



**LAB-AIDS Correlations for**  
**SOUTH DAKOTA SCIENCE COURSE PATHWAYS**  
**MIDDLE SCHOOL, Grades 6-8**

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This document is intended to show our alignment with the South Dakota Science Course Pathways for Middle School, Grades 6-8.<sup>1</sup> The South Dakota Content Standards serve as expectations for what students should know and be able to do by the end of each grade. The review, revision, development, and feedback process involves stakeholders throughout the state of South Dakota and is an ongoing and critical component to ensure South Dakota students in every classroom receive current and relevant learning experiences.

#### ABOUT OUR PROGRAMS

LAB-AIDS Core Science Programs are developed to support current knowledge on the teaching and learning of science. All materials support an inquiry-driven pedagogy, with support for literacy skill development and with assessment programs that clearly show what students know and are able to do from using the programs. All programs have extensive support for technology in the school science classrooms, and feature comprehensive teacher support. For more information please visit [www.lab-aids.com](http://www.lab-aids.com) and navigate to the program of interest.

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. SEPUP materials are supported by grants from the National Science Foundation. All other materials developed by LAB-AIDS. This correlation is intended to show selected locations in SEPUP 2<sup>nd</sup> Edition programs that support the South Dakota Science Course Pathways. It is not an exhaustive list; other locations may exist that are not listed here.

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<sup>1</sup> <http://doe.sd.gov/contentstandards/documents/SciPathwy.pdf>

## KEY TO SEPUP CORE SCIENCE PROGRAMS

SEPUP programs are available as full year courses, or separately, as units, each taking 3-9 weeks to complete, as listed below.

### ***Issues and Earth Science, Second Edition (IAES)***

<b>Unit Title</b>	<b>Activity Number</b>
Studying Soils Scientifically	1-11
Rocks and Minerals	12-23
Erosion and Deposition	24-35
Plate Tectonics	36-49
Weather and Atmosphere	50-70
The Earth in Space	71-84
Exploring Space	85-98

### ***Issues and Life Science, Second Edition (IALS)***

<b>Unit Title</b>	<b>Activity Number</b>
Experimental Design: Studying People Scientifically	1-10
Body Works	11-29
Cell Biology and Disease	30-53
Genetics	54-71
Ecology	72-88
Evolution	89-101
Bioengineering	102-109

### ***Issues and Physical Science, Second Edition (IAPS)***

<b>Unit Title</b>	<b>Activity Number</b>
Studying Materials Scientifically	1-11
The Chemistry of Materials	12-29
Water	30-52
Energy	53-72
Force and Motion	73-88
Waves	89-99

Each of the full year programs begins with a “starter” unit sequence on the scientific method in the context of each particular discipline. For example, the Issues and Life Science (IALS) course contains a ten- activity unit called “Experimental Design: Studying People Scientifically,” which uses the science behind clinical trials on human subjects, to frame the study of the life sciences. These are listed first in each course.

## ABOUT THE LAB-AIDS CITATIONS

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

The citation: Earth in Space 72, 73, 75, 76, means the *Issues and Earth Science* Student Book, Earth in Space unit activities 72, 73, 75, and 76 combine to address the standard.

South Dakota Content Standard	SEPUP's <i>Issues and Earth Science</i>
Sixth Grade Earth and Space Science	Unit Title and Activity Number
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. (SEP: 2; DCI: ESS1.A, ESS1.B; CCC: Patterns)	Earth in Space 72, 73, 75, 76, 77, 79, 80, 81
MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. (SEP: 2; DCI: ESS1.A, ESS1.B; CCC: Systems)	Exploring the Solar System 95, 96
MS-ESS1-3. Analyze and interpret data to determine scale proportions of objects in the solar system. (SEP: 4; DCI: ESS1.B; CCC: Scale/Prop., Technology)	Exploring the Solar System 90, 91
MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. (SEP: 2; DCI: ESS2.A; CCC: Stability/Change)	Rocks and Minerals 22; Plate Tectonics 46
MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. (SEP: 6; DCI: ESS2.A, ESS2.C; CCC: Scale/Prop.)	Rocks and Minerals 28, 29, 30, 31, 32, 33; PT 38, 39, 40, 41, 42, 44, 45, 46, 47, 48
MS-ESS2-3. Analyze and interpret data on the age of the Earth, distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. (SEP: 4; DCI: ESS2.B, ESS1.C; CCC: Patterns)	Rocks and Minerals 21; Plate Tectonics 38, 39, 41, 42, 47; IALS Evolution 92, 93
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. (SEP:2; DCI: ESS2.C; CCC: Energy/Matter)	Weather and Atmosphere 59, 60, 61, 62
MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions. (SEP: 3; DCI: ESS2.C, ESS2.D; CCC: Cause/Effect)	Weather and Atmosphere 64, 66, 67, 68, 69
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. (SEP: 2; DCI: ESS2.C, ESS2.D; CCC: Systems)	Weather and Atmosphere 50, 53, 54, 55, 56, 57, 58
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. (SEP: 6; DCI: ESS3.A ; CCC: Cause/Effect , Technology)	Not covered in current edition
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. (SEP: 4; DCI: ESS3.B; CCC: Patterns, Technology)	Plate Tectonics 36, 43, 44, 45

