

Zingy Learning NGSS Middle School Correlation Document

(Subject-specific model)

Earth and Space

Unit 1: The water cycle Lesson 1: Atoms Lesson 2: Bodies of water Lesson 3: States of matter Lesson 4: Changes of state Lesson 5: Transpiration Lesson 6: Air Lesson 7: Mountains	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.
Unit 2: Air masses Lesson 1: Wind Lesson 2: Surface temperatures Lesson 3: Air masses Lesson 4: Air fronts Lesson 5: 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.
Unit 3: Atmospheric and Oceanic Circulation Lesson 1: Temperature and precipitation Lesson 2: Atmospheric circulation Lesson 3: Oceanic circulation Lesson 4: Thermohaline circulation Lesson 5: US Climate Lesson 6: Energy	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.
Unit 4: Energy resources Lesson 1: Fossil fuels Lesson 2: Electricity Lesson 3: Pollution Lesson 4: Alternative energy resources Lesson 5: Biofuels Lesson 6: Solutions	MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
Unit 5: Global warming Lesson 1: Temperature Lesson 2: Human activity Lesson 3: Natural processes Lesson 4: Consequences	MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

<p>Unit 6: Human Population Lesson 1: Population Lesson 2: Consumption and Impacts</p>	<p>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.</p>
<p>Unit 7: Rock cycle Lesson 1: Structure of Earth Lesson 2: Crystallization Lesson 3: Weathering and sedimentation Lesson 4: Deformation Lesson 5: Melting Lesson 6: Minerals Lesson 7: Cycle of matter</p>	<p>MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.</p>
<p>Unit 8: Plate tectonics Lesson 1: Patterns Lesson 2: Tectonic plates Lesson 3: Tectonic plate motion Lesson 4: Oceans Lesson 5: Evidence of plate tectonics</p>	<p>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.</p>
<p>Unit 9: Earth surface changes Lesson 1: West Coast Lesson 2: Himalayas</p>	<p>MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.</p>
<p>Unit 10: Volcanoes Lesson 1: Volcanoes Lesson 2: Predicting volcanoes</p>	<p>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.</p>
<p>Unit 11: Earth Resources Lesson 1: Minerals Lesson 2: Soil Lesson 3: Fresh water Lesson 4: Fossil fuels</p>	<p>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.</p>
<p>Unit 12: History of Earth Lesson 1: Relative rock dating Lesson 2: Absolute dating of rock Lesson 3: Fossils Lesson 4: Geological timescale Lesson 5: Fossil record</p>	<p>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.</p>
<p>Unit 13: Earth-Sun-Moon system Lesson 1: Day and Night Lesson 2: Length of day Lesson 3: Seasons Lesson 4: The moon Lesson 5: Moon phases Lesson 6: Eclipses Lesson 7: Tides Lesson 8: Looking up at the sky Lesson 9: Distances</p>	<p>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.</p>

Unit 14: Gravity Lesson 1: The solar system Lesson 2: Stars and Galaxies Lesson 3: Gravitational force	MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
Unit 15: The Solar System Lesson 1: The solar system Lesson 2: Size	MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.

Biology

Unit 16: Cells Lesson 1: Molecules Lesson 2: Nucleus Lesson 3: DNA Lesson 4: Proteins Lesson 5: Mitochondria Lesson 6: Cell membrane Lesson 7: Endoplasmic reticulum and Golgi apparatus Lesson 8: Cell Division Lesson 9: Chloroplast and cell wall	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.
Unit 17: Single and multiple cellular organisms Lesson 1: Cells Lesson 2: Cell comparisons Lesson 3: Cell death Lesson 4: Viruses	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.
Unit 18: Biological systems Lesson 1: Tissues, organs and systems Lesson 2: Digestive system Lesson 3: Urinary system Lesson 4: Respiratory and Circulatory systems Lesson 5: Musculoskeletal and Nervous systems	MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.
Unit 19: Sensory receptors Lesson 1: Seeing Lesson 2: Hearing Lesson 3: Tasting, smelling and touching Lesson 4: The brain	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.
Unit 20: Reproduction Lesson 1: Reproduction Lesson 2: Plant and animal relationships Lesson 3: Birds	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.
Unit 21: Growth Lesson 1: Environmental growth factors Lesson 2: Genetic growth factors	MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
Unit 22: Photosynthesis Lesson 1: Photosynthesis Lesson 2: Photosynthetic organisms Lesson 3: Respiration Lesson 4: Growth Lesson 5: Evidence for photosynthesis	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.

