Amplify Science

Grades 6–8

Correlation to the Oregon Science Standards

Amplify Science

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Grade 6

6.PS3: Energy	
OR Performance Expectation	Amplify Science Units
6.PS3.3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. • **SEP** Constructing Explanations and Designing Solutions • **DCI** Energy • **CCC** Energy and Matter	***Phase Change Engineering Internship*** • Day 4 (SEP, DCI, CCC) • Day 7 (SEP, DCI, CCC) ***Thermal Energy*** • Lesson 3.3 (DCI) • Lesson 4.3 (DCI)
6.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** Planning and Carrying Out Investigations • **DCI** Energy • **CCC** Scale, Proportion, and Quantity	***Thermal Energy*** • Lesson 3.3 (SEP, DCI) • Lesson 3.4 (DCI, CCC) • Lesson 4.3 (DCI)
6.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. • **SEP** Engaging in Argument from Evidence • **DCI** Energy • **CCC** Energy and Matter	***Thermal Energy*** • Lesson 2.4 (DCI) • Lesson 4.3 (SEP, DCI, CCC) ***Harnessing Human Energy*** • Lesson 2.1 (SEP, DCI, CCC) ***Force and Motion*** • Lesson 3.3 (DCI) ***Magnetic Fields*** • Lesson 2.4 (DCI)

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6.LS1: From Molecules to Organisms: Structures and Processes	
OR Performance Expectation	Amplify Science Units
6.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. • **SEP** Planning and Carrying Out Investigations • **DCI** From Molecules to Organisms: Structures and Processes • **CCC** Scale, Proportion, and Quantity	***Microbiome*** • **Lesson 1.3** (DCI, CCC) • **Lesson 2.4** (SEP, DCI, CCC) • **Lesson 2.6** (SEP, DCI, CCC) • **Lesson 2.8** (SEP, DCI, CCC)
6.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** Developing and Using Models • **DCI** From Molecules to Organisms: Structures and Processes • **CCC** Structure and Function	***Metabolism*** • **Lesson 2.3** (SEP) • **Lesson 3.3** (DCI) ***Traits and Reproduction*** • **Lesson 1.3** (SEP) • **Lesson 1.5** (CCC) • **Lesson 2.2** (DCI)
6.LS1.3 Construct an explanation supported by evidence for how the body is composed of interacting systems consisting of cells, tissues, and organs working together to maintain homeostasis. • **SEP** Engaging in Argument from Evidence • **DCI** From Molecules to Organisms: Structures and Processes • **CCC** Systems and System Models	***Metabolism*** • **Lesson 2.1** (DCI, CCC) • **Lesson 2.6** (DCI) • **Lesson 4.3** (SEP, CCC)
6.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. • **SEP** Engaging in Argument from Evidence • **DCI** From Molecules to Organisms: Structures and Processes • **CCC** Cause and Effect	***Traits and Reproduction*** • **Lesson 3.1** (DCI) • **Lesson 3.2** (SEP, DCI, CCC) ***Natural Selection*** • **Lesson 4.3** (DCI, CCC)

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6.LS1.5 Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. • **SEP** Constructing Explanations and Designing Solutions • **DCI** From Molecules to Organisms: Structures and Processes • **CCC** Cause and Effect	***Traits and Reproduction*** • **Lesson 4.1** (DCI) ***Natural Selection*** • **Lesson 3.2** (CCC) • **Lesson 3.3** (SEP, CCC) • **Lesson 4.3** (SEP)
6.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. • **SEP** Obtaining, Evaluating, and Communicating Information • **DCI** From Molecules to Organisms: Structures and Processes • **CCC** Cause and Effect	***Metabolism*** • **Lesson 2.6** (DCI) • **Lesson 3.3** (DCI) ***Traits and Reproduction*** • **Lesson 2.1** (SEP) • **Lesson 3.2** (CCC)

6.LS3: Heredity: Inheritance and Variation of Traits

OR Performance Expectation	Amplify Science Units
6.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** Developing and Using Models • **DCI** Heredity: Inheritance and Variation of Traits • **CCC** Cause and Effect	***Traits and Reproduction*** • **Lesson 3.3** (SEP, DCI, CCC) • **Lesson 4.3** (DCI) • **Lesson 4.4** (DCI)

6.ESS2: Earth's Systems

OR Performance Expectation	Amplify Science Units
6.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.	***Rock Transformations*** • **Lesson 2.1** (DCI, CCC)