South Dakota Content Standard	SEPUP's <i>Issues and Earth Science</i>
Sixth Grade Earth and Space Science	Unit Title and Activity Number
MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.* (SEP: 6 ; DCI: ESS3.C; CCC: Cause/Effect, Technology)	Plate Tectonics 38, 49
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. (SEP: 7; DCI: ESS3.C; CCC: Cause/Effect, Technology, Nature Science/Consequence-Actions)	Not covered in current edition
MS-ESS3-5. Ask questions to clarify evidence of the factors that may have caused a change in global temperatures over the past century. (SEP: 1; DCI: ESS3.D; CCC: Stability/Change)	Not covered in current edition

South Dakota Content Standard	SEPUP's <i>Issues and Life Science</i>
Seventh Grade Life Science	Unit Title and Activity Number
MS-LS1-1. Plan and carry out an investigation to provide evidence that living things are made of cells; either one cell or many different types and numbers of cells. (SEP: 3; DCI: LS1.A; CCC: Scale/Prop., Technology)	Cell Biology and Disease 35, 36, 38, 43; Ecology 82
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. (SEP: 2; DCI: LS1.A; CCC: Structure/Function)	Cell Biology and Disease 40, 41
MS-LS1-3. Construct an argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. (SEP: 7 ; DCI: LS1.A; CCC: Systems)	Body Works 12, 13, 14, 15, 16, 17, 18; Cell Biology and Disease 42
MS-LS1-4. Construct an 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. (SEP: 7; DCI: LS1.B; CCC: Cause/Effect)	See for example: <a href="http://www.sepuplhs.org/pdfs/ials_lifecycles.pdf">http://www.sepuplhs.org/pdfs/ials_lifecycles.pdf</a>
MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. (SEP: 6; DCI: LS1.B; CCC: Cause/Effect)	Genetics 55, 62, 64, 65
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. (SEP: 6, Nature Science/Empirical Evidence; DCI: LS1.C, PS3.D; CCC: Energy/Matter)	Ecology 81, 82
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. (SEP: 2; DCI: LS1.C, PS3.D; CCC: Energy/Matter)	Body Works 14, 15; Cell Biology and Disease 39, 41, 42; Ecology 79
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. (SEP: 4; DCI: LS2.A; CCC: Cause/Effect)	Ecology 72, 77, 85, 87, 88
MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. (SEP: 6; DCI: LS2.A; CCC: Patterns)	Ecology 72, 73, 78, 79, 80, 83, 84
MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. (SEP: 2; DCI: LS2.B; CCC: Energy/Matter)	Ecology 78, 79, 80, 81
MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components	Ecology 72, 77, 85, 87, 88

