



2022 Science Standards

Reference for Curricular Materials

The purpose of this document is to assist educators in aligning the 2022 Idaho Content Standards for Science to existing science curricular materials. This document is organized by grade level K-5, grade bands 6-8 and 9-12.

*NA in the National Standard column indicates there is not a correlated standard with the Idaho Standard.

Kindergarten Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
K-PS-1.1 Pushes, Pulls, and Motion	K-PS2-1	With guidance and support, 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.	Planning & Carrying Out Investigations	Cause & Effect
K-PS-1.2 Motion Design Solution	K-PS2-2	With guidance and support, analyze data to determine if a design solution works as intended to change the motion of an object with a push or a pull.	Analyzing & Interpreting Data	Cause & Effect
K-PS-2.1 Sun's Energy Warms the Earth	K-PS3-1	Make observations to determine the effect of the Sun's energy on the Earth's surface.	Planning and Carrying Out Investigations	Cause & Effect
K-PS-2.2 Shade Structure Design	K-PS3-2	Design and build a structure that will reduce the warming effect of the Sun's energy on a material.	Constructing Explanations & Designing Solutions	Engineering
K-LS-1.1 Plant and Animal Needs	K-LS1-1	Use observations to describe how plants and animals are alike and different in terms of how they live and grow.	Analyzing & Interpreting Data	Patterns

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
K-ESS-1.1 Weather Patterns	K-ESS2-1	Use and share observations of local weather conditions to describe variations in patterns throughout the year.	Analyzing & Interpreting Data	Patterns
K-ESS-1.2 Environmental Interactions	K-ESS2-2	With guidance and support, use evidence to construct an explanation of how plants and animals interact with their environment to meet their needs.	Engaging in Argument from Evidence	Systems and System Models
K-ESS-2.1 Environmental Relationships	K-ESS3-1	Use a model to represent the relationship between the needs of different plants and animals and the places they live.	Developing and Using Models	Systems and System Models
K-ESS-2.2 Forecasting Severe Weather	K-ESS3-2	Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.	Asking Qs, Defining Problems	Cause and Effect
K-ESS-2.3 Environmental Solutions	K-ESS3-3	Communicate ideas that would enable humans to interact in a beneficial way with the land, water, air, and/or other living things in the local environment.	Obtaining, Evaluating, and Communicating Information	Cause and Effect

First Grade Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
1-PS-1.1 Sound & Vibrating Materials	1-PS4-1	With guidance and support, plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	Planning and Carrying Out Investigations	Cause and Effect
1-PS-1.2 Illumination and Darkness	1-PS4-2	With guidance and support, make observations to construct an evidence-based explanation that objects in darkness can be seen only when illuminated.	Constructing Explanation, Designing Solutions	Cause and Effect
1-PS-1.3 Light and Materials	1-PS4-3	With guidance and support, plan and conduct investigations to determine the effect of placing materials in the path of a beam of light.	Planning and Carrying Out Investigations	Cause and Effect
1-PS-1.4 Communication Device Design	1-PS4-4	Design and build a device that uses light or sound to communicate over a distance.	Constructing Explanation, Designing Solutions	Engineering
1-LS-1.1 Biomimicry Design Solution	1-LS1-1	Design and build a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	Constructing Explanation, Designing Solutions	Structure and Function
1-LS-1.2 Behavior - Parents and Offspring	1-LS1-2	Obtain information to identify patterns of behavior in parents and offspring that help offspring survive.	Obtaining, Evaluating, Communicate Information	Patterns
1-LS-1.3 Living vs Non-living	NA	Use classification supported by evidence to differentiate between living and non-living items.	Analyzing & Interpreting Data	Patterns

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
1-LS-2.1 Parents & Offspring	1-LS3-1	Make observations to construct an evidence-based explanation that offspring are similar to, but not identical to, their parents.	Constructing Explanation, Designing Solutions	Patterns
1-ESS-1.1 Sun, Moon, and Star Patterns	1-ESS1-1	Use observations of the Sun, Moon, and stars to describe patterns that can be predicted.	Analyzing and Interpreting Data	Patterns
1-ESS-1.2 Seasonal Sunlight	1-ESS1-2	Make observations at different times of year to relate the amount of daylight to the time of year.	Planning and Carrying Out Investigations	Patterns

