Alabama Content Standards at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Alabama Content Standards.

Alabama Content Standards	MODULE: **Energy and Motion**
1	●
2	●

Correlations by Module

MODULE: Energy and Motion

DCI Energy

Speed and Energy

1	**Use evidence to explain the relationship between the speed of an object and its energy.**	26–28, 29, 44–45, 53

SEP Science and Engineering Practices

Constructing Explanations and Designing Solutions
Using evidence in constructing explanations that specify variables; describing and predicting phenomena; and designing multiple solutions to design problems.

CCC Crosscutting Concepts

Cause and Effect: Mechanism and Prediction
Cause and effect relationships are routinely identified, tested, and used to explain change. Events that occur together with regularity might or might not be a cause and effect relationship.

**From the 2023 Alabama Course of Study: Science*

DCI Energy		
Transference of Energy		
2	**Plan and carry out investigations to answer questions regarding changes in energy when objects collide, and predict reasonable outcomes based on observed patterns.** *Examples: marbles rolling down a ramp and colliding with each other, chain reactions with dominoes*	35–37, 44–45, 54–55
SEP Science and Engineering Practices		
Asking Questions and Defining Problems Specifying qualitative relationships.		
CCC Crosscutting Concepts		
Patterns Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products. Patterns of change can be used to make predictions. Patterns can be used as evidence to support an explanation.		

Alabama Course of Study: English Language Arts Connections	
13	17, 18, 20, 34, 38, 51, 55, 58
22	40, 58
27	45
33	17, 40, 60
33a	17, 40, 60
Open Court Reading Connections	
Alabama Inspire Science, Grade 4, Unit 1, Module 1, Lesson 1	Open Court Reading, Grade 4, Unit 1: Lesson 6; Unit 2: Lesson 6
Alabama Inspire Science, Grade 4, Unit 1, Module 1, Lesson 2	Open Court Reading, Grade 4, Unit 1: Lesson 6; Unit 2: Lesson 6

Alabama Content Standards at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Alabama Content Standards.

Alabama Content Standards	MODULE: **Energy Transfer**	MODULE: **Natural Resources in the Environment**
3	●	
3a	●	●
3b	●	
4	●	●
14		●

Correlations by Module

MODULE: Energy Transfer

DCI Energy

Transference of Energy

3	**Plan and carry out investigations to provide evidence that energy is transferred by sound, light, heat, and electric currents.** *Examples: creating an electric circuit that requires a complete loop*	28–29, 30–31, 32–33, 34–35, 46–47, 51–52, 64–67, 72

SEP Science and Engineering Practices

Planning and Carrying Out Investigations
Designing and conducting investigations with controlled variables; providing evidence to support explanations or design solutions.

CCC Crosscutting Concepts

Energy and Matter: Flows, Cycles, and Conservation
Matter is made of particles. Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. Energy can be transferred in various ways; energy can be transferred between objects.

DCI Energy

Transference of Energy

3a	**Construct an explanation using evidence to support the claim that heat can be produced in many ways.** *Examples: rubbing hands together, burning leaves*	71

SEP Science and Engineering Practices

Constructing Explanations and Designing Solutions
Using evidence in constructing explanations that specify variables; describing and predicting phenomena; and designing multiple solutions to design problems.

CCC Crosscutting Concepts

Energy and Matter: Flows, Cycles, and Conservation
Matter is made of particles. Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. Energy can be transferred in various ways; energy can be transferred between objects.

DCI Energy

Transference of Energy

3b	**Construct an explanation with evidence supporting the claim that different objects can absorb, reflect, and/or conduct energy.**	34–35, 72–73, 74, 76

SEP Science and Engineering Practices

Constructing Explanations and Designing Solutions
Using evidence in constructing explanations that specify variables; describing and predicting phenomena; and designing multiple solutions to design problems.

CCC Crosscutting Concepts

Energy and Matter: Flows, Cycles, and Conservation
Matter is made of particles. Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. Energy can be transferred in various ways; energy can be transferred between objects.

Continued from previous page.

