2013 Science Standards Revision

Grade Band/Content Area	Nevada Science Standards	Next Generation Science Standards	Alignment Notes / PD Ideas
Kindergarten to 2nd Grade: Earth and Space Science	E.2.C.3. Students know soils have different colors or textures depending on their composition	K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.	○ *There are 12 complete matches between our current science standards and the NGSS.* ○ *There are 30 partial matches between our current science standards and the NGSS.* ○ *There are 4 standards that do not match any standards in the NGSS.* ○ *There are not any standards out of grade level.*
		K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface.	
		K-PS2-1 Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	

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Kindergarten to 2nd Grade: Life Science	L.2.A.1. Students know animals and plants have offspring that are similar to their parents.	K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface. K-PS2-1 Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive. 3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	○ *There are 10 complete matches between our current science standards and the NGSS.* ○ *There are 14 partial matches between our current science standards and the NGSS.* ○ *There is one standard that do not match any standards in the NGSS.* ○ *There are no standards out of grade level.*

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Kindergarten to 2nd Grade: Physical Science	P.2.A.2 Students know properties of materials can be changed by heating, freezing, mixing, cutting, or bending	2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties	○ *There are 21 complete matches between our current science standards and the NGSS.* ○ *There are 30 partial matches between our current science standards and the NGSS.* ○ *There are 2 standards that do not match any standards in the NGSS.* ○ *There are no standards out of grade level.* ○ *There are 5 NGSS engineering standards (engineering is not addressed in Nevada's current standards)*
		2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land	
		2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.	

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3rd to 5th Grades: Earth and Space Science	E.5.C.2. Students know landforms may result from slow processes (e.g. erosion and deposition) and fast processes (e.g. volcanoes, earthquakes, landslides, flood, and human activity).	2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	○ *There are 14 complete matches between our current science standards and the NGSS.* ○ *There are 4 partial matches between our current science standards and the NGSS.* ○ *There are no standards that do not match any standards in the NGSS.* ○ *There are 12 standards out of grade level due to the fact that students will expected to…* *1) make a model instead of knowing how models work* *2) Measure and graph instead of knowing that graphic representations can be used* *3) Make and support an argument instead of evaluating given information*
		4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	
		4-ESS2-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	

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3rd to 5th Grades: Life Science	P.5.A.3 Students know identifiable properties can be used to separate mixtures.	2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties	○ *There are 14 complete matches between our current science standards and the NGSS.* ○ *There are 10 partial matches between our current science standards and the NGSS.* ○ *There are no standards that do not match any standards in the NGSS.* ○ *There are 5 standards out of grade level due to the fact that students will expected to…* *1) make a model instead of knowing how models work* *2) Measure and graph instead of knowing that graphic representations can be used* *3) Make and support an argument instead of evaluating given information*
		2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land	
		2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.	

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3rd to 5th Grades: Physical Science	P.5.A.2 Students know heating or cooling can change some common materials, such as water, from one state to another.	5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen.	○ *There are 6 complete matches between our current science standards and the NGSS.* ○ *There are 5 partial matches between our current science standards and the NGSS.* ○ *There are no standards that do not match any standards in the NGSS.* ○ *There is one standard out of grade level.* ○ *There are 3 NGSS engineering standards (engineering is not addressed in Nevada's current standards)*
	P.5.A.5 Students know the mass of a material remains constant whether it is together, in parts, or in a different state.	5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	
	P.5.A.6 Students know materials are composed of parts that are too small to be seen without magnification.	5-PS1-3. Make observations and measurements to identify materials based on their properties.	

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6th to 8th Grades: Earth and Space Science	P.2.A.2 Students know properties of materials can be changed by heating, freezing, mixing, cutting, or bending	MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.	○ *There are 24 complete matches between our current science standards and the NGSS.* ○ *There are no partial matches between our current science standards and the NGSS.* ○ *There are no standards that do not match any standards in the NGSS.* ○ *There are 13 standards out of grade level because the committee found that the NGSS builds on the ideas of our current standards in earlier grades and add more rigor than contained at this grade band in our current science standards.*
		MS-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	
		MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	

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6th to 8th Grades: Life Science	L.8.C.1. Students know how matter and energy are transferred through food webs in an ecosystem.	MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	○ *There are 19 complete matches between our current science standards and the NGSS.* ○ *There are no partial matches between our current science standards and the NGSS.* ○ *There are no standards that do not match any standards in the NGSS.* ○ *There is one standard out of grade level.* ○ *There are 4 NGSS engineering standards (engineering is not addressed in Nevada's current standards)*
		MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	
		MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	