Second Grade Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
2-PS-1.1 Material Properties	2-PS1-1	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Planning and Carrying Out Investigations	Patterns
2-PS-1.2 Materials Testing	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.	Analyzing and Interpreting Data	Cause and Effect
2-PS-1.3 Objects and Pieces	2-PS1-3	Make observations to construct an evidence-based argument that objects, when disassembled, may be used to create new objects using the same set of components.	Constructing Explanations and Designing Solutions	Energy and Matter
2-PS-1.4 Reversible & Irreversible Changes	2-PS1-4	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	Engaging in Argument from Evidence	Cause and Effect
2-LS-1.1 Plant Needs	2-LS2-1	Plan and conduct an investigation to determine the impact of light and water on the growth of plants.	Planning and Carrying Out Investigations	Cause and Effect
2-LS-1.2 Seeds & Pollination	2-LS2-2	Develop a model that demonstrates how plants depend on animals for pollination or the dispersal of seeds.	Developing and Using Models	Structure and Function
2-LS-2.1 Habitats and Biodiversity	2-LS4-1	Make observations of plants and animals to compare the diversity of life in different habitats.	Planning and Carrying Out Investigations	Patterns

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
2-ESS-1.1 Earth Events	2-ESS1-1	Use information from several sources to provide evidence that Earth events can occur quickly or slowly.	Constructing Explanations, Designing Solutions	Stability and Change
2-ESS-2.1 Erosion Design Solution	2-ESS2-1	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	Constructing Explanations, Designing Solutions	Stability and Change
2-ESS-2.2 Mapping Land & Water	2-ESS2-2	Develop a model to represent the shapes and kinds of land and bodies of water in an area.	Developing and Using Models	Patterns
2-ESS-2.3 Water on Earth	2-ESS2-3	Obtain information to identify where water is found on Earth and that it can be solid or liquid.	Obtaining, & Communicating Information	Patterns

Third Grade Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
3-PS-1.1 Balanced and Unbalanced Forces	3-PS2-1	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	Planning and Carrying Out Investigations	Cause and Effect
3-PS-1.2 Predicting Future Motion	3-PS2-2	Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion.	Planning and Carrying Out Investigations	Patterns
3-PS-1.3 Electric & Magnetic Forces	3-PS2-3	Ask questions to determine cause and effect relationships of static electricity or magnetic interactions between two objects not in contact with each other.	Asking Questions and Defining Problems	Cause and Effect
3-PS-1.4 Magnetic Design Solution	3-PS2-4	Define a problem that can be solved by applying scientific ideas about magnets.	Asking Questions and Defining Problems	Engineering
3-LS-1.1 Life Cycles	3-LS1-1	Develop models to demonstrate that living things, although they have unique and diverse life cycles, all have birth, growth, reproduction, and death in common.	Developing and using models	Patterns
3-LS-2.1 Animal Groups	3-LS2-1	Construct an argument that some animals form groups that help members survive.	Engaging in Argument from Evidence	Cause and Effect
3-LS-3.1 Inheritance & Variation of Traits	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.	Analyzing and Interpreting Data	Patterns

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
3-LS-3.2 Environmental Influence on Traits	3-LS3-2	Use evidence to support the explanation that traits can be influenced by the environment.	Constructing Explanations and Designing Solutions	Cause and Effect
3-LS-3.3 Adaptations and Survival	3-LS4-3	Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	Engaging in Argument from Evidence	Cause and Effect
3-ESS-1.1 Seasonal Weather Conditions	3-ESS2-1	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Analyzing and Interpreting Data	Patterns
3-ESS-1.2 World Climates	3-ESS2-2	Obtain and combine information to describe climates in different regions of the world.	Obtaining, Evaluating, and Communicating Information	Patterns
3-ESS-2.1 Weather-Related Hazard Solution	3-ESS3-1	Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	Engaging in Argument from Evidence	Cause and Effect

Fourth Grade Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
4-PS-1.1 Motion Energy	4-PS3-1	Use evidence to construct an explanation relating the speed of an object to the energy of that object.	Constructing Explanations and Designing Solutions	Energy and Matter
4-PS-1.2 Energy Transfer	4-PS3-2	Make observations to provide evidence that energy can be transferred by heat, sound, light, and electric currents.	Planning and Carrying Out Investigations	Energy and Matter
4-PS-1.3 Energy in Collisions	4-PS3-3	Ask questions and predict outcomes about the changes in energy that occur when objects collide.	Asking Questions and Defining Problems	Energy and Matter
4-PS-1.4 Energy Conversion Device	4-PS3-4	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	Constructing Explanations and Designing Solutions	Energy and Matter
4-PS-2.1 Wave Model	4-PS4-1	Develop a model of a simple mechanical wave to describe patterns of amplitude and wavelength and that waves can cause objects to move.	Developing and Using Models	Patterns
4-PS-2.2 Light and Vision	4-PS4-2	Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	Developing and Using Models	Cause and Effect
4-PS-2.3 Information Transfer Solution	4-PS4-3	Generate and compare multiple solutions that use patterns to transfer information.	Constructing Explanations, Designing Solutions	Patterns