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• **SEP** Developing and Using Models • **DCI** Earth's Systems • **CCC** Energy and Matter	• **Lesson 3.4** (SEP) ***Weather Patterns*** • **Lesson 1.2** (DCI) • **Lesson 2.1** (CCC) • **Lesson 2.3** (DCI, CCC)
6.ESS2.5 Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. • **SEP** Planning and Carrying Out Investigations • **DCI** Earth's Systems • **CCC** Cause and Effect	***Ocean, Atmosphere, and Climate*** • **Lesson 2.3** (SEP) • **Lesson 3.3** (DCI, CCC) ***Weather Patterns*** • **Lesson 2.3** (SEP, DCI) • **Lesson 3.2** (DCI, CCC)
6.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** Developing and Using Models • **DCI** Earth's Systems • **CCC** Systems and System Models	***Ocean, Atmosphere, and Climate*** • **Lesson 1.4** (SEP, DCI) • **Lesson 3.2** (SEP, DCI, CCC) • **Lesson 3.3** (SEP, DCI)

6.ESS3: Earth and Human Activity	
OR Performance Expectation	Amplify Science Units
6.ESS3.3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. • **SEP** Constructing Explanations and Designing Solutions • **DCI** Earth and Human Activity • **CCC** Cause and Effect	***Earth's Changing Climate Engineering Internship*** • **Day 9** (SEP, DCI) ***Earth's Changing Climate*** • **Lesson 1.2** (DCI) • **Lesson 2.1** (CCC) • **Lesson 3.3** (SEP, DCI)

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6.ESS3.5 Ask clarifying questions based on evidence about the factors that have caused climate change over the past century. • **SEP** Asking Questions and Defining Problems • **DCI** Earth and Human Activity • **CCC** Stability and Change	***Earth's Changing Climate*** • Lesson 3.3 (DCI) • Lesson 4.2 (SEP) • Lesson 4.3 (DCI, CCC)

6.ETS1: Engineering Design	
OR Performance Expectation	Amplify Science Units
6.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. • **SEP** Asking Questions and Defining Problems • **DCI** Engineering Design	***Earth's Changing Climate Engineering Internship*** • Day 9 (SEP, DCI) ***Metabolism Engineering Internship*** • Day 9 (SEP, DCI)
6.ETS1.2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. • **SEP** Engaging in Argument from Evidence • **DCI** Engineering Design	***Earth's Changing Climate Engineering Internship*** • Day 9 (SEP, DCI) ***Metabolism Engineering Internship*** • Day 9 (SEP, DCI)
6.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. • **SEP** Analyzing and Interpreting Data • **DCI** Engineering Design	***Earth's Changing Climate Engineering Internship*** • Day 9 (SEP, DCI) ***Metabolism Engineering Internship*** • Day 7 (SEP, DCI) • Day 9 (SEP, DCI)
6.ETS1.4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal	***Earth's Changing Climate Engineering Internship*** • Day 4 (SEP, DCI)

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design can be achieved. • **SEP** Developing and Using Models • **DCI** Engineering Design	• **Day 5** (DCI) ***Metabolism Engineering Internship*** • **Day 9** (SEP, DCI)

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Grade 7

7.PS1: Matter and its Interactions	
OR Performance Expectation	Amplify Science Units
7.PS1.1 Develop models to describe the atomic composition of simple molecules and extended structures. • **SEP** Developing and Using Models • **DCI** Matter and its Interactions • **CCC** Scale, Proportion, and Quantity	***Chemical Reactions*** • **Lesson 1.6** (SEP, DCI, CCC) • **Lesson 4.4** (DCI) ***Phase Change*** • **Lesson 1.5** (CCC) • **Lesson 1.6** (SEP)
7.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** Analyzing and Interpreting Data • **DCI** Matter and its Interactions • **CCC** Patterns	***Chemical Reactions*** • **Lesson 1.3** (SEP, CCC) • **Lesson 2.2** (DCI) • **Lesson 4.3** (DCI)
7.PS1.3 Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. • **SEP** Obtaining, Evaluating, and Communicating Information • **DCI** Matter and its Interactions • **CCC** Structure and Function	***Chemical Reactions*** • **Lesson 2.1** (SEP, DCI, CCC) • **Lesson 2.2** (DCI) • **Lesson 4.3** (DCI)
7.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** Developing and Using Models • **DCI** Matter and its Interactions • **CCC** Cause and Effect	***Phase Change*** • **Lesson 1.6** (SEP, DCI) • **Lesson 2.1** (DCI) ***Thermal Energy*** • **Lesson 1.4** (SEP, DCI) • **Lesson 3.3** (DCI)

