS articles in Science conference. • Ecosystems	