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
4-LS-1.1 Internal and External Structures	4-LS1-1	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Engaging in Argument from Evidence	Systems and System Models
4-LS-1.2 Sensation, Processing, and Response	4-LS1-2	Use a model to describe how animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	Developing and Using Models	Systems and System Models
4-ESS-1.1 Evidence from Rock Layers	4-ESS1-1	Identify evidence from patterns in rock formations and fossils in rock layers for changes in a landscape over time to support an explanation for changes in a landscape over time.	Constructing Explanations and Designing Solutions	Patterns
4-ESS-2.1 Weathering and Erosion	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.	Planning and Carrying Out Investigations	Cause and Effect
4-ESS-2.2 Mapping Earth's Features	4-ESS2-2	Analyze and interpret data from maps to describe patterns of Earth's features.	Analyzing and Interpreting Data	Patterns
4-ESS-3.1 Natural Resources & Energy	4-ESS3-1	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	Obtaining, Evaluating, and Communicating Information	Cause and Effect
4-ESS-3.2 Natural Hazard Design Solution	4-ESS3-2	Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	Constructing Explanations and Designing Solutions	Cause and Effect

Fifth Grade Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
5-PS-1.1 Particle Model of Matter	5-PS1-1	Develop a model to describe that matter is made of particles too small to be seen.	Developing and Using Models	Scale, Proportion, and Quantity
5-PS-1.2 Conservation of Matter	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.	Using Mathematics and Computational Thinking	Scale, Proportion, and Quantity
5-PS-1.3 Material Properties	5-PS1-3	Make observations and measurements to identify materials based on their properties.	Planning and Carrying Out Investigations	Scale, Proportion, and Quantity
5-PS-1.4 Mixing Substances	5-PS1-4	Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	Planning and Carrying Out Investigations	Cause and Effect
5-PS-2.1 Gravitational Force	5-PS2-1	Support an argument that Earth's gravitational force exerted on objects is directed downward.	Engaging in Argument from Evidence	Cause and Effect
5-PS-3.1 Food Energy from the Sun	5-PS3-1	Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the Sun.	Developing and Using Models	Energy and Matter
5-LS-1.1 Plant Requirements	5-LS1-1	Support an argument that plants get what they need for growth chiefly from air, water, and energy from the Sun.	Engaging in Argument from Evidence	Energy and Matter

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
5-LS-2.1 Fossil Evidence of Past Environments	5-LS4-1	Analyze and interpret data from fossils to provide evidence of the types of organisms and the environments that existed long ago and compare those to living organisms and their environments.	Analyzing and Interpreting Data	Scale, Proportion, and Quantity
5-LS-2.2 Variation, Survival, and Reproduction	5-LS4-2	Construct an argument with evidence for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	Constructing Explanations and Designing Solutions	Cause and Effect
5-LS-2.3 Environmental Change Solution	5-LS4-4	Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals living there may change.	Engaging in Argument from Evidence	Systems and System Models
5-LS-2.4 Matter Cycles	5-LS2-1	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Developing and Using Models	Systems and System Models
5-ESS-1.1 Stellar Brightness and Distance	5-ESS1-1	Support an argument that differences in the apparent brightness of the Sun compared to other stars is due to their relative distances from the Earth.	Engaging in Argument from Evidence	Scale, Proportion, and Quantity
5-ESS-1.2 Daily and Seasonal Sky Changes	5-ESS1-2	Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Analyzing and Interpreting Data	Patterns
5-ESS-2.1 Earth Sphere Interactions	5-ESS2-1	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	Developing and Using Models	Systems & System Models

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5-ESS-2.2 Water Availability and Distribution	5-ESS2-2	Describe and graph the relative amounts of fresh and salt water in various reservoirs, to interpret and analyze the distribution of water on Earth.	Using Mathematics and Computational Thinking	Scale, Proportion, and Quantity
5-ESS-3.1 Protecting Earth's Resources	5-ESS3-1	Obtain and combine information about ways communities protect Earth's resources and environment using scientific ideas.	Obtaining, Evaluating, and Communicating Information	Systems and System Models