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7.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** Developing and Using Models • **DCI** Matter and its Interactions • **CCC** Energy and Matter	***Chemical Reactions*** • **Lesson 3.4** (SEP, DCI, CCC) • **Lesson 4.3** (DCI, CCC) • **Lesson 4.4** (DCI, CCC)
7.PS1.6 Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. • **SEP** Constructing Explanations and Designing Solutions • **DCI** Matter and its Interactions • **CCC** Energy and Matter	***Phase Change Engineering Internship*** • **Day 7** (SEP, DCI) ***Force and Motion Engineering Internship*** • **Day 7** (SEP, DCI) ***Chemical Reactions*** • **Lesson 2.5** (DCI) ***Harnessing Human Energy*** • **Lesson 2.2** (CCC)

7.LS1: From Molecules to Organisms: Structures and Processes	
OR Performance Expectation	Amplify Science Units
7.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** Constructing Explanations and Designing Solutions • **DCI** From Molecules to Organisms: Structures and Processes • **CCC** Energy and Matter	***Matter and Energy in Ecosystems*** • **Lesson 1.5** (DCI, CCC) • **Lesson 1.6** (SEP) • **Lesson 3.4** (DCI, CCC)
7.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.	***Matter and Energy in Ecosystems*** • **Lesson 2.2** (SEP, DCI, CCC) • **Lesson 2.3** (DCI, CCC)

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• **SEP** Developing and Using Models • **DCI** From Molecules to Organisms: Structures and Processes • **CCC** Energy and Matter	***Metabolism*** • **Lesson 1.3** (SEP, DCI) • **Lesson 3.3** (SEP, DCI)

7.LS2: Ecosystems: Interactions, Energy, and Dynamics	
OR Performance Expectation	Amplify Science Units
7.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** Analyzing and Interpreting Data • **DCI** Ecosystems: Interactions, Energy, and Dynamics • **CCC** Cause and Effect	***Populations and Resources*** • **Lesson 2.3** (DCI) • **Lesson 3.3** (DCI, CCC) • **Lesson 4.2** (SEP)
7.LS2.2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. • **SEP** Constructing Explanations and Designing Solutions • **DCI** Ecosystems: Interactions, Energy, and Dynamics • **CCC** Patterns	***Microbiome*** • **Lesson 2.4** (CCC) ***Natural Selection*** • **Lesson 2.2** (CCC) ***Populations and Resources*** • **Lesson 2.4** (SEP, DCI) • **Lesson 2.7** (SEP) • **Lesson 3.3** (DCI)
7.LS2.3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. • **SEP** Developing and Using Models • **DCI** Ecosystems: Interactions, Energy, and Dynamics • **CCC** Energy and Matter	***Matter and Energy in Ecosystems*** • **Lesson 3.4** (SEP, DCI, CCC) ***Populations and Resources*** • **Lesson 1.2** (SEP)

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	• **Lesson 2.2** (CCC) • **Lesson 2.3** (DCI)
7.LS2.4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. • **SEP** Engaging in Argument from Evidence • **DCI** Ecosystems: Interactions, Energy, and Dynamics • **CCC** Stability and Change	***Populations and Resources*** • **Lesson 3.4** (DCI) • **Lesson 4.1** (CCC) • **Lesson 4.3** (SEP, DCI, CCC)
7.LS2.5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services. • **SEP** Engaging in Argument from Evidence • **DCI** Ecosystems: Interactions, Energy, and Dynamics • **CCC** Stability and Change	***Populations and Resources*** • **Lesson 1.3** (DCI) • **Lesson 4.1** (CCC) • **Lesson 4.3** (CCC) ***Natural Selection Engineering Internship*** • **Day 8** (SEP)

