

St. Johns County School District
2013-2014 School Year
Course: 2002100

8th Grade Science

Curriculum Map Terms and Use

Text: Pearson Interactive Science Course 3. 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 map.

Common Core Standards for Math and Literacy: 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/>

Essential Questions: Overarching question(s) that will serve to guide instruction and 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 and benchmark are given in the benchmark. **Ex: SC.912.P.12.1**

Standard: The knowledge that the student is expected to acquire.

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.

Content Limits: When given, these explain limitations on the standard that will be tested on a state EOC or FCAT.

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

Resources and 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 or important topics. Standards that are foundational to future middle or high school required courses have comments listed beneath the standard. **For resources on CPALMS, visit:**www.cpalms.org

Course# 2002100	Course: 8th Grade Science	Quarter: 1 and all throughout the year	Pacing: approximately 1.5-2 weeks for “N” standards
Unit/Organizing Strand: The Practice of Science, Characteristics of Scientific Knowledge			
Essential Question(s): Why is it important to control conditions and focus on a single variable in an experiment? How can you be sure that the data in an experiment answers your question?			
Benchmark and Student Task	Standard	Resources and Activities	
<p>SC.8.N.1.1 Also assesses SC.8.N.1.3 and 1.4 Also assesses SC.6.N.1.1, SC.6.N.1.3, SC.7.N.1.1, SC.7.N.1.3, SC.7.N.1.4.</p> <p>SC.8.N.1.2 Assessed as SC.7.N.1.2</p> <p>SC.8.N.2.2 Not FCAT assessed.</p> <p>SC.8.N.1.6 Assessed as SC.6.N.2.2</p> <p>SC.8.N.1.5 Assessed as SC.7.N.1.5</p> <p>SC.8.N.1.3 Assessed as SC.8.N.1.1</p>	<p>Define a problem from the 8th grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations 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.</p> <p>Design and conduct a study using repeated trials and replication</p> <p>Discuss what characterizes science and its methods.</p> <p>Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of collected evidence.</p> <p>Analyze the methods used to develop a scientific explanation as seen in different fields of science</p> <p>Use phrases such as “results support” or “fail to support” in science understanding that science does not offer conclusive proof of a knowledge claim.</p> <p>Teach them, but, “N” standards on this page will not be tested until midterm.</p>	<p>Media Resource: BozemanScience.com:</p> <ul style="list-style-type: none"> • Scientific Method • Asking Questions and Designing Problems • Planning and Carrying Out Investigations • Obtaining, Evaluating and Communicating Information 	

Course# 2002100	Course: 8th Grade Science	Quarter: 1 and all throughout the year	Pacing:
Unit/Organizing Strand: Language Arts and Math Standards for Reading/Writing from Common Core			
Benchm/ Task	Standard		
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 (eg., 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	<p>Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <ul style="list-style-type: none"> • Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (headings) graphics (charts, tables) and multimedia when useful to aid comprehension • Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples • Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts • Use precise language and domain specific vocabulary to inform about or explain the topic • Establish and maintain a formal style and objective tone • Provide a concluding statement or sections that follows and supports the information or explanation presented <p>Draw evidence from informational text to support analysis, reflection and research.</p>		
LACC.68.WHST.3.9	Summarize numerical data sets in relation to their context such as by:		
MACC.8.F.2.5	<ol style="list-style-type: none"> a. Reporting the number of observations b. Describing the nature of the attribute under investigation, including how it was measured and its unit of measurement c. Giving quantitative measures of center (median/mean) and variability (interquartile range and/or mean absolute deviation) as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered d. Relating the choice of measure of center and variability to the shape of data distribution and the context in which the data were gathered 		