Middle School Physical Science Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
MS-PS-1.1 Atomic Model	PS 1-1	Develop models to describe the atomic composition of simple molecules.	Developing and Using Models	Scale, Proportion and Quantity
MS-PS-1.2 Chemical Properties and Reactions	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.	Analyzing and Interpreting Data	Patterns
MS-PS-1.3 Synthetic Materials	PS 1-3	Construct a scientific explanation, based on evidence, to describe that synthetic materials come from natural resources.	Obtaining, Evaluating, and Communicating Information	Structure and Function
MS-PS-1.4 Thermal Energy and Particle Motion	PS 1-4	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	Developing and Using Models	Cause and Effect
MS-PS-1.5 Conservation of Mass	PS 1-5	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.	Developing and Using Models	Energy and Matter
MS-PS-1.6 Thermal Energy Design Project	PS 1-6	Undertake a design project to construct, test, and/or modify a device that either releases or absorbs thermal energy by chemical processes.	Constructing Explanations and Designing Solutions	Energy and Matter

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
MS-PS-2.1 Collision Design Solution	PS 2-1	Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	Constructing Explanations and Designing Solutions	Systems and System Models
MS-PS-2.2 Forces, Mass and the Motion of an Object	PS 2-2	Plan and conduct 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.	Planning and Carrying Out Investigations	Stability and Change
MS-PS-2.3 Electric and Magnetic Forces	PS 2-3	Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	Asking Questions and Defining Problems	Cause and Effect
MS-PS-2.4 Gravitational Interactions	PS 2-4	Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	Engaging in Argument from Evidence	Systems and System Models
MS-PS-2.5 Electric and Magnetic Fields	PS 2-5	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.	Planning and Carrying Out Investigations	Cause and Effect
MS-PS-3.1 Kinetic Energy	PS 3-1	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.	Analyzing and Interpreting Data	Scale, Proportion and Quantity

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
MS-PS-3.2. Potential Energy	PS 3-2	Develop a model to describe the relationship between the relative positions of objects interacting at a distance and the relative potential energy in the system.	Developing and Using Models	Systems and System Models
MS-PS-3.3 Thermal Energy Transfer Solution	PS 3-3	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	Constructing Explanations and Designing Solutions	Energy and Matter
MS-PS-3.4 Thermal Energy Transfer	PS 3-4	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.	Planning and Carrying Out Investigations	Scale, Proportion and Quantity
MS-PS-3.5 Energy Transfer to or from an Object	PS 3-5	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.	Engaging in Argument from Evidence	Energy and Matter
MS-PS-4.1 Wave Properties	PS 4-1	Use diagrams of a simple wave to explain that (1) a wave has a repeating pattern with a specific amplitude, frequency, and wavelength, and (2) the amplitude of a wave is related to the energy in the wave.	Developing and Using Models	Patterns
MS-PS-4.2 Wave Reflection, Absorption, and Transmission	PS 4-2	Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	Developing and Using Models	Structure and Function

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
MS-PS-4.3 Digitized Wave Signals	PS 4-3	Present qualitative scientific and technical information to support the claim that digitized signals (0s and 1s) can be used to encode and transmit information.	Obtaining, Evaluating, and Communicating Information	Structure and Function

Middle School Life Science Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
MS-LS-1.1 Cell Theory	LS 1-1	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	Planning and Carrying Out Investigations	Scale, Proportion, Quantity
MS-LS-1.2 Cell Parts and Function	LS 1-2	Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	Developing and Using Models	Structure and Function
MS-LS-1.3 Interacting Body Systems	LS 1-3	Make a claim supported by evidence for how a living organism is a system of interacting subsystems composed of groups of cells.	Engaging in Argument from Evidence	Systems & System Models
MS-LS-1.4 Characteristics of Life	NA	Construct a scientific argument based on evidence to defend a claim of life for a specific object or organism.	Engaging in Argument from Evidence	Structure and Function
MS-LS-1.5 Photosynthesis - Matter Cycling and Energy Flow	LS 1-6	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.	Constructing Explanations and Designing Solutions	Energy and Matter
MS-LS-1.6 Food and Chemical Reactions	LS 1-7	Develop a conceptual model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as matter moves through an organism.	Developing and Using Models	Energy and Matter
MS-LS-2.1 Effects of Resource Availability	LS 2-1	Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	Analyzing and Interpreting Data	Cause and Effect