Other Correlations	
Alabama Course of Study: English Language Arts Connections	
33	24, 38, 60, 78, 81
33a	56
Open Court Reading Connections	
Alabama Inspire Science, Grade 4, Unit 2, Module 1, Lesson 1	Open Court Reading, Grade 4, Unit 1: Lesson 6; Unit 2: Lesson 6

Correlations by Module

MODULE: Natural Resources in the Environment

DCI Energy

Transference of Energy

3a	**Construct an explanation using evidence to support the claim that heat can be produced in many ways.** *Examples: rubbing hands together, burning leaves*	102

SEP Science and Engineering Practices

Constructing Explanations and Designing Solutions
Using evidence in constructing explanations that specify variables; describing and predicting phenomena; and designing multiple solutions to design problems.

CCC Crosscutting Concepts

Energy and Matter: Flows, Cycles, and Conservation
Matter is made of particles. Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. Energy can be transferred in various ways; energy can be transferred between objects.

DCI Energy

Transference of Energy

4	**Design, construct, and test a device that changes energy from one form to another.** *Examples: electric circuits converting electrical energy into motion, light, or sound energy; a passive solar heater converting light energy into heat energy*	142–143, 149, 153–158

SEP Science and Engineering Practices

Constructing Explanations and Designing Solutions

Using evidence in constructing explanations that specify variables; describing and predicting phenomena; and designing multiple solutions to design problems.

CCC Crosscutting Concepts

Energy and Matter: Flows, Cycles, and Conservation

Matter is made of particles. Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. Energy can be transferred in various ways; energy can be transferred between objects.

DCI Earth and Human Activity

Natural Resources

14	**Gather information to describe how the use of energy derived from renewable and nonrenewable resources affects the environment.** *Examples: Constructing dams harnesses energy from water and changes animal habitats. Burning fossil fuels creates energy and creates air pollution.*	94–96, 97, 98–99, 103, 110–111, 112–113, 114, 115, 123, 124–127, 128–129, 130–131, 135

SEP Science and Engineering Practices

Obtaining, Evaluating, and Communicating Information

Evaluating the merit and accuracy of ideas and methods.

CCC Crosscutting Concepts

Cause and Effect: Mechanism and Prediction

Cause and effect relationships are routinely identified, tested, and used to explain change. Events that occur together with regularity might or might not be a cause and effect relationship.

Continued from previous page.

Other Correlations	
Alabama Course of Study: English Language Arts Connections	
33	120, 135, 152
33a	104 Teacher's Edition *Only:* 111, 131, 147

Alabama Content Standards at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Alabama Content Standards.

Alabama Content Standards	MODULE: **Earth and Its Changing Features**	MODULE: **Earthquakes**
5		●
10	●	
11	●	
12	●	
13	●	●
15		●

Correlations by Module

MODULE: Earth and Its Changing Features

DCI Earth's Systems

Water

10	**Develop and use a model to describe how water moves through Earth's systems by the processes of evaporation, condensation, and precipitation.**	47a-47d

SEP Science and Engineering Practices

Developing and Using Models
Building and revising simple models; using models to represent events and design solutions.

CCC Crosscutting Concepts

Systems and System Models
A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. A system can be described in terms of its components and their interactions.

**From the 2023 Alabama Course of Study: Science*

DCI Earth's Systems

Changes Over Time

11	**Construct explanations of Earth's changes over time through slow and rapid processes, citing evidence found in rock formations and fossils in rock layers.** *Examples: rock layers containing shell fossils appearing above rock layers containing plant fossils but no shells, indicating a change from land to water over time; a canyon with rock layers in the walls and a river in the bottom indicating that over time a river cut through the rock*	30–31, 32–33, 34–35, 37–39, 58

SEP Science and Engineering Practices

Constructing Explanations and Designing Solutions

Using evidence in constructing explanations that specify variables; describing and predicting phenomena; and designing multiple solutions to design problems.

CCC Crosscutting Concepts

Stability and Change

Change is measured in terms of differences over time and may occur at different rates. Some systems appear stable, but over long periods of time will eventually change.

