Lab-Aids Correlations for

NEW MEXICO SCIENCE STANDARDS

GRADES 6-8 – INTEGRATED and DISCIPLINE SPECIFIC COURSE MAPs

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This document is intended to show how the SEPUP 3rd edition materials align with the *New Mexico 6-8 Course Maps for Integrated and Discipline Specific sequences.*[1]

ABOUT OUR PROGRAMS

Lab-Aids has maintained its home offices and operations in Ronkonkoma, NY, since 1963. We publish over 200 kits and core curriculum programs to support science teaching and learning, grades 6-12. All core curricula support an inquiry-driven pedagogy, with support for literacy skill development and with assessment programs that clearly show what students know and can do as a result of program use. All programs have extensive support for technology and feature comprehensive teacher support. For more information please visit www.lab-aids.com and navigate to the program of interest.

SEPUP

Materials from the Science Education for Public Understanding Program (SEPUP) are developed at the Lawrence Hall of Science, at the University of California, Berkeley, and distributed nationally by LAB-AIDS, Inc. Since 1987, development of SEPUP materials has been supported by grants from the National Science Foundation and other public and private sources. SEPUP programs include student books, equipment kits, teacher materials, and online digital content, and are available as full year courses, or separately, as units, each taking 3-8 weeks to complete, as listed on the following tables.

[1] Reference: https://webnew.ped.state.nm.us/bureaus/math-science/nm-stem-ready-science/nm-stem-ready-science-standards/recommended-secondary-course-maps/

Suggested Scope and Sequence, Grades 6-8

Integrated Model

Grade 6	**Grade 7**	**Grade 8**
Waves	Chemical Reactions	Force and Motion
Energy	Body Systems	Fields and Interactions
Weather and Climate	Ecology	Solar System and Beyond
Geological Processes	Earth's Resources	Reproduction
Cells to Organisms	Biomedical Engineering	Evolution
Land, Water, and Human Interactions	Chemistry of Materials	

Discipline Specific Model

Grade 6	**Grade 7**	**Grade 8**
Solar System and Beyond	Land, Water, and Human Interactions	Chemistry of Materials
Geological Processes	Evolution	Chemical Reactions
Earth's Resources	From Cells to Organisms	Energy
Biomedical Engineering	Body Systems	Force and Motion
Force and Motion	Reproduction	Fields and Interactions
	Ecology	Waves

ABOUT THE LAB-AIDS CITATIONS

The following tables are presented in a Disciplinary Core Idea arrangement – Earth Space Science (ESS), Life Science (LS), Physical Science (PS) and Engineering, Technology and Applications of Science (ETS).

Citations included in the correlation document are as follows:

* indicates where Performance Expectation is assessed
† indicates unit in development
Unit title, Activity Number
The Chemistry of Materials, 14

NGSS Performance Expectations	MS-PS1-2
Science and Engineering Practices	Planning and Carrying Out Investigations
Crosscutting Concepts	Structure and Function
Disciplinary Core Ideas	MS-PS1.A
Common Core English-Language Arts	RST.6-8.3
Common Core Mathematics	MP.2

New Mexico Science Standard	Where found in SEPUP
NEW MEXICO INTEGRATED STANDARDS COURSE MAP	
GRADE 6	
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.	*Biomedical Engineering:* 1, 2, 3* †*Fields and Interactions:* 3, 6* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	*Biomedical Engineering:* 4, 5, 7* †*Fields and Interactions:* 12, 14*
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.	*Biomedical Engineering:* 1, 2, 4, 5* †*Fields and Interactions:* 2, 10, 12* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
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.	*Biomedical Engineering:* 2, 4, 5, 8, 9* †*Fields and Interactions:* 1, 2, 3, 6, 10* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
Light Waves, Particles, Temperature, States of Matter, Thermal Energy Transfer	
MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	*Waves:* 3, 8, 9, 10, 11, 12, 13*
MS-PS1-4: Develop a model that predicts and describes changes in particle motion, temperature,	*Chemistry of Materials:* 7, 9, 10

New Mexico Science Standard	Where found in SEPUP
and state of a pure substance when thermal energy is added or removed.	
MS-PS3-3: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	*Energy:* 1, 7, 8, 9, 10, 11, 12, 13*
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.	*Energy:* 1, 4, 6, 7, 8*
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.	*Energy:* 2, 3, 4, 5, 6*
Water Cycling, Weather, Climate	
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.	*Land, Water, and Human Interaction:* 2, 5, 7, 8, 9*
MS-ESS2-5: Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.	*Weather and Climate:* 2, 3, 4, 7, 9, 10, 11, 12, 13*
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.	*Weather and Climate:* 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14*
Rock Cycling, Plate Tectonics	
MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	*Geological Processes:* 2, 5, 8, 9, 10, 11, 13, 14, 15*
MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	*Geological Processes:* 2, 3, 4, 6, 7, 9, 10, 11, 12, 13* *Land, Water, and Human Interaction:* 4, 6, 7, 8, 9, 10, 11, 12, 13, 14*