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
MS-LS-2.2 Relationships in Ecosystems	LS 2-2	Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	Constructing Explanations and Designing Solutions	Patterns
MS-LS-2.3 Matter Cycling and Energy Flow in Ecosystems	LS 2-3	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	Developing and Using Models	Energy and Matter
MS-LS-2.4 Energy Flow & Trophic Levels	NA	Develop a model to describe the flow of energy through the trophic levels of an ecosystem.	Developing and Using Models	Energy and Matter
MS-LS-2.5 Ecosystem Interactions	LS 2-4	Construct an argument supported by evidence that changes to physical or biological components of an ecosystem affect populations.	Engaging in Argument from Evidence	Stability and Change
MS-LS-2.6 Biodiversity and Ecosystem Services Solutions	LS 2-5	Design and evaluate solutions for maintaining biodiversity and ecosystem services.	Constructing Explanations and Designing Solutions	Stability and Change
MS-LS-3.1 Mutations - Harmful, Beneficial or Neutral	LS 3-1	Develop and use a model to describe why mutations may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	Developing and Using Models	Structure and Function
MS-LS-3.2 Asexual and Sexual Reproduction	LS 3-2	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.	Developing and Using Models	Cause and Effect

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
MS-LS-4.1 Fossil Evidence of Common Ancestry	LS 4-1	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.	Analyzing and Interpreting Data	Patterns
MS-LS-4.2 Anatomical Evidence of Evolutionary Relationships	LS 4-2	Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer relationships.	Constructing Explanations and Designing Solutions	Patterns
MS-LS-4.3 Homologous Structures	NA	Analyze visual evidence to compare patterns of similarities in the anatomical structures across multiple species of similar classification levels to identify relationships.	Analyzing and Interpreting Data	Patterns
MS-LS-4.4 Natural Selection	LS 4-4	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.	Constructing Explanations and Designing Solutions	Cause and Effect
MS-LS-4.5 Artificial Selection	LS 4-5	Obtain, evaluate, and communicate information about how technologies allow humans to influence the inheritance of desired traits in organisms.	Obtaining, Evaluating, Communicating Information	Cause and Effect
MS-LS-4.6 Adaptation of Populations over Time	LS 4-6	Use mathematical models to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	Using Mathematics and Computational Thinking	Cause and Effect

Middle School Earth/Space Science Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
MS-ESS-1.1 Earth-Sun-Moon System	ESS 1-1	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.	Developing and Using Models	Patterns
MS-ESS-1.2 Gravity and Motions in Space	ESS 1-2	Develop and use a model to describe the role of gravity in the orbital motions within galaxies and the solar system.	Developing and Using Models	Systems and System Models
MS-ESS-1.3 Scale Properties in the Solar System	ESS 1-3	Analyze and interpret data to determine scale properties of objects in the solar system.	Analyzing & Interpreting Data	Scale, Proportion, & Quantity
MS-ESS-1.4 Geologic Time Scale	ESS 1-4	Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to analyze Earth's history	Constructing Explanation, Designing Solutions	Scale, Proportion, and Quantity
MS-ESS-2.1 Cycling of Earth's Materials	ESS 2-1	Develop a model to describe the cycling of Earth's materials and the internal and external flows of energy that drive the rock cycle processes.	Developing and Using Models	Stability and Change
MS-ESS-2.2 Geoscience Processes at Varying Scales	ESS 2-2	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	Constructing Explanation, Designing Solutions	Scale, Proportion, and Quantity

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
MS-ESS-2.3 Evidence of Plate Tectonics	ESS 2-3	Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.	Analyzing & Interpreting Data	Patterns
MS-ESS-2.4 Cycling of Water Through Earth's Systems	ESS 2-4	Develop a model to describe the cycling of water through Earth's systems driven by energy from the Sun and the force of gravity.	Developing and Using Models	Energy and Matter
MS-ESS-2.5 Interacting Air Masses and Weather	ESS 2-5	Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.	Planning & Carrying Out Investigations	Cause and Effect
MS-ESS-2.6 Atmospheric and Oceanic Circulation	ESS 2-6	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.	Developing and Using Models	Systems and System Models
MS-ESS-3.1 Uneven Distribution of Earth's Resources	ESS 3-1	Construct a scientific explanation based on evidence for how Earth's mineral, energy, and groundwater resources are unevenly distributed as a result of past and current geologic processes.	Constructing Explanation, Designing Solutions	Cause and Effect
MS-ESS-3.2 Natural Hazards	ESS 3-2	Analyze and interpret data on natural hazards to forecast future catastrophic events to mitigate their effects.	Analyzing & Interpreting Data	Patterns

