



Nevada Alternate Assessment

Nevada Academic Content Standard Connectors for Science

Grade 8

Contents

Nevada Academic Content Connectors	2
Example: Science Grade 5.....	2
NAA Science NVAC Connectors - Grade 8.....	3
Structure & Properties of Matter.....	3
Chemical Reactions	3
Forces and Interactions.....	3
Energy.....	4
Waves and Electromagnetic Radiation.....	4
Structure, Function, and Information Processing	5
Matter and Energy in Organisms and Ecosystems.....	5
Interdependent Relationships in Ecosystems	5
Growth, Development, and Reproduction of Organisms.....	6
Natural Selection and Adaptations.....	7
Space Systems	7
History of Earth	7
Earth’s Systems.....	8
Weather and Climate.....	8
Human Impacts.....	8
Engineering Design	9

Nevada Academic Content Connectors

The Nevada Academic Content Connectors (NACC) for Science represents the academic skills upon which students to be instructed. The NACCs for Science are linked to the Nevada Academic Content Standards and represent the key academic knowledge, skills and abilities of the Science content at each grade level. The NVAC Connectors for Science were modeled after the Criterion Referenced Test (CRT) and represent the enduring understanding of the content standards for Science at a given grade level.

Example: Science Grade 5

Nevada Academic Content Standards (NVACS)	NVAC Connectors
Structure and Properties of Matter 0	
5-PS1-1 Develop a model to describe that matter is made of particles too small to be seen. (2)	Describe that matter is made of particles too small to be seen. (3)
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. (2)	Identify a graph that shows how temperature changes affect weight. (3)

(1) NGSS Disciplinary Core Idea Topical Groupings

(2) Science Content Standards

(3) Connectors to the Content Standards

The Nevada Alternate Assessment was developed to allow students an opportunity to fully demonstrate their knowledge in each content area. This ability to demonstrate knowledge of core content and skills is critical as educators seek to provide access to the general education curriculum while fostering higher expectations for students with significant cognitive disabilities.

NAA Science NVAC Connectors - Grade 8

Nevada Academic Content Standards (NVACS)	NVAC Connectors
Structure & Properties of Matter	
MS-PS1-1 Develop models to describe the atomic composition of simple molecules and extended structures.	Develop models to describe the atomic composition of simple atomic structures.
MS-PS1-3 Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	Examine where resources for man-made materials are found.
MS-PS1-4 Develop a model that predicts and describes changes in particle motion, temperature, and a state of a pure substance when thermal energy is added or removed.	Make a model that describes how changes in temperature cause changes in particle motion. (Molecules)
Chemical Reactions	
MS-PS1-2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	Determine if a chemical reaction has occurred when two substances are combined.
MS-PS1-5 Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	Use a model to describe how chemical changes do not change the total number of atoms.
MS-PS1-6 Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	Investigate chemical reactions that either produce or absorb thermal energy.
Forces and Interactions	
MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	Use "equal but opposite force" concepts to explain the motion of two objects colliding.
MS-PS2-2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	Explain how an object's motion depends on the force and/or mass of the object.
MS-PS2-3 Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	Examine the relationship between the distance and the strength of magnetic forces of two magnets.
MS-PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	Use evidence to describe how gravitational forces are related to both mass and distance.
MS-PS2-5 Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	Understand that forces can occur across distances without contact. (Field forces such as gravity, magnets, electric fields)

Nevada Academic Content Standards (NVACS)	NVAC Connectors
Energy	
MS-PS3-1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	Use graphs or charts to explain how energy is related to the speed and mass of an object.
MS-PS3-2 Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	Describe the relationship between distance from earth's surface and the amount of potential stored energy of an object.
MS-PS3-3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	Use materials as insulators or conductors based on their ability to support or prevent temperature changes of an object.
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.	Use energy concepts to explain how the temperature of an object can change.
MS-PS3-5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	Recognize that energy can be transferred from one object to another.
Waves and Electromagnetic Radiation	
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.	Describe that all waves transfer energy and the size (height) of the wave is related to the energy.
MS-PS4-2 Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	Use a model to explain what happens when waves hit a new material.
MS-PS4-3 Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	Understand that waves are used in communication.