Course# 2002100	Course: 8th Grade Science	Quarter: 1	Pacing:
Unit/Organizing Strand: Matter			
Essential Questions: What constitutes matter? What are the characteristics/properties of matter?			
Benchmarks/Student Task	Standards	Resources and Activities	
SC.8.P.8.4 Also assesses SC.8.P.8. SC.8.P.8.3 Assessed as SC.8.P.8.4 SC.8.P.8.2 Assessed as SC.6.P.13.1 SC.8.P.8.1 Assessed as SC.8.P.8.5	Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured: for example: density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample. Explore and describe the densities of various materials through measurement of their masses and volumes. Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass. Explore the scientific theory of atoms (also known as the atomic theory) by using models to explain the motion of particles in solids, liquids and gases.	Media : BozemanScience.com <ul style="list-style-type: none"> • Matter • States of Matter • Properties of Matter Simulation: http://phet.colorado.edu/ States of Matter	

Course# 2002100	Course: 8th Grade Science	Quarter: 1	Pacing:
Unit/Organizing Strand: Properties of Matter, Practice of Science, The Role of Laws, Theories, Hypothesis and Models			
Essential Question(s): What have we learned about atoms and their makeup?			
Benchmarks and Student Tasks	Standards:	Resources and Activities	
<p>SC.8.P.8.7 Assessed as SC.8.P.8.5</p> <p>SC.8.N.3.2 Assessed as SC.7.N.3.1</p> <p>SC.8.N.3.1 Not FCAT assessed.</p> <p>SC.8.N.1.4 Assessed as SC.8.N.1.1</p>	<p>Explore the scientific theory of atoms (also known as the atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons).</p> <p>Explain why theories may be modified but are rarely discarded.</p> <p>Select models useful in relating the results of their own investigations.</p> <p>Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data</p> <p style="text-align: center;">END OF QUARTER 1</p>	<p>Media Resource: BozemanScience.com:</p> <ul style="list-style-type: none"> • The History of the Atom • Developing and Using Models <p>Writing prompts: in the MS Writing folder on Science teacher's conference.</p> <ul style="list-style-type: none"> • Atoms-Cells • Weight-mass 	

Course# 2002100	Course: 8th Grade Science	Quarter: 2	Pacing:
Unit/Organizing Strand: The Properties of Matter			
Essential Question(s): What makes one element different from another? How can all of forms of matter be made up of about 100 or so different elements? How is the Periodic Table used to describe physical/chemical characteristic of elements? How are chemical changes different from physical changes in matter?			
Benchmarks and Student Tasks	Standards	Resources and Activities	
<p>SC.8.P.8.6 Assessed as SC.8.P.8.5</p> <p>SC.8.P.8.5 Also assesses SC.8.P.8.1, SC.8.P.8.6, SC.8.P.8.7, SC.8.P.8.8, SC.8.P.8.9</p> <p>SC.8.P.9.2 Also assesses SC.8.P.9.1 and SC.8.P.9.3</p>	<p>Recognize that elements are grouped in the periodic table according to similarities of their properties.</p> <p>Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.</p> <p>Differentiate between physical changes and chemical changes. (Include Change of State with Physical Changes)</p>	<p>Resources: Media: BozemanScience.com:</p> <ul style="list-style-type: none"> • Atoms and the Periodic Table • Tour of the Periodic Table <p>Articles: are in MS Articles (conference).</p> <ul style="list-style-type: none"> • Elements-Atoms-diamonds <p>Simulation: http://phet.colorado.edu/ Build an Atom</p>	

Course# 2002100	Course: 8th Grade Science	Quarter: 2	Pacing:
Unit/Organizing Strand: The Properties of Matter, Changes in Matter			
Essential Question(s): How do the properties of matter differ dependent on the type of bond/compound formed? How do chemical or physical changes affect the energy of a system?			
Benchmarks and Student Tasks	Standards	Resources and Activities	
<p>SC.8.P.9.1 Assessed as SC.8.P.9.2</p> <p>SC.8.P.9.3 Assessed as SC.8.P.9.2</p> <p>SC.8.P.8.9 Assessed as SC.8.P.8.5</p> <p>SC.8.P.8.8 Assessed as SC.8.P.8.5</p>	<p>Explore the Law of Conservation of Mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes.</p> <p>Investigate and describe how temperature influences chemical changes.</p> <p>Distinguish among mixtures (including solutions) and pure substances.</p> <p>Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts.</p> <p>END OF QUARTER 2</p>	<p>Media: BozemanScience.com:</p> <ul style="list-style-type: none"> Physical and Chemical Changes <p>Activity:</p> <ul style="list-style-type: none"> Write about the physical and chemical changes that occur when a wax candle burns. Explain how you decided to classify each. 	