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
MS-ESS-3.3 Human Impact on the Environment	ESS 3-3	Apply scientific practices to design a method for monitoring human activity and increasing beneficial human influences on the environment.	Constructing Explanation, Designing Solutions	Cause and Effect
MS-ESS-3.4 Human Consumption of Natural Resources	ESS 3-4	Construct an argument based on evidence for how changes in human population and per-capita consumption of natural resources positively and negatively affect Earth's systems.	Engaging in Argument from Evidence	Cause and Effect
MS-ESS-3.5 Climate Variability	ESS 3-5	Ask questions to interpret evidence of the factors that cause climate variability throughout Earth's history.	Asking Questions and Defining Problems	Stability and Change

High School Physical Science-Chemistry Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-PSC-1.1 Atomic Structure	NA	Develop models to describe the atomic composition of simple molecules and extended structures.	Developing and Using Models	Structure & Function
HS-PSC-1.2 Valence Electrons and Properties of Elements	PS 1-1	Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.	Developing and Using Models	Patterns
HS-PSC-1.3 Electrical Forces and Bulk Scale Structure	PS 1-3	Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrostatic forces between particles.	Planning and Carrying Out Investigations	Patterns
HS-PSC-1.4 Fission, Fusion, & Radioactive Decay	PS 1-8	Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and the various modes of radioactive decay.	Developing and Using Models	Energy and Matter
HS-PSC-1.5 Molecular-Level Structure of Designed Materials	PS 2-6	Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.	Obtaining, Evaluating, and Communicating Information	Structure and Function

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-PSC-2.1 Chemical Reactions	PS 1-2	Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.	Constructing Explanations	Patterns
HS-PSC-2.2 Thermal Energy and Particle Motion	PS 1-4	Develop a model to illustrate that the energy transferred during an exothermic or endothermic chemical reaction is based on the bond energy difference between bonds broken (absorption of energy) and bonds formed (release of energy).	Developing and Using Models	Energy and Matter
HS-PSC-2.3 Collision Theory and Rates of Reaction	PS 1-5	Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.	Constructing Explanations	Patterns
HS-PSC-2.4 Conservation of Mass	PS 1-7	Use mathematical representations to support the claim that the number and type of atoms, and therefore mass, are conserved during a chemical reaction.	Using Mathematics & Computational Thinking	Energy and Matter
HS-PSC-3.1 Wave-Particle Duality of EM Radiation	PS 4-3	Ask questions to clarify the idea that electromagnetic radiation can be described either by a wave model or a particle model.	Asking Questions, Defining Problems	Systems and System Models
HS-PSC-3.2 Energy Change in Components of a System	PS 3-1	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.	Using Mathematics and Computational Thinking	Systems and System Models

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-PSC-3.3 Macroscopic Energy Due to Particle Position and Motion	PS 3-2	Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).	Developing and Using Models	Energy and Matter
HS-PSC-3.4* Energy Conversion Device Design	PS 3-3	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. ---OPTIONAL	Designing Solutions	Energy and Matter
HS-PSC-3.5 Energy Change Due to Interacting Fields	PS 3-5	Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).	Developing and Using Models	Cause and Effect

High School Physical Science-Physics Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-PSP-1.1 Newton's Second Law of Motion	PS 2-1	Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.	Analyzing and Interpreting Data	Cause and Effect
HS-PSP-1.2 Conservation of Momentum	PS 2-2	Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system	Using Mathematics and Computational Thinking	Systems and System Models
HS-PSP-1.3 Reducing Force in Collisions Device	PS 2-3	Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.	Designing Solutions	Cause and Effect
HS-PSP-1.4 Gravitational and Electrostatic Forces	PS 2-4	Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.	Using Mathematics and Computational Thinking	Patterns
HS-PSP-1.5 Electric Current and Magnetic Fields	PS 2-5	Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.	Planning and Carrying Out Investigations	Cause and Effect

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-PSP-1.6 Molecular-Level Structure of Designed Materials	PS 2-6	Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.	Obtaining, Evaluating, and Communicating Information	Structure and Function
HS-PSP-2.1 Energy Change in Components of a System	PS 3-1	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.	Using Mathematics and Computational Thinking	Systems and System Models
HS-PSP-2.2 Macroscopic Energy Due to Particle Position and Motion	PS 3-2	Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).	Developing and Using Models	Energy and Matter
HS-PSP-2.3 Energy Conversion Device Design	PS 3-3	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.	Designing Solutions	Energy and Matter
HS-PSP-2.4 The Second Law of Thermodynamics	PS 3-4	Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).	Planning and Carrying Out Investigations	Systems and System Models
HS-PSP-2.5 Energy Change Due to Interacting Fields	PS 3-5	Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.	Developing and Using Models	Cause and Effect