New Mexico Science Standard	Where found in SEPUP
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.	*Geological Processes:* 10, 11, 12, 13, 14*
Natural Hazards	
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.	*Geological Processes:* 1, 3, 4, 6, 7, 8, 11, 18*
Organismal Growth, Cells, and Systems	
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.	*Waves:* 1, 2, 3, 4, 7*
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.	*From Cells to Organisms*: 1, 2, 3, 4, 5, 6, 7, 8, 9*
MS-LS1-2: Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.	*From Cells to Organisms*: 4, 6, 7, 8*
MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	*From Cells to Organisms*: 10, 14, 15 *Body Systems:* 1, 2, 3, 4, 9, 10, 11, 12*
GRADE 7	
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.	*Biomedical Engineering:* 1, 2, 3* †*Fields and Interactions:* 3, 6* *Chemical Reactions 8-10*

New Mexico Science Standard	Where found in SEPUP
	Land, Water, and Human Interactions 7, 15, 16
MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	*Biomedical Engineering:* 4, 5, 7* †*Fields and Interactions:* 12, 14* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
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.	*Biomedical Engineering:* 1, 2, 4, 5* †*Fields and Interactions:* 2, 10, 12* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
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.	*Biomedical Engineering:* 2, 4, 5, 8, 9* †*Fields and Interactions:* 1, 2, 3, 6, 10* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
Chemical Reactions	
MS-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures.	*Chemistry of Materials:* 2, 6, 7, 11, 12*
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.	*Chemical Reactions:* 1, 2, 3, 4, 5*
MS-PS1-3: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	*Chemistry of Materials:* 1, 2, 3, 4, 5, 11, 12, 13*

New Mexico Science Standard	Where found in SEPUP
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.	*Chemical Reactions:* 1, 2, 3, 4, 5, 6, 7*
MS-PS1-6: Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	*Chemical Reactions:* 2, 3, 5, 8, 9, 10, 11*
Metabolic Reactions in Organisms	
MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	*Reproduction:* 1, 7*
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.	*From Cells to Organisms*: 5, 11* *Body Systems:* 5
Ecosystem Interactions and Competition	
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.	*Ecology:* 1, 2, 5, 6, 7, 8, 9*
MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	*Ecology:* 2, 6, 7, 8, 10*
MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	*Ecology:* 1, 2, 3, 4, 5, 6, 12, 13, 14*
MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	*Ecology:* 2, 3, 4, 5, 13, 14, 15*
Ecosystems Matter and Energy	
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.	*From Cells to Organisms*: 12, 13*

New Mexico Science Standard	Where found in SEPUP
MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	*Ecology:* 7, 8, 11, 12*
Earth Resources and Climate Change	
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.	*Geological Processes:* 2, 16, 17* *Earth's Resources:* 1, 2, 3, 5, 7, 8, 14*
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.	*Geological Processes:* 1, 3, 4, 6, 7, 8, 11, 18*
MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	*Land, Water, and Human Interactions:* 2, 3, 4, 5, 6, 9, 13, 14, 15, 16*
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.	*Earth's Resources:* 2, 4, 6, 13*
MS-ESS3-5: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	*Weather and Climate:* 1, 14, 15, 16*
GRADE 8	
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.	*Biomedical Engineering:* 1, 2, 3* †*Fields and Interactions:* 3, 6* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*

New Mexico Science Standard	Where found in SEPUP
MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	*Biomedical Engineering:* 4, 5, 7* †*Fields and Interactions:* 12, 14*
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.	*Biomedical Engineering:* 1, 2, 4, 5* †*Fields and Interactions:* 2, 10, 12* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
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.	*Biomedical Engineering:* 2, 4, 5, 8, 9* †*Fields and Interactions:* 1, 2, 3, 6, 10* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
Contact Forces and Motion	
MS-PS2-1: Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	*Force and Motion:* 1, 10, 11, 12*
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.	*Force and Motion:* 1, 6, 7, 8, 9, 13*
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.	*Force and Motion:* 1, 2, 3, 4, 5*
Sound Waves	
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.	*Waves:* 1, 2, 3, 4, 7*

