PhD Science® K–5 Curriculum Correlation to Georgia Standards of Excellence (GSE) for Science

Contents

PhD Science® Correlation to Georgia Standards of Excellence (GSE) for Science: Level K

The *PhD Science* Level K curriculum mostly aligns with the Kindergarten GSE for Science. A detailed analysis of alignment follows.

Key: Module (M), Lesson (L)

Kindergarten Standards

Earth and Space Science	**Aligned *PhD Science* Lessons**
SKE1. Obtain, evaluate, and communicate observations about time patterns (day to night and night to day) and objects (sun, moon, stars) in the day and night sky.	**Level K Module 1** **Level 1 Module 4**
a. Ask questions to classify objects according to those seen in the day sky, the night sky, and both.	Level 1 M4 L1–8, 14–25
b. Develop a model to communicate the changes that occur in the sky during the day, as day turns into night, during the night, and as night turns into day using pictures and words.	Level 1 M4 L9–13, 23–25
SKE2. Obtain, evaluate, and communicate information to describe the physical attributes of earth materials (soil, rocks, water, and air).	**Level K Module 1** **Level 2 Module 2**
a. Ask questions to identify and describe earth materials—soil, rocks, water, and air.	Level K M1 L8, 11 Level 2 M2 L3–4, 14–17
b. Construct an argument supported by evidence for how rocks can be grouped by physical attributes (size, weight, texture, color).	Level 2 M2 L3–4
c. Use tools to observe and record physical attributes of soil such as texture and color.	Level 2 M2 L3–4, 10–12

Physical Science	Aligned *PhD Science* Lessons
SKP1. Obtain, evaluate, and communicate information to describe objects in terms of the materials they are made of and their physical attributes.	**Level K Module 1** **Level 2 Module 1** **Level 2 Module 2**
a. Ask questions to compare and sort objects made of different materials. (Common materials include clay, cloth, plastic, wood, paper, and metal.)	Level K M1 L13–16 Level 2 M1 L1–7
b. Use senses and science tools to classify common objects, such as buttons or swatches of cloth, according to their physical attributes (color, size, shape, weight, and texture).	Level 2 M1 L1–7
c. Plan and carry out an investigation to predict and observe whether objects, based on their physical attributes, will sink or float.	*PhD Science* students observe the physical attributes of objects, but they do not observe whether objects sink or float.
SKP2. Obtain, evaluate, and communicate information to compare and describe different types of motion.	**Level K Module 2**
a. Plan and carry out an investigation to determine the relationship between an object's physical attributes and its resulting motion (straight, circular, back and forth, fast and slow, and motionless) when a force is applied. (Examples could include toss, drop, push, and pull.)	Level K M2 L1–23
b. Construct an argument as to the best way to move an object based on its physical attributes.	Level K M2 L17–23

Life Science	Aligned *PhD Science* Lessons
SKL1. Obtain, evaluate, and communicate information about how organisms (alive and not alive) and non-living objects are grouped.	**Level K Module 3** **Level K Module 4**
a. Construct an explanation based on observations to recognize the differences between organisms and non-living objects.	Level K M3 L1–3, 9–29 Level K M4 L1–5, 8–9, 11–16
b. Develop a model to represent how a set of organisms and non-living objects are sorted into groups based on their attributes.	Level K M3 L1–3, 9–29 Level K M4 L1–5, 8–9, 11–16
SKL2. Obtain, evaluate, and communicate information to compare the similarities and differences in groups of organisms.	**Level 1 Module 1**
a. Construct an argument supported by evidence for how animals can be grouped according to their features.	Level 1 M1 L1–6, 22–23, 26–29
b. Construct an argument supported by evidence for how plants can be grouped according to their features.	Level 1 M1 L1–3, 7–8, 22–23, 26–29
c. Ask questions and make observations to identify the similarities and differences of offspring to their parents and to other members of the same species.	Level 1 M1 L22–23, 26–29

Science and Engineering Practices

Science and Engineering Practices	Aligned *PhD Science* Lessons
Asking Questions and Defining Problems	Level K M1 L1–9, 12–16, 22–26 Level K M2 L1–3, 9 Level K M3 L1–8, 14–16, 22, 27–29
Developing and Using Models	Level K M1 L1–2, 12–16 Level K M2 L1–3, 10–12 Level K M3 L1–3, 9–12, 19–20 Level K M4 L1–9, 11–16
Planning and Carrying Out Investigations	Level K M1 L4–7, 10–24, 27–30 Level K M2 L7–8, 10–23 Level K M3 L4–8, 21 Level K M4 L3–5
Constructing Explanations and Designing Solutions	Level K M2 L17–20 Level K M3 L4–16, 23–29
Obtaining, Evaluating, and Communicating Information	Level K M1 L12–16, 25–26, 28–30 Level K M2 L21–23 Level K M3 L23–29 Level K M4 L1–2, 6–10, 14–16, 18–24, 26–28

Core Ideas

The following core ideas appear in the GSE Kindergarten Curriculum Map.

Physical Attributes	**Aligned *PhD Science* Lessons**
Properties of Matter	Level 2 M1 L1–31 Level 2 M2 L3–4, 14–17
Physical Attributes	Level 2 M1 L1–16, 19, 20–31 Level 2 M2 L3–4, 14–17
Floating and Sinking	*PhD Science* does not cover this topic in the national edition.