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-PSP-3.1 Wave Properties in Various Media	PS 4-1	Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.	Using Mathematics and Computational Thinking	Cause and Effect
HS-PSP-3.2 Digital Transmission and Storage of Information	PS 4-2	Evaluate questions about the advantages of using digital transmission and storage of information.	Asking Questions	Stability and Change
HS-PSP-3.3 Wave-Particle Duality of Electromagnetic Radiation	PS 4-3	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.	Engaging in Argument from Evidence	Systems and System Models
HS-PSP-3.4 Absorption of Electromagnetic Radiation	PS 4-4	Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.	Obtaining, Evaluating, and Communicating Information	Cause and Effect
HS-PSP-3.5 Waves & Information Technology	PS 4-5	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.	Obtaining, Evaluating, and Communicating Information	Cause and Effect

High School Life Science Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-LS-1.1 DNA, Genes, and Proteins	LS 1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.	Constructing Explanations and Designing Solutions	Structure and Function
HS-LS-1.2 Interacting Body Systems	LS 1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	Developing and Using Models	Systems and System Models
HS-LS-1.3 Feedback Mechanisms and Homeostasis	LS 1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.	Planning and Carrying Out Investigations	Stability and Change
HS-LS-1.4 Cellular Division and Differentiation	LS 1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	Developing and Using Models	Systems and System Models
HS-LS-1.5 Photosynthesis and Energy Transformation	LS 1-5	Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.	Developing and Using Models	Energy and Matter
HS-LS-1.6 Formation of Carbon-Based Molecules	LS 1-6	Construct an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.	Constructing Explanations and Designing Solutions	Energy and Matter

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-LS-1.7 Cellular Respiration and Energy Transfer	LS 1-7	Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy.	Developing and Using Models	Energy and Matter
HS-LS-2.1 Carrying Capacity of Ecosystems	LS 2-1	Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.	Using Mathematics, Computational Thinking	Scale, Proportion, and Quantity
HS-LS-2.2 Biodiversity and Populations in Ecosystems	LS 2-2	Use mathematical representations to support explanations that biotic and abiotic factors affect biodiversity at different scales within an ecosystem.	Using Mathematics, Computational Thinking	Scale, Proportion, and Quantity
HS-LS-2.3 Aerobic and Anaerobic Cycling of Matter	LS 2-3	Construct an explanation using mathematical representations to support claims for the flow of energy through trophic levels and the cycling of matter in an ecosystem.	Constructing Explanations and Designing Solutions	Energy and Matter
HS-LS-2.4 Cycling of Carbon in Ecosystems	LS 2-5	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.	Developing and Using Models	Systems and System Models
HS-LS-2.5 Ecosystem Dynamics	LS 2-6	Evaluate the claims, evidence, and reasoning that changing the conditions of a static ecosystem may result in a new ecosystem.	Engaging in Argument from Evidence	Stability and Change

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-LS-2.6 Human Impact Reduction Solution	LS 2-7	Design, evaluate, and/or refine practices used to manage a natural resource based on direct and indirect influences of human activities on biodiversity and ecosystem health.	Constructing Explanations and Designing Solutions	Stability and Change
HS-LS-2.7 Social Interactions and Group Behavior	LS 2-8	Evaluate the evidence for the role of group behavior on individual and species' ability to survive and reproduce.	Engaging in Argument from Evidence	Cause and Effect
HS-LS-3.1 Chromosomal Inheritance	LS 3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring	Asking Questions and Defining Problems	Cause and Effect
HS-LS-3.2 Inheritable Genetic Variation	LS 3-2	Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.	Engaging in Argument from Evidence	Cause and Effect
HS-LS-3.3 Variation and Distribution of Traits	LS 3-3	Apply concepts of probability and statistical analysis to explain the variation and distribution of expressed traits in a population.	Analyzing and Interpreting Data	Scale, Proportion, and Quantity
HS-LS-4.1 Evidence of Common Ancestry and Diversity	LS 4-1	Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.	Obtaining, Evaluating, Communicating Information	Patterns