New Mexico Science Standard	Where found in SEPUP
MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	*Waves:* 3, 8, 9, 10, 11, 12, 13*
Electric, Magnetic and Gravitational Forces	
MS-PS2-3: Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	†*Fields and Interactions:* 5, 7, 8, 9, 11, 12*
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.	†*Fields and Interactions:* 4, 6, 7*
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.	†*Fields and Interactions:* 5, 7, 8*
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.	†*Fields and Interactions:* 3, 6, 7, 10*
Earth, Solar System, Galaxy and Communicating in Space	
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.	*Solar System and Beyond:* 2, 3, 4, 5, 6, 7, 9*
MS-ESS1-2: Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.	*Solar System and Beyond:* 1, 10, 11, 12, 13, 14, 15, 16*
MS-ESS1-3: Analyze and interpret data to determine scale properties of objects in the solar system.	*Solar System and Beyond:* 10, 11, 12, 13*
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.	*Waves:* 5, 6

New Mexico Science Standard	Where found in SEPUP
Genetics	
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.	*Reproduction:* 1, 3, 7, 8, 12, 13*
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.	*Reproduction:* 1, 2, 3, 4, 5, 6, 7, 8, 9*
Natural Selection	
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.	Evolution: 1, 2, 3, 4*
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.	Evolution: 1, 2, 3, 4, 5, 6*
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.	*Reproduction:* 9, 10*, 11*
Common Ancestry	
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. Evolution: 7, 8, 9, 10 11*	Evolution: 7, 8, 9, 10 11*
MS-LS4-2: Apply scientific ideas to construct an explanation for the anatomical similarities and	Evolution: 7, 8, 9, 10 11, 12*

New Mexico Science Standard	Where found in SEPUP
differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.	
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.	Evolution: 12, 13*

New Mexico Science Standard	Where Found in SEPUP
NEW MEXICO DISCIPLINE SPECIFIC STANDARDS COURSE MAP	
GRADE 6 EARTH AND SPACE SCIENCE CONTENTRATION	
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.	*Biomedical Engineering:* 1, 2, 3* †*Fields and Interactions:* 3, 6* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	*Biomedical Engineering:* 4, 5, 7* †*Fields and Interactions:* 12, 14*
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.	*Biomedical Engineering:* 1, 2, 4, 5* †*Fields and Interactions:* 2, 10, 12* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
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.	*Biomedical Engineering:* 2, 4, 5, 8, 9* †*Fields and Interactions:* 1, 2, 3, 6, 10* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
Earth's Place in the Universe	
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.	*Solar System and Beyond:* 2, 3, 4, 5, 6, 7, 9*

New Mexico Science Standard	Where Found in SEPUP
MS-ESS1-2: Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.	*Solar System and Beyond:* 1, 10, 11, 12, 13, 14, 15, 16*
MS-ESS1-3: Analyze and interpret data to determine scale properties of objects in the solar system.	*Solar System and Beyond:* 10, 11, 12, 13*
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.	*Earth's Resources:* 9, 10, 11, 12*
Earth's Systems	
MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	*Geological Processes:* 2, 3, 4, 6, 7, 9, 10, 11, 12, 13* *Land, Water, and Human Interaction:* 4, 6, 7, 8, 9, 10, 11, 12, 13, 14*
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.	*Geological Processes:* 10, 11, 12, 13, 14*
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.	*Land, Water, and Human Interaction:* 2, 5, 7, 8, 9*
MS-ESS2-5: Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.	*Weather and Climate:* 2, 3, 4, 7, 9, 10, 11, 12, 13*
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.	*Weather and Climate:* 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14*
MS-ESS3-5: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	*Weather and Climate:* 1, 14, 15, 16*
Biological Evolution	

New Mexico Science Standard	Where Found in SEPUP
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. Evolution: 7, 8, 9, 10 11*	Evolution: 7, 8, 9, 10 11*
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.	Evolution: 7, 8, 9, 10 11, 12*
Matter and Its Interactions	
Matter and Its Interactions	
MS-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures.	*Chemistry of Materials:* 2, 6, 7, 11, 12*
Motion and Stability: 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.	*Force and Motion:* 1, 10, 11, 12*
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.	*Force and Motion:* 1, 6, 7, 8, 9, 13*
GRADE 7 LIFE SCIENCE CONCENTRATION	
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.	*Biomedical Engineering:* 1, 2, 3* †*Fields and Interactions:* 3, 6* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well	*Biomedical Engineering:* 4, 5, 7*

New Mexico Science Standard	Where Found in SEPUP
they meet the criteria and constraints of the problem.	†*Fields and Interactions:* 12, 14*
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.	*Biomedical Engineering:* 1, 2, 4, 5* †*Fields and Interactions:* 2, 10, 12* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
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.	*Biomedical Engineering:* 2, 4, 5, 8, 9* †*Fields and Interactions:* 1, 2, 3, 6, 10* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
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.	*Geological Processes:* 2, 5, 8, 9, 10, 11, 13, 14, 15*
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.	*Land, Water, and Human Interaction:* 2, 5, 7, 8, 9*
Earth and Human Activity	
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.	*Geological Processes:* 2, 16, 17* *Earth's Resources:* 1, 2, 3, 5, 7, 8, 14*
Biological Evolution Unity and Diversity	
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.	Evolution: 12, 13*