Course# 2002100	Course: 8th Grade Science	Quarter: 3	Pacing:
Unit/Organizing Strand: Matter and Energy Transformations			
Essential Question(s): What everyday situations illustrate energy transformation? How does energy transfer demonstrate the Law of Conservation of Energy? Why are cycles invaluable to sustaining life? What is the outcome of energy flow in our environment?			
Benchmarks and Student Tasks:	Standards	Resources and Activities	
<p>SC.8.L.18.4 Also assesses SC.8.L.18.1, SC.8.L.18.2, SC.8.L.18.3.</p> <p>SC.8.L.18.3 Assessed as SC.8.L.18.4.</p> <p>SC.8.L.18.1 Standards SC.8.L.18.1 and 18.2 are critical standards for students who will take HS Biology. Assessed as SC.8.L.18.4.</p> <p>SC.8.L.18.2 Standards SC.8.L.18.1 and 18.2 are critical standards for students who will take HS Biology. Assessed as SC.8.L.18.4.</p>	<p>Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.</p> <p>Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environments.</p> <p>Describe and investigate the process of photosynthesis, such as the roles of light, carbon dioxide, water and chlorophyll, production of food, release of oxygen.</p> <p>Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide.</p>	<p>Articles: are in MS Articles (conference).</p> <ul style="list-style-type: none"> • Biogeochemical cycles <p>Writing: Is in MS Writing folder on Science conference</p> <ul style="list-style-type: none"> • Photosynthesis • Chlorophyll <p>Media: BozemanScience.com:</p> <ul style="list-style-type: none"> • Photosynthesis • Cellular Respiration <p>www.NBClearn.com:</p> <ul style="list-style-type: none"> • Chemistry Now: The Chemistry of Green: Chlorophyll <p>Simulation: http://www.johnkyrk.com/photosynthesis.html</p> <ul style="list-style-type: none"> • Photosynthesis 	

Course# 2002100	Course: 8th Grade Science	Quarter: 3	Pacing:
Unit/Organizing Strand: Earth in Space and Time			
Essential Question(s): What does our universe contain and how have we learned about it?			
Benchmarks/Standards:	Target: The student will...		Resources and Activities
<p>SC.8.E.5.1 Assessed as SC.8.E.5.3</p> <p>SC.8.E.5.2 Assessed as SC.8.E.5.3</p> <p>SC.8.E.5.3 Also assesses SC.8.E.5.1 and 5.2</p>	<p>Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance.</p> <p>Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars</p> <p>Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size and composition.</p>		<p>Articles: are in MS Articles (conference).</p> <ul style="list-style-type: none"> • Stars • Space-White Dwarfs <p>Writing:</p> <ul style="list-style-type: none"> • Are there galaxies other than the Milky Way that can be seen with the unaided eye? explain, justify, and cite facts. <p>Writing:</p> <ul style="list-style-type: none"> • What is the difference between the universe and the observable universe? <p>Media: www.NBClearn.com: Science Behind the News: Impacts on Jupiter</p>