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6th to 8th Grades: Physical Science	P.8.C.5. Students know heat energy flows from warmer materials or regions to cooler ones through conduction, convection, and radiation.	MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	○ *There are 21 complete matches between our current science standards and the NGSS.* ○ *There are no partial matches between our current science standards and the NGSS.* ○ *There are no standards that do not match any standards in the NGSS.* ○ *There are 7 standards out of grade level because the committee found that the NGSS builds on the ideas of our current standards in earlier grades and add more rigor than contained at this grade band in our current science standards.* ○ *There are 4 NGSS engineering standards (engineering is not addressed in Nevada's current standards)*
		MS-PS3-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	
		MS-PS3-5. Construct, use, and present arguments to support the claim that when the motion energy of an object changes, energy is transferred to or from the object.	

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9th to 12th Grades: Earth and Space Science	E.12.A.4. Students know convection and radiation play important roles in moving heat energy in the Earth system.	HS-ESS2-1. Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.	○ *There are 14 complete matches between our current science standards and the NGSS.* ○ *There are 5 partial matches between our current science standards and the NGSS.* ○ *There are 4 standards that do not match any standards in the NGSS.* ○ *There is one standard out of grade level not match any standards in the NGSS.*
		HS-ESS2-3. Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.	
		HS-ESS2-4. Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.	

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9th to 12th Grades: Life Science	L.12.C.2. Students know relationships of organisms and their physical environment	HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.	○ *There are 16 complete matches between our current science standards and the NGSS.* ○ *There is one partial match between our current science standards and the NGSS.* ○ *There is one standard that does not match any standards in the NGSS.* ○ *There are no standards out of grade level.*
	L.12.C.3. Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials.	HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	
	L.12.C.4. Students know the unique geologic, hydrologic, climatic, and biological characteristics of Nevada's bioregions.	HS-LS2-1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.	

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9th to 12th Grades: Physical Science	P.12.C.1 Students know waves (i.e. sound, seismic, and electromagnetic) have energy that can be transferred when the waves interact with matter.	HS-PS4-3. Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.	○ *There are 46 complete matches between our current science standards and the NGSS.* ○ *There are no partial matches between our current science standards and the NGSS.* ○ *There are no standards that do not match any standards in the NGSS.* ○ *There are 8 standards out of grade level because the committee found that the NGSS builds on the ideas of our current standards in earlier grades and add more rigor than contained at this grade band in our current science standards.* ○ *There are 4 NGSS engineering standards (engineering is not addressed in Nevada's current standards)*
		HS-PS4-5. Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.	
		MS-PS4-1. Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.	

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The Next Generation Science Standards (NGSS) provide an important opportunity to improve science education and student achievement. Based on the Framework for K–12 Science Education, the NGSS are intended to reflect a new vision for American science education. The following conceptual shifts in the NGSS demonstrate what is new and different about the NGSS:

1) K-12 Science education should reflect the interconnected nature of science as it is practiced and experienced in the real world.
2) The Next Generation Science Standards are student performance expectations and not curriculum.
3) The Science Concepts in the NGSS build coherently from K–12.
4) The NGSS focus on deeper understanding of content as well as application of content.
5) Science and Engineering are integrated in the NGSS, from K–12.
6) The NGSS are designed to prepare students for college, career, and citizenship.
7) The NGSS and Common Core State Standards (English Language Arts and Mathematics) are aligned.

2006 Standards		*2013 Proposed Standards*	*Explanation*
Benchmarks		Performance expectations	Performance expectations Science clarify the expectations of what students will know and be able to do be the end of the grade or grade band. Performance expectations include a student's ability to apply a practice to content knowledge, thereby focusing on understanding and application.
Content Areas • Earth & Space Science • Life Science • Nature of Science • Physical Science		Disciplinary Core Ideas • Earth & Space Science • Engineering & Technology Applications to Science • Life Science • Physical Science	The NGSS has Practices and Nature of Science (NOS) built into each standard. The NGSS extends practices and inquiry to great depth in each of the standards.
Grade Bands (K-2, 3-5, 6-8, 9-12)		Grade Levels and Grade Bands (K, 1, 2, 3, 4, 5, 6-8, 9-12) with horizontal and vertical alignment	Using the combination of grade levels and grade bands along with horizontal and vertical alignment allows one to see the progression for all the science concepts within the standards.
Multiple pages levels		One page	This change is reflective of other NV adopted academic content standards. Each standard was fit into one page for ease of use for classroom teachers for standards-based grading.
Vocabulary embedded		Introductions and Storylines	These sections describe the content that occurs at each grade band. The purpose of these sections is to briefly describe the content at each grade band for each disciplinary core idea across K-12.

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