DCI Earth's Systems

Changes Over Time

12	**Plan and carry out investigations to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, and vegetation, investigating a single form of weathering or erosion at a time.** *Examples: angle of slope in downhill movement of water flow, cycles of freezing and thawing of water, cycles of heating and cooling water, speed of wind, relative rate of soil deposition, amount of vegetation compared to rate of erosion*	46–47, 54–55, 61–66

SEP Science and Engineering Practices

Planning and Carrying Out Investigations

Designing and conducting investigations with controlled variables; providing evidence to support explanations or design solutions.

CCC Crosscutting Concepts

Scale, Proportion, and Quantity

Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long time periods. Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.

DCI Earth's Systems		
Physical Features		
13	**Analyze and interpret data from maps to describe patterns of Earth's features on land and in the ocean.** *Examples: topographic maps of Earth's land and ocean floor; maps of mountains, continental boundaries, volcanoes, and earthquakes*	6–7, 11, 18–19, 24
SEP Science and Engineering Practices		
Analyzing and Interpreting Data Introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations, using digital tools whenever possible.		
CCC Crosscutting Concepts		
Patterns Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products. Patterns of change can be used to make predictions. Patterns can be used as evidence to support an explanation.		

Other Correlations	
Alabama Course of Study: English Language Arts Connections	
33	26, 42
33a	35, 56, 57, 60

Correlations by Module

MODULE: Earthquakes

DCI Waves and Their Applications in Technologies for Information Transfer

Waves Properties

5	**Develop and use models to describe amplitude and wavelength patterns and how waves can cause objects to move.**	90–92, 93, 95–96, 98–99, 102

SEP Science and Engineering Practices

Developing and Using Models
Building and revising simple models; using models to represent events and design solutions.

CCC Crosscutting Concepts

Patterns
Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products. Patterns of change can be used to make predictions. Patterns can be used as evidence to support an explanation.

DCI Earth's Systems

Physical Features

13	**Analyze and interpret data from maps to describe patterns of Earth's features on land and in the ocean.** *Examples: topographic maps of Earth's land and ocean floor; maps of mountains, continental boundaries, volcanoes, and earthquakes*	73, 74–76, 78, 79, 80–81, 83, 84

SEP Science and Engineering Practices

Analyzing and Interpreting Data
Introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations, using digital tools whenever possible.

CCC Crosscutting Concepts

Patterns
Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products. Patterns of change can be used to make predictions. Patterns can be used as evidence to support an explanation.

DCI Earth and Human Activity		
Natural Hazard Solutions		
15	**Design, test, and evaluate a solution that will protect humans from the effects of natural Earth processes.** *Examples: designing buildings to resist earthquakes, tornados, or hurricanes; improving monitoring of volcanic activity*	118–119, 123–128
SEP Science and Engineering Practices		
Constructing Explanations and Designing Solutions Using evidence in constructing explanations that specify variables; describing and predicting phenomena; and designing multiple solutions to design problems.		
CCC Crosscutting Concepts		
Cause and Effect: Mechanism and Prediction Cause and effect relationships are routinely identified, tested, and used to explain change. Events that occur together with regularity might or might not be a cause and effect relationship.		

Other Correlations	
Alabama Course of Study: English Language Arts Connections	
20	114

Alabama Content Standards at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Alabama Content Standards.

Alabama Content Standards	MODULE: **Structures and Functions of Living Things**	MODULE: **Information Processing and Transfer**
3		●
3b		●
6		●
7		●
8	●	
9		●

Correlations by Module

MODULE: Structures and Functions of Living Things

DCI From Molecules to Organisms

Internal and External Structures

8	**Make a claim, using evidence, that the functions of both internal and external structures of plants and animals (including humans) support growth, survival, and behavior.** *Examples: In plants, thorns provide protection and stems transport nutrients; in animals, heart pumps blood and skin provides protection.* **Clarification: The emphasis is on the function of individual structures.**	12, 13, 14, 15, 16, 17, 21, 22, 31, 39, 41, 45–50

SEP Science and Engineering Practices

Engaging in Argument from Evidence
Critiquing the scientific explanations or solutions proposed by peers, citing relevant evidence about the natural and designed world(s).