South Dakota Content Standard	SEPUP's <i>Issues and Life Science</i>
Seventh Grade Life Science	Unit Title and Activity Number
of an ecosystem affect populations. (SEP: 7; DCI: LS2.C ; CCC: Stability/Change)	
MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.* (SEP: 7; DCI: LS2.C, LS4.D, ETS1.B ; CCC: Stability/Change, Technology)	Ecology 87
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. (SEP:2 ; DCI: LS3.A, LS3.B; CCC: Structure/Function)	Genetics 56, 63, 66
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. (SEP: 2; DCI: LS1.B, LS3.A, LS3.B; CCC: Cause/Effect)	Genetics 57, 59, 61, 63, 65, 66
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. (SEP: 4; DCI: LS4.A; CCC: Patterns)	Evolution 92, 93, 98, 99
MS-LS4-2. Apply scientific ideas to construct an explanation for similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. (SEP: 6; DCI: LS4.A; CCC: Patterns)	Evolution 98, 99, 100, 101
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. (SEP: 6; DCI: LS4.B; CCC: Cause/Effect)	Evolution 95, 96, 97
MS-LS4-5. Obtain, evaluate, and communicate information about how technological advances have changed the way humans influence the inheritance of desired traits in organisms. * (SEP: 8; DCI: LS4.B; CCC: Cause/Effect, Technology)	Genetics 57; Evolution 101
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. (SEP: 5; DCI: LS4.C; CCC: Cause/Effect)	Evolution 95, 96, 98

South Dakota Content Standard	SEPUP's <i>Issues and Physical Science</i>
Eighth Grade Physical Science	Unit Title and Activity Number
MS-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures. (SEP:2 ; DCI: PS1.A; CCC: Scale/Prop. )	Chemistry of Materials 20
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. (SEP: 8; DCI: PS1.A, PS1.B; CCC: Patterns)	Chemistry of Materials 14, 19, 25, 27, 28
MS-PS1-3. Obtain and evaluate information to describe that synthetic materials come from natural resources and impact society. (SEP: 8; DCI: PS1.A, PS1.B; CCC: Structure/Function, Technology)	IAES Rocks and Minerals 13, CM 13, 21
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. (SEP: 2; DCI: PS1.A, PS3.A; CCC: Cause/Effect)	Water 35
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. (SEP: 2 ; DCI: PS1.B; CCC: Energy/Matter)	Chemistry of Materials 25
MS-PS1-6. Design, construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.* (SEP: 6; DCI: PS1.B, ETS1.B, ETS1.C; CCC: Energy/Matter)	Not covered in current edition
MS-PS2-1. Design a solution to a problem involving the motion of two colliding objects that illustrates Newton's Third Law.* (SEP: 6; DCI: PS2.A; CCC: Systems, Technology)	Force and Motion 85
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. (SEP: 3; DCI: PS2.A; CCC: Stability/Change)	Force and Motion 77, 79
MS-PS2-3. Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. (SEP: 1; DCI: PS2.B; CCC: Cause/Effect)	Energy 65, 65A, 66
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. (SEP: 7; DCI: PS2.B; CCC: Systems)	Waves 95, 96
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. (SEP: 3; DCI: PS2.B; CCC: Cause/Effect)	Energy 65A

South Dakota Content Standard	SEPUP's <i>Issues and Physical Science</i>
Eighth Grade Physical Science	Unit Title and Activity Number
MS-PS3-1. Construct and analyze graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object. (SEP: 4; DCI: PS3.A; CCC: Scale/Prop.)	Energy 54, 55
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. (SEP: 2; DCI: PS3.A, PS3.C; CCC: Systems)	Energy 54
MS-PS3-3. Design, construct, and test a device that either minimizes or maximizes thermal energy transfer.* (SEP: 6; DCI: PS3.A, PS3.B, ETS1.A, ETS1.B, ; CCC: Energy/Matter)	Energy 59, 60, 69, 70
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. (SEP: 3; DCI: PS3.A, PS3.B; CCC: Scale/Prop.)	Energy 56 , 61, 62, 63, 67
MS-PS3-5. Engage in argument from evidence to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. (SEP: 7; DCI: PS3.B; CCC: Energy/Matter)	Energy 54, 55, 56, 56A
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. (SEP: 5; DCI: PS4.A; CCC: Patterns)	Waves 90
MS-PS4-2. Develop and use a model to describe how waves are reflected, absorbed, or transmitted through various materials. (SEP: 2; DCI: PS4.A, PS4.B; CCC: Structure)	Waves 93, 95, 97
MS-PS4-3. Obtain, evaluate and communicate information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals. (SEP: 8; DCI: PS4.C; CCC: Structure, Technology)	Not covered in current edition