7.ESS2: Earth's Systems	
OR Performance Expectation	Amplify Science Units
7.ESS2.1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. • **SEP** Developing and Using Models • **DCI** Earth's Systems • **CCC** Stability and Change	***Rock Transformations*** • **Lesson 3.4** (DCI) • **Lesson 4.3** (DCI) ***Earth's Changing Climate*** • **Lesson 1.3** (SEP) • **Lesson 2.3** (CCC)
7.ESS2.2 Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. • **SEP** Constructing Explanations and Designing Solutions • **DCI** Earth's Systems	***Rock Transformations*** • **Lesson 3.4** (SEP, DCI) ***Plate Motion***

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• **CCC** Scale, Proportion, and Quantity	• **Lesson 3.2** (CCC) • **Lesson 4.1** (SEP, DCI) • **Lesson 4.2** (SEP, DCI)
7.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. • **SEP** Analyzing and Interpreting Data • **DCI** Earth's Systems • **CCC** Patterns	***Plate Motion*** • **Lesson 2.5** (DCI, CCC) • **Lesson 3.3** (DCI, CCC) • **Lesson 4.3** (SEP, DCI)

7.ESS3: Earth and Human Activity

OR Performance Expectation	Amplify Science Units
7.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** Constructing Explanations and Designing Solutions • **DCI** Earth and Human Activity • **CCC** Cause and Effect	***Rock Transformations*** • **Lesson 2.3** (DCI) • **Lesson 2.4** (SEP) • **Lesson 3.2** (CCC)
7.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** Analyzing and Interpreting Data • **DCI** Earth and Human Activity • **CCC** Patterns	***Plate Motion*** • **Lesson 1.3** (DCI, CCC) • **Lesson 4.3** (SEP) ***Plate Motion Engineering Internship*** • **Day 9** (DCI) ***Ocean, Atmosphere, and Climate*** • **Lesson 2.3** (SEP)

7.ETS1: Engineering Design

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OR Performance Expectation	Amplify Science Units
7.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. • **SEP** Asking Questions and Defining Problems • **DCI** Engineering Design	***Phase Change Engineering Internship*** • **Day 7** (SEP, DCI) • **Day 9** (SEP, DCI) ***Plate Motion Engineering Internship*** • **Day 9** (SEP, DCI)
7.ETS1.2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. • **SEP** Engaging in Argument from Evidence • **DCI** Engineering Design	***Phase Change Engineering Internship*** • **Day 7** (SEP, DCI) • **Day 9** (SEP, DCI) ***Plate Motion Engineering Internship*** • **Day 9** (SEP, DCI)
7.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. • **SEP** Analyzing and Interpreting Data • **DCI** Engineering Design	***Phase Change Engineering Internship*** • **Day 7** (SEP, DCI) • **Day 8** (SEP, DCI) • **Day 9** (SEP, DCI) ***Plate Motion Engineering Internship*** • **Day 9** (SEP, DCI)
7.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. • **SEP** Developing and Using Models • **DCI** Engineering Design	***Phase Change Engineering Internship*** • **Day 7** (SEP, DCI) • **Day 9** (SEP, DCI) ***Plate Motion Engineering Internship*** • **Day 9** (SEP, DCI)

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Grade 8

8.PS2: Motion and Stability: Forces and Interaction	
OR Performance Expectation	Amplify Science Units
8.PS2.1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. • **SEP** Constructing Explanations and Designing Solutions • **DCI** Motion and Stability: Forces and Interaction • **CCC** Systems and System Models	***Force and Motion*** • Lesson 4.3 (DCI) • Lesson 4.4 (DCI) ***Force and Motion Engineering Internship*** • Day 7 (SEP) ***Magnetic Fields*** • Lesson 2.4 (CCC)
8.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** Planning and Carrying Out Investigations • **DCI** Motion and Stability: Forces and Interaction • **CCC** Stability and Change	***Force and Motion*** • Lesson 1.6 (DCI) • Lesson 2.1 (SEP, DCI) ***Thermal Energy*** • Lesson 2.4 (CCC) • Lesson 3.3 (SEP)
8.PS2.3 Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. • **SEP** Asking Questions and Defining Problems • **DCI** Motion and Stability: Forces and Interaction • **CCC** Cause and Effect	***Magnetic Fields*** • Lesson 4.3 (DCI) • Lesson 4.4 (DCI) ***Force and Motion*** • Lesson 1.6 (CCC) • Lesson 2.1 (SEP)
8.PS2.4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the	***Magnetic Fields*** • Lesson 1.3 (CCC)