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-LS-4.2 Four Factors of Natural Selection	LS 4-2	Construct an explanation based on evidence that the process of evolution, through the mechanism of natural selection, primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.	Constructing Explanations and Designing Solutions	Cause and Effect
HS-LS-4.3 Adaptation of Populations	LS 4-3	Apply concepts of probability and statistical analysis to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait	Analyzing and Interpreting Data	Patterns
HS-LS-4.4 Natural Selection Leads to Adaptation	LS 4-4	Construct an explanation based on evidence for how natural selection leads to adaptation of populations.	Constructing Explanations and Designing Solutions	Cause and Effect
HS-LS-4.5 Environmental Change - Speciation and Extinction	LS 4-5	Evaluate models that demonstrate how changes in an environment may result in the evolution of a population of a given species; the emergence of new species over generations; or the extinction of other species due to the processes of genetic drift, gene flow, mutation, and natural selection.	Engaging in Argument from Evidence	Cause and Effect

High School Earth and Space Science Standards

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-ESS-1.1 Nuclear Fusion and the Sun's Energy	ESS 1-1	Develop a model based on evidence to illustrate the life span of the Sun and the role of nuclear fusion in the Sun's core to release energy that eventually reaches Earth in the form of radiation.	Developing and Using Models	Scale, Proportion and Quantity
HS-ESS-1.2 The Big Bang Theory	ESS 1-2	Construct an explanation of the current model of the origin of the universe based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.	Constructing Explanations	Energy and Matter
HS-ESS-1.3 Stellar Nucleosynthesis	ESS 1-3	Communicate scientific ideas about the way stars, over their life cycle, transform elements.	Obtaining, Evaluating, and Communicating Information	Energy and Matter
HS-ESS-1.4 Orbital Motions	ESS 1-4	Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.	Planning and Carrying Out Investigations	Structure and Function
HS-ESS-1.5 Evidence of Plate Tectonics	ESS 1-5	Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.	Engaging in Argument from Evidence	Patterns
HS-ESS-1.6 Evidence of the Earth's History	ESS 1-6	Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.	Constructing Explanations	Stability and Change
HS-ESS-2.1 The Creation of Landforms	ESS 2-1	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.	Developing and Using Models	Stability and Change
HS-ESS-2.2 Feedback in Earth's Systems	ESS 2-2	Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.	Analyzing and Interpreting Data	Stability and Change

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-ESS-2.3 Cycling of Matter in the Earth's Interior	ESS 2-3	Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection	Developing and Using Models	Energy and Matter
HS-ESS-2.4 Energy and Climate Variation	ESS 2-4	Use a model to describe how variations in the flow of energy into and out of Earth's systems result in variations in climate.	Developing and Using Models	Cause and Effect
HS-ESS-2.5 Interactions of the Hydrologic and Rock Cycles	ESS 2-5	Plan and conduct an investigation of how the chemical and physical properties of water contribute to the mechanical and chemical mechanisms that affect Earth materials and surface processes.	Planning and Carrying Out Investigations	Structure and Function
HS-ESS-2.6 Carbon Cycling in Earth's Systems	ESS 2-6	Develop a model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.	Developing and Using Models	Energy and Matter
HS-ESS-2.7 Coevolution of Life and Earth's Systems	ESS 2-7	Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.	Engaging in Argument from Evidence	Stability and Change
HS-ESS-3.1 Global Impacts on Human Activity	ESS 3-1	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.	Constructing Explanations	Cause and Effect
HS-ESS-3.2 Cost-Benefit Ratio Design Solutions	ESS 3-2	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.	Engaging in Argument from Evidence	Structure and Function

Idaho Standard	National Standard	Idaho Performance Standard	Practice	CCC
HS-ESS-3.3 Biodiversity, Natural Resources, and Human Sustainability	ESS 3-3	Illustrate relationships among management of natural resources, the sustainability of human populations, and biodiversity.	Developing and Using Models	Stability and Change
HS-ESS-3.4 Reducing Human Impact Design Solutions	ESS 3-4	Evaluate or refine a scientific or technological solution that mitigates or enhances human influences on natural systems.	Designing Solutions	Stability and Change
HS-ESS-3.5 Climate Variability and Future Impacts	ESS 3-5	Analyze geoscience data and the results from global climate models to make an evidence-based explanation of how climate variability can affect Earth's systems on a global and regional scale.	Analyzing and Interpreting Data	Stability and Change
HS-ESS-3.6 Human Impacts on Earth Systems	ESS 3-6	Communicate how relationships among Earth systems are being influenced by human activity.	Obtaining, Evaluating, and Communicating Information	Systems and System Models

For Questions Contact

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