Nevada Academic Content Standards (NVACS)	NVAC Connectors
Structure, Function, and Information Processing	
MS-LS1-1 Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	Examine the provided evidence to prove that living things are made of cells.
MS-LS1-2 Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	Demonstrate how cells can organize and work together in large groups.
MS-LS1-3 Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	Examine evidence of how body systems work together. (Nervous system – the senses, muscular system)
MS-LS1-8 Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.	Gather information about how the brain interprets interactions with the environment (senses).
Matter and Energy in Organisms and Ecosystems	
MS-LS1-6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	Use explanations to describe how plants cycle matter as they transfer energy from the sun. (Photosynthesis)
MS-LS1-7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	Develop an explanation from a model about how food is used to provide for growth and energy.
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.	Use data to explain how populations are dependent upon resource availability in the 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.	Use a model to describe how living and non-living parts of an ecosystem relate (Energy & matter)
MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	Use data to describe how populations of an ecosystem can be affected.
Interdependent Relationships in Ecosystems	
MS-LS2-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	Interpret the patterns of different organisms in different ecosystems, which allow them to survive. (Ex. Wolves, lions, whales hunting in packs)
MS-LS2-5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	Determine which solution would best support a sustained ecosystem.

Nevada Academic Content Standards (NVACS)	NVAC Connectors
Growth, Development, and Reproduction of Organisms	
MS-LS1-4 Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.	Identify characteristics and behaviors that will allow plants and animals to survive.
MS-LS1-5 Construct a scientific explanation based on evidence for environmental and genetic factors influence the growth of organisms.	Explain how the environment and genetics influences the growth of an organism.
MS-LS3-1 Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	Understand that the genetic makeup can change; some of these changes help an organism survive, some have no effect, while others can be harmful.
MS-LS3-2 Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	Identify organisms that reproduce identical offspring and organisms that reproduce offspring with different characteristics.
MS-LS4-5 Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.	Use evidence to explain how humans artificially select for desired characteristics of plants and animals.

Nevada Academic Content Standards (NVACS)	NVAC Connectors
Natural Selection and Adaptations	
MS-LS4-1 Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.	Recognize that patterns in the fossil record show how life has changed over time.
MS-LS4-2 Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.	Compare anatomical similarities and differences between fossils and modern organisms to show evolutionary relationships.
MS-LS4-3 Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationship not evident in the fully formed anatomy.	Compare similarities between embryonic stages of development from different organisms to identify common features not found in adults.
MS-LS4-4 Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.	Explain how adaptations/genetics influence survival of an organism and its population.
MS-LS4-6 Use mathematical representations to support explanations of how natural selection may lead to increases and decreases in specific traits over time.	Use mathematical representation (arrows, +, -, =) to describe how natural selection causes traits to change.
Space Systems	
MS-ESS1-1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.	Use representations of the Earth, sun, or moon to explain that seasons are a direct result of Earth's tilt, not the distance from the sun.
MS-ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.	Understand that gravitation force is the main mechanism controlling motion in the solar system.
MS-ESS1-3 Analyze and interpret data to determine scale properties of objects in the solar system.	Use data to describe the sizes of objects in the solar system.
History of Earth	
MS-ESS1-4 Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.	Explain how rock layers are used to organize Earth's geologic history.
MS-ESS2-2 Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	Use examples from evidence to explain Earth's surface has changed both rapidly and slowly over time.
MS-ESS2-3 Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.	Use the location of fossils, rocks, and land shapes to describe plate tectonics.

Nevada Academic Content Standards (NVACS)	NVAC Connectors
Earth's Systems	
MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	Use a model to describe how Earth's materials change through time.
MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	Use a model to describe how the sun and gravity cycle water on earth.
MS-ESS3-1 Construct a scientific explanation based on evidence for how the uneven distributions on Earth's mineral, energy, and groundwater resources are the results of past and current geoscience processes.	Explain Earth's resources are unequally distributed due to past Earth processes. (Mineral, energy, and water)
Weather and Climate	
MS-ESS2-5 Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.	Explain that weather is caused by changes in air masses.
MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	Describe how regional climates (weather over greater than 30-year periods of time) are controlled by the unequal heating of Earth's surface.
MS-ESS3-5 Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	Compare the last 200 years of human activity and changes in global temperatures.
Human Impacts	
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.	Use data to describe how some geological process can and cannot be predicted.
MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	Describe ways humans monitor and minimize their impact on the environment.
MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.	Describe how changes in human population results in the demand for natural resources.

Nevada Academic Content Standards (NVACS)	NVAC Connectors
Engineering Design	
MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	Use scientific principles in the development of criteria and constraints for a design solution.
MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	Compare different solutions and explain why one is better than the other.
MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	Examine multiple solutions and select a combination of the solutions to solve a problem.
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	Describe the importance of multiple tests when developing a design.