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masses of interacting objects. • **SEP** Engaging in Argument from Evidence • **DCI** Motion and Stability: Forces and Interaction • **CCC** Systems and System Models	• **Lesson 3.2** (DCI) • **Lesson 4.3** (SEP, CCC)
8.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** Planning and Carrying Out Investigations • **DCI** Motion and Stability: Forces and Interaction • **CCC** Cause and Effect	***Force and Motion Engineering Internship*** • **Day 1** (DCI) ***Force and Motion*** • **Lesson 1.6** (CCC) • **Lesson 2.1** (SEP) ***Magnetic Fields*** • **Lesson 1.5** (DCI) • **Lesson 3.2** (DCI)

8.PS3: Energy	
OR Performance Expectation	Amplify Science Units
8.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. • **SEP** Analyzing and Interpreting Data • **DCI** Energy • **CCC** Scale, Proportion, and Quantity	***Force and Motion*** • **Lesson 2.1** (CCC) • **Lesson 3.3** (DCI, CCC) • **Lesson 4.3** (SEP, DCI)
8.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** Developing and Using Models • **DCI** Energy • **CCC** Systems and System Models	***Magnetic Fields*** • **Lesson 2.4** (SEP, DCI, CCC) • **Lesson 3.3** (DCI, CCC) • **Lesson 4.3** (DCI, CCC)

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8.PS4: Waves and Their Applications in Technologies for Information Transfer	
OR Performance Expectation	Amplify Science Units
8.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** Using Mathematics and Computational Thinking • **DCI** Energy • **CCC** Patterns	***Light Waves*** • **Lesson 2.4** (DCI) ***Thermal Energy*** • **Lesson 2.4** (CCC) • **Lesson 3.4** (SEP) ***Chemical Reactions*** • **Lesson 1.3** (CCC)
8.PS4.2 Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. • **SEP** Developing and Using Models • **DCI** Energy • **CCC** Structure and Function	***Chemical Reactions*** • **Lesson 2.1** (CCC) • **Lesson 2.3** (SEP) ***Light Waves*** • **Lesson 2.3** (DCI) • **Lesson 2.4** (DCI)
8.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. • **SEP** Obtaining, Evaluating, and Communicating Information • **DCI** Energy • **CCC** Structure and Function	***Light Waves*** • **Lesson 3.1** (DCI) ***Chemical Reactions*** • **Lesson 3.1** (SEP) • **Lesson 3.2** (SEP) ***Force and Motion Engineering Internship*** • **Day 7** (CCC) • **Day 9** (CCC)

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8.LS3: Heredity: Inheritance and Variation of Traits	
OR Performance Expectation	Amplify Science Units
8.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** Developing and Using Models • **DCI** Heredity: Inheritance and Variation of Traits • **CCC** Structure and Function	***Traits and Reproduction*** • **Lesson 1.3** (DCI, CCC) • **Lesson 2.4** (SEP, DCI) • **Lesson 4.3** (DCI, CCC)

8.LS4: Biological Evolution: Unity and Diversity	
OR Performance Expectation	Amplify Science Units
8.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. • **SEP** Analyzing and Interpreting Data • **DCI** Biological Evolution: Unity and Diversity • **CCC** Patterns	***Matter and Energy in Ecosystems*** • **Lesson 1.4** (CCC) • **Lesson 1.6** (CCC) ***Evolutionary History*** • **Lesson 2.4** (DCI) • **Lesson 3.3** (SEP)
8.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. • **SEP** Constructing Explanations and Designing Solutions • **DCI** Biological Evolution: Unity and Diversity • **CCC** Patterns	***Evolutionary History*** • **Lesson 3.2** (SEP, DCI) • **Lesson 4.3** (DCI, CCC) ***Natural Selection*** • **Lesson 1.4** (CCC) • **Lesson 3.3** (SEP)
8.LS4.3 Analyze displays of pictorial data to compare patterns of	***Evolutionary History***