New Mexico Science Standard	Where Found in SEPUP
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.	Evolution: 1, 2, 3, 4*
MS-LS4-5: Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.	Evolution: 14, 15, 16*
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.	Evolution: 1, 2, 3, 4, 5, 6*
From Molecules to Organisms: Structures and Processes	
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.	*From Cells to Organisms*: 1, 2, 3, 4, 5, 6, 7, 8, 9*
MS-LS1-2: Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.	*From Cells to Organisms*: 4, 6, 7, 8*
MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	*From Cells to Organisms*: 10, 14, 15 *Body Systems:* 1, 2, 3, 4, 9, 10, 11, 12*
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.	*Reproduction:* 9, 10*, 11*
MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	*Reproduction:* 1, 7*
MS-LS1-6: Construct a scientific explanation based on evidence for the role of photosynthesis in the	*From Cells to Organisms*: 12, 13*

New Mexico Science Standard	Where Found in SEPUP
cycling of matter and flow of energy into and out of organisms.	
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.	*From Cells to Organisms*: 5, 11* *Body Systems:* 5
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.	*Body Systems:* 6, 7, 8*
Heredity Inheritance and Variation of Traits	
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.	*Reproduction:* 1, 3, 7, 8, 12, 13*
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.	*Reproduction:* 1, 2, 3, 4, 5, 6, 7, 8, 9*
Ecosystems Interaction Energy and Dynamics	
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.	*Ecology:* 1, 2, 5, 6, 7, 8, 9*
MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	*Ecology:* 2, 6, 7, 8, 10*
MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	*Ecology:* 7, 8, 11, 12*
MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or	*Ecology:* 1, 2, 3, 4, 5, 6, 12, 13, 14*

New Mexico Science Standard	Where Found in SEPUP
biological components of an ecosystem affect populations.	
MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	*Ecology:* 2, 3, 4, 5, 13, 14, 15*
GRADE 8 PHYSICAL SCIENCE CONCENTRATION	
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.	*Biomedical Engineering:* 1, 2, 3* †*Fields and Interactions:* 3, 6* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	*Biomedical Engineering:* 4, 5, 7* †*Fields and Interactions:* 12, 14*
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.	*Biomedical Engineering:* 1, 2, 4, 5* †*Fields and Interactions:* 2, 10, 12* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
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.	*Biomedical Engineering:* 2, 4, 5, 8, 9* †*Fields and Interactions:* 1, 2, 3, 6, 10* *Chemical Reactions 8-10* *Land, Water, and Human Interactions 7, 15, 16*
Earth and Human Activity	
MS-ESS3-2: Analyze and interpret data on natural hazards to forecast future catastrophic events and	*Geological Processes:* 1, 3, 4, 6, 7, 8, 11, 18*

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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.	*Land, Water, and Human Interactions:* 2, 3, 4, 5, 6, 9, 13, 14, 15, 16*
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.	*Earth's Resources:* 2, 4, 6, 13*
Matter and Its Interactions	
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.	*Chemical Reactions:* 1, 2, 3, 4, 5*
MS-PS1-3: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	*Chemistry of Materials:* 1, 2, 3, 4, 5, 11, 12, 13*
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.	*Chemistry of Materials:* 7, 9, 10
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.	*Chemical Reactions:* 1, 2, 3, 4, 5, 6, 7*
MS-PS1-6: Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	*Chemical Reactions:* 2, 3, 5, 8, 9, 10, 11*
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.	*Force and Motion:* 1, 2, 3, 4, 5*

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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.	†*Fields and Interactions:* 3, 6, 7, 10*
MS-PS3-3: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	*Energy:* 1, 7, 8, 9, 10, 11, 12, 13*
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.	*Energy:* 1, 4, 6, 7, 8*
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.	*Energy:* 2, 3, 4, 5, 6*
Motion and Stability 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.	*Force and Motion:* 1, 10, 11, 12*
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.	*Force and Motion:* 1, 6, 7, 8, 9, 13*
MS-PS2-3: Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	†*Fields and Interactions:* 5, 7, 8, 9, 11, 12*
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.	†*Fields and Interactions:* 4, 6, 7*
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.	†*Fields and Interactions:* 5, 7, 8*

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Waves and Their Applications for Information Transfer	
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.	*Waves:* 1, 2, 3, 4, 7*
MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	*Waves:* 3, 8, 9, 10, 11, 12, 13*
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.	*Waves:* 5, 6