<p>Unit 23: Respiration and Growth Lesson 1: Animals and food Lesson 2: Conservation of matter Lesson 3: Conservation of energy</p>	<p>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.</p>
<p>Unit 24: Food webs Lesson 1: Biotic and abiotic Lesson 2: Producers Lesson 3: Consumers Lesson 4: Food web Lesson 5: Decomposers</p>	<p>MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.</p>
<p>Unit 25: Resources Lesson 1: Populations Lesson 2: Plant growth factors Lesson 3: Abundance and scarcity Lesson 4: Case study</p>	<p>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.</p>
<p>Unit 26: Ecological Interactions Lesson 1: Predation, mutualism and competition</p>	<p>MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.</p>
<p>Unit 27: Ecosystem changes Lesson 1: Ecosystem changes</p>	<p>MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.</p>
<p>Unit 28: Biodiversity and ecosystem services Lesson 1: Biodiversity Lesson 2: Soil ecosystem services Lesson 3: Maintaining healthy soil</p>	<p>MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.</p>
<p>Unit 29: Genetics Lesson 1: Sexual reproduction I Lesson 2: Sexual reproduction II Lesson 3: Chromosome pairs Lesson 4: Genes and traits Lesson 5: Dominant/Recessive I Lesson 6: Dominant/Recessive II Lesson 7: Punnett square Lesson 8: X/Y chromosomes Lesson 9: Sexual versus asexual reproduction I Lesson 10: Sexual versus asexual reproduction II</p>	<p>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.</p>
<p>Unit 30: Mutations Lesson 1: DNA and protein Lesson 2: Mutations Lesson 3: Helpful Mutations Lesson 4: Our lost gene</p>	<p>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.</p>

<p>Unit 31: Natural Selection Lesson 1: Natural Selection Lesson 2: Darwin's finches Lesson 3: Size</p>	<p>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.</p>
<p>Unit 32: Population genetics Lesson 1: Population genetics</p>	<p>MS-LS4-6. Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.</p>
<p>Unit 33: Artificial selection Lesson 1: Selective breeding Lesson 2: Genetic modification Lesson 3: Gene therapy</p>	<p>MS-LS4-5. Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.</p>
<p>Unit 34: Fossil record Lesson 1: Species Lesson 2: Fossil record</p>	<p>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.</p>
<p>Unit 35: Anatomical structures Lesson 1: Comparative Anatomy Lesson 2: Geological timescale</p>	<p>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.</p>
<p>Unit 36: Embryological development Lesson 1: Comparative embryological development</p>	<p>MS-LS4-3. Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.</p>

Chemistry and Physics

Unit 37: Substances Lesson 1: Periodic Table Lesson 2: Size of atoms Lesson 3: Molecules and extended structures Lesson 4: States of matter Lesson 5: Changes of state	MS-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures.
Unit 38: Thermal energy transfer Lesson 1: Temperature Lesson 2: Energy transfer Lesson 3: Rate of energy transfer Lesson 4: Touch	MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
Unit 39: Change in kinetic energy Lesson 1: Moving molecules Lesson 2: Changes of state Lesson 3: Conservation of energy	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.
Unit 40: Temperature and energy Lesson 1: Different quantities Lesson 2: Different materials Lesson 3: Storing energy	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.
Unit 41: Changes of state Lesson 1: Kinetic energy Lesson 2: Change of state Lesson 3: Air pressure	MS-PS1-4. 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.
Unit 42: Chemical Reactions Lesson 1: Properties Lesson 2: Solubility Lesson 3: Chemical reactions Lesson 4: Reactants and products	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.
Unit 43: Conservation of matter Lesson 1: Conservation of atoms Lesson 2: Conservation of mass Lesson 3: Chemical formula	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.
Unit 44: Endothermic and exothermic processes Lesson 1: Endothermic and exothermic Lesson 2: Dissolving	MS-PS1-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.
Unit 45: Synthetic materials Lesson 1: Synthetic materials	MS-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.

<p>Unit 46: Forces I Lesson 1: Speed Lesson 2: Force Lesson 3: Balanced and unbalanced forces Lesson 4: Speed and mass Lesson 5: Investigation Lesson 6: Friction</p>	<p>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.</p>
<p>Unit 47: Forces II Lesson 1: Action and Reaction Lesson 2: Collisions</p>	<p>MS-PS2-1. Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.</p>
<p>Unit 48: Gravitational forces Lesson 1: Gravitational force Lesson 2: Weight Lesson 3: Distance Lesson 4: Acceleration</p>	<p>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.</p>
<p>Unit 49: Fields Lesson 1: Magnetic field Lesson 2: Magnetization Lesson 3: Electric charges Lesson 4: Attraction and repulsion Lesson 5: Electric field Lesson 6: Field comparisons</p>	<p>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.</p>
<p>Unit 50: Electromagnetic forces Lesson 1: Electricity Lesson 2: Generator Lesson 3: Electromagnets</p>	<p>MS-PS2-3. Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.</p>
<p>Unit 51: Kinetic energy Lesson 1: Conservation of energy Lesson 2: Kinetic energy Lesson 3: Falling</p>	<p>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.</p>
<p>Unit 52: Potential energy Lesson 1: Gravitational Potential energy I Lesson 2: Gravitational Potential energy II Lesson 3: Magnetic Potential energy Lesson 4: Electric Potential energy</p>	<p>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.</p>
<p>Unit 53: Waves Lesson 1: Waves Lesson 2: Energy Lesson 3: Sound</p>	<p>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.</p>
<p>Unit 54: Light and sound Lesson 1: Light Lesson 2: Reflection and absorption Lesson 3: Refraction Lesson 4: Electromagnetic radiation</p>	<p>MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.</p>

Lesson 5: Color and brightness Lesson 6: Sound	
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Unit 55: Digital and Analog signals Lesson 1: Analog signals - Radio Lesson 2: Digital signals - Cell phone	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.
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