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similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy. • **SEP** Analyzing and Interpreting Data • **DCI** Biological Evolution: Unity and Diversity • **CCC** Patterns	• **Lesson 3.1** (DCI) • **Lesson 4.3** (CCC) ***Natural Selection*** • **Lesson 1.4** (SEP, CCC) • **Lesson 2.4** (CCC)
8.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** Constructing Explanations and Designing Solutions • **DCI** Biological Evolution: Unity and Diversity • **CCC** Cause and Effect	***Natural Selection*** • **Lesson 2.4** (SEP, DCI) • **Lesson 4.3** (DCI, CCC) • **Lesson 4.4** (DCI, CCC)
8.LS4.5 Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. • **SEP** Obtaining, Evaluating, and Communicating Information • **DCI** Biological Evolution: Unity and Diversity • **CCC** Cause and Effect	***Natural Selection*** • **Lesson 3.2** (DCI) • **Lesson 4.3** (CCC) ***Traits and Reproduction*** • **Lesson 2.1** (SEP, DCI, CCC) • **Lesson 3.5** (SEP, DCI, CCC)
8.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** Using Mathematics and Computational Thinking • **DCI** Biological Evolution: Unity and Diversity • **CCC** Cause and Effect	***Natural Selection*** • **Lesson 1.4** (SEP, DCI) • **Lesson 2.4** (DCI, CCC) • **Lesson 4.3** (DCI, CCC)

8.ESS1: Earth's Place in the Universe	
OR Performance Expectation	Amplify Science Units
8.ESS1.1 Develop and use a model of the Earth.sun.moon system to	***Earth, Moon, and Sun***

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describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. • **SEP** Developing and Using Models • **DCI** Earth's Place in the Universe • **CCC** Patterns	• **Lesson 1.3** (SEP, DCI) • **Lesson 2.4** (DCI, CCC) • **Lesson 3.1** (DCI)
8.ESS1.2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. • **SEP** Developing and Using Models • **DCI** Earth's Place in the Universe • **CCC** Systems and System Models	***Geology on Mars*** • **Lesson 1.3** (DCI) • **Lesson 2.2** (SEP, DCI, CCC) ***Earth, Moon, and Sun*** • **Lesson 2.4** (SEP, DCI, CCC)
8.ESS1.3 Analyze and interpret data to determine scale properties of objects in the solar system. • **SEP** Analyzing and Interpreting Data • **DCI** Earth's Place in the Universe • **CCC** Scale, Proportion, and Quantity	***Geology on Mars*** • **Lesson 1.1** (DCI, CCC) • **Lesson 1.3** (DCI) ***Plate Motion*** • **Lesson 3.2** (CCC)
8.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. • **SEP** Constructing Explanations and Designing Solutions • **DCI** Earth's Place in the Universe • **CCC** Scale, Proportion, and Quantity	***Plate Motion*** • **Lesson 3.2** (SEP, DCI, CCC) • **Lesson 3.4** (SEP) • **Lesson 4.2** (DCI)

8.ESS3: Earth and Human Activity	
OR Performance Expectation	Amplify Science Units
8.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 Changing Climate*** • **Lesson 3.1** (DCI) • **Lesson 4.3** (SEP, DCI)

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• **SEP** Engaging in Argument from Evidence • **DCI** Earth and Human Activity • **CCC** Cause and Effect	***Ocean, Atmosphere, and Climate*** • **Lesson 2.4** (CCC)

8.ETS1: Engineering Design	
OR Performance Expectation	Amplify Science Units
8.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. • **SEP** Asking Questions and Defining Problems • **DCI** Engineering Design	***Force and Motion Engineering Internship*** • **Day 7** (SEP, DCI) • **Day 9** (SEP, DCI) ***Natural Selection Engineering Internship*** • **Day 7** (SEP, DCI) • **Day 9** (SEP, DCI)
8.ETS1.2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. • **SEP** Engaging in Argument from Evidence • **DCI** Engineering Design	***Force and Motion Engineering Internship*** • **Day 7** (SEP, DCI) • **Day 9** (SEP, DCI) ***Natural Selection Engineering Internship*** • **Day 7** (SEP, DCI) • **Day 9** (SEP, DCI)
8.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. • **SEP** Analyzing and Interpreting Data • **DCI** Engineering Design	***Force and Motion Engineering Internship*** • **Day 7** (SEP, DCI) • **Day 9** (SEP, DCI) ***Natural Selection Engineering Internship*** • **Day 7** (SEP, DCI) • **Day 9** (SEP, DCI)
8.ETS1.4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal	***Force and Motion Engineering Internship*** • **Day 7** (SEP, DCI)

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design can be achieved. • **SEP** Developing and Using Models • **DCI** Engineering Design	• **Day 9** (SEP, DCI) ***Natural Selection Engineering Internship*** • **Day 7** (SEP, DCI) • **Day 9** (SEP, DCI)

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