Course# 2002100	Course: 8th Grade Science	Quarter: 3	Pacing:
Unit/Organizing Strand: Earth in Space and Time			
Essential Question(s): What does our universe contain and how have we learned about it? How is it possible that objects far from us have such an impact on us?			
Benchmarks/Standards:	Target: The student will...		Resources and Activities
<p>SC.8.E.5.4 Assessed as SC.8.E.5.7</p> <p>SC.8.E.5.5 Also assesses SC.8.E.5.6</p> <p>SC.8.E.5.6 Assessed as SC.8.E.5.5</p>	<p>Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and the solar systems and in determining their motions.</p> <p>Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).</p> <p>Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences.</p> <p style="text-align: center;">END QUARTER 3</p>		<p>Media: http://science360.gov</p> <ul style="list-style-type: none"> • Birth of a Planet

Course# 2002100	Course: 8th Grade Science	Quarter: 4	Pacing:
Unit/Organizing Strand: Earth in Space and Time			
Essential Question(s): What is gravity's role on our changing seasons/tides? How is it possible that objects far from us have such an impact on us? Why is the sun our most important star?			
Benchmarks/Standards:	Target: The student will...	Resources and Activities	
<p>SC.8.E.5.7 Also assesses SC.8.E.5.4 and SC.8.E.5.8</p> <p>SC.8.E.5.9</p> <p>SC.8.E.5.8 Assessed as SC.8.E.5.7</p>	<p>Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions.</p> <p>Explain the impact of objects in space on each other including: the Sun on the Earth including seasons and gravitational attraction and the Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body.</p> <p>Compare various historical models of the Solar System, including geocentric and heliocentric.</p>	<p>Articles: are in MS Articles (conference).</p> <ul style="list-style-type: none"> • Stars • Space-White Dwarfs <p>Writing:</p> <ul style="list-style-type: none"> • Are there galaxies other than the Milky Way that can be seen with the unaided eye? explain, justify and site facts • What is the difference between the universe and the observable universe? <p>Media: http://science.discovery.com</p> <ul style="list-style-type: none"> • The Sun • Solar system <p>Simulations: http://www.jgiesen.de/GeoAstro/GeoAstro.htm</p>	

Course# 2002100	Course: 8th Grade Science	Quarter: 4	Pacing:
Unit/Organizing Strand: Earth in Space and Time, Characteristics of Scientific Knowledge, Science and Society.			
Essential Question(s): How is technology important to further of our knowledge of the universe?			
Benchmarks/Standards:	Target: The student will...		Resources and Activities
<p>SC.8.E.5.10 Assessed as SC.7.N.1.5</p> <p>SC.8.E.5.11 Assessed as SC.7.P.10.1</p> <p>SC.8.N.2.1 Not assessed on FCAT.</p>	<p>Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, communication of information.</p> <p>Identify and compare characteristics of the electromagnetic spectrum such as wavelength, frequency, use, and hazards and recognize its application to an understanding of planetary images and satellite photographs.</p> <p>Distinguish between scientific and pseudoscientific ideas.</p>		<p>Articles: are in MS Articles (conference).</p> <ul style="list-style-type: none"> Edwin Hubble <p>Writing:</p> <ul style="list-style-type: none"> Write a paragraph arguing for or against the advancement of technology, using at least 3 examples that support your point. <p>Writing: Predict how our oceans would be affected if gravitational pull on us from the moon were to lessen.</p>

Course# 2002100	Course: 8th Grade Science	Quarter: 4	Pacing:
Unit/Organizing Strand: Earth in Space and Time , Science and Society			
Essential Question(s): What is the impact of science on our culture, society, economy?			
Benchmarks/Standards:	Target: The student will...	Resources /Activities	
SC.8.E.5.12 Not FCAT assessed. SC.8.N.4.1 Not FCAT assessed. SC.8.N.4.2 Not FCAT assessed.	Summarize the effects of space exploration on the economy and culture of Florida. Explain that science is one of the processes that can be used to inform decision making at the community, state, national and international levels. Explain how political, social and economic concerns can affect science and vice versa.	Media: http://bigthink.com Bill Nye: <ul style="list-style-type: none"> • Why We Explore 	
END SEMESTER 2			