CCC Crosscutting Concepts

Structure and Function
Different materials have different substructures, which can sometimes be observed. Substructures have shapes and parts that serve functions.

**From the 2023 Alabama Course of Study: Science*

Continued from previous page.

Other Correlations	
Alabama Course of Study: English Language Arts Connections	
20a–d	33, 50, 87
Open Court Reading Connections	
Alabama Inspire Science, Grade 4, Unit 4, Module 1, Lesson 1	Grade 4, Unit 4: Lesson 4
Alabama Inspire Science, Grade 4, Unit 4, Module 1, Lesson 2	Grade 4, Unit 4: Lesson 2, Lesson 3, Lesson 5, Lesson 6

Correlations by Module

MODULE: Information Processing and Transfer

DCI Energy

Transference of Energy		
3	**Plan and carry out investigations to provide evidence that energy is transferred by sound, light, heat, and electric currents.** *Examples: creating an electric circuit that requires a complete loop*	76–77

SEP Science and Engineering Practices

Planning and Carrying Out Investigations
Designing and conducting investigations with controlled variables; providing evidence to support explanations or design solutions.

CCC Crosscutting Concepts

Energy and Matter: Flows, Cycles, and Conservation
Matter is made of particles. Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. Energy can be transferred in various ways; energy can be transferred between objects.

DCI Energy		
Transference of Energy		
3b	**Construct an explanation with evidence supporting the claim that different objects can absorb, reflect, and/or conduct energy.**	76–77, 78–79, 80–81
SEP Science and Engineering Practices		
Constructing Explanations and Designing Solutions Using evidence in constructing explanations that specify variables; describing and predicting phenomena; and designing multiple solutions to design problems.		
CCC Crosscutting Concepts		
Energy and Matter: Flows, Cycles, and Conservation Matter is made of particles. Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. Energy can be transferred in various ways; energy can be transferred between objects.		

DCI Waves and Their Applications in Technologies for Information Transfer		
Information Transfer		
6	**Construct an explanation of how light, sound, and digitized information are transferred by waves.** *Examples: using a grid of 1s and 0s representing black and white to send information about a picture, using drums to send coded information through sound waves, and using Morse code to send a message*	96–97, 111–116
SEP Science and Engineering Practices		
Constructing Explanations and Designing Solutions Using evidence in constructing explanations that specify variables; describing and predicting phenomena; and designing multiple solutions to design problems.		
CCC Crosscutting Concepts		
Patterns Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products. Patterns of change can be used to make predictions. Patterns can be used as evidence to support an explanation.		

DCI Waves and Their Applications in Technologies for Information Transfer

Wave Properties

7	**Develop a model to demonstrate that light reflecting from objects and entering the eyes allow objects to be seen.** *Example: light reflecting off an apple and back into the eye*	76–77

SEP Science and Engineering Practices

Developing and Using Models
Building and revising simple models; using models to represent events and design solutions.

CCC Crosscutting Concepts

Cause and Effect: Mechanism and Prediction
Cause and effect relationships are routinely identified, tested, and used to explain change. Events that occur together with regularity might or might not be a cause and effect relationship.

DCI From Molecules to Organisms: Structures and Processes

Information Processing

9	**Carry out investigations to support a claim that different animals receive information through their senses, process that information, and respond in various ways.** *Examples: earthworms tunneling into the soil to avoid light, frogs jumping when startled, dogs moving their ears when reacting to sound*	64–65, 67–69

SEP Science and Engineering Practices

Developing and Using Models
Building and revising simple models; using models to represent events and design solutions.

CCC Crosscutting Concepts

Systems and System Models
A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. A system can be described in terms of its components and their interactions

Continued from previous page.

Other Correlations	
Alabama Course of Study: English Language Arts Connections	
 **29**	87
 **33**	110
 **33a**	110