Motion	**Aligned *PhD Science* Lessons**
Objects pull or push each other when they collide or are connected.	Level K M2 L13–23
Pushes and pulls can have different strengths and directions.	Level K M2 L7–23
Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.	Level K M2 L1–23

Living/Non-Living	**Aligned *PhD Science* Lessons**
All animals need food to live and grow.	Level K M3 L4–16, 19–20, 22, 27–29 Level 2 M4 L7–8
Plants need water and light to live and grow.	Level K M3 L4–16, 19–20, 22, 27–29 Level 2 M4 L7–8
Animals can move around, but plants cannot.	Level K M3 L1–29 Level K M4 L1–28
Living things can survive only where their needs are met.	Level K M3 L1–3, 9–29 Level K M4 L1–5, 8–9, 11–16
Living things exist in different places on land and in water.	Level K M3 L2, 4, 6, 8, 9–26 Level K M4 L18–19 Level 2 M4 L1–3, 7–25

Earth Materials	Aligned *PhD Science* Lessons
Rocks, soils, and sand	Level K M1 L8, 11 Level K M3 L1–3, 9–12, 27–29
Plants and animals (including humans) depend on the land, water, and air to live and grow.	Level K M3 L4–16, 19–22, 27–29
Living things need water, air, and resources from the land, and they try to live in places that have the things they need.	Level K M3 L1–29 Level K M4 L1–5, 8–9, 11–16 Level 2 M4 L7–8

Time Patterns and Organisms	Aligned *PhD Science* Lessons
Patterns of the motion of the Sun, moon, and stars in the sky, can be observed, described, and predicted.	Level 1 M4 L1–8, 14–25
Some events on Earth occur in cycles, like day and night.	Level 1 M4 L9–13, 23–25 Level 5 M4 L7–8
Animals and plants have different parts.	Level 1 M1 L1–21, 27–29
Plants and animals have predictable characteristics at different stages of development. Plants and animals grow and change. Adult plants and animals can have young.	Level 1 M1 L1–15, 22–29 Level 3 M3 L1–3, 7–8, 23–25, 27–28

Crosscutting Concepts

Crosscutting Concepts	Aligned *PhD Science* Lessons
Patterns	Level K M1 L17–30 Level K M2 L1–6, 17–20 Level K M3 L4–8, 14–20, 22, 26–29 Level K M4 L3–5
Cause and Effect	Level K M2 L4–23 Level K M3 L28–29 Level K M4 L3–5, 10, 14–19, 26–28
Structure and Function	Level K M1 L10–16 Level K M4 L20–24
Scale, Proportion, and Quantity	Level K M1 L1–7, 10–24, 28–30 Level K M2 L7–9, 13–15, 21–23 Level K M3 L1–3 Level K M4 L25
Stability and Change	Level K M1 L8–9, 17–21 Level K M4 L14–16
Energy and Matter	Level 2 M1 L10–11, 29–31 Level 2 M2 L3–4, 8–13, 22–24
Systems and System Models	Level K M3 L1–3, 9–13, 19–21, 23–25, 27–29 Level K M4 L1–9, 11–16

PhD Science® Correlation to Georgia Standards of Excellence (GSE) for Science: Level 1

The *PhD Science* Level 1 curriculum aligns with the Grade 1 GSE for Science. A detailed analysis of alignment follows.

Key: Module (M), Lesson (L)

Grade 1 Standards

Earth and Space Science	**Aligned *PhD Science* Lessons**
S1E1. Obtain, evaluate, and communicate weather data to identify weather patterns.	**Level K Module 1** **Level K Module 4** **Level 3 Module 1** **Level 3 Module 2**
a. Represent data in tables and/or graphs to identify and describe different types of weather and the characteristics of each type.	Level K M1 L3–11, 17–21, 25–26
b. Ask questions to identify forms of precipitation such as rain, snow, sleet, and hailstones as either solid (ice) or liquid (water).	Level K M1 L4–7, 22–24
c. Plan and carry out investigations on current weather conditions by observing, measuring with simple weather instruments (thermometer, wind vane, rain gauge), and recording weather data (temperature, precipitation, sky conditions, and weather events) in a periodic journal, on a calendar, and graphically.	Level K M1 L3–11, 17–21
d. Analyze data to identify seasonal patterns of change.	Level K M4 L25 Level 3 M1 L11–15 Level 3 M2 L16–19

Physical Science	Aligned *PhD Science* Lessons
S1P1. Obtain, evaluate, and communicate information to investigate light and sound.	**Level 1 Module 2** **Level 1 Module 3**
a. Use observations to construct an explanation of how light is required to make objects visible.	Level 1 M2 L1–9, 21–23
b. Ask questions to identify and compare sources of light.	Level 1 M2 L1–3, 10–12
c. Plan and carry out an investigation of shadows by placing objects at various points from a source of light.	Level 1 M2 L1–3, 10–23
d. Construct an explanation supported by evidence that vibrating materials can make sound and that sound can make materials vibrate.	Level 1 M3 L1–17, 26–29
e. Design a signal that can serve as an emergency alert using light and/or sound to communicate over a distance.	Level 1 M3 L18–29
S1P2. Obtain, evaluate, and communicate information to demonstrate the effects of magnets on other magnets and other objects.	**Level 3 Module 4**
a. Construct an explanation of how magnets are used in everyday life.	Level 3 M4 L19–22
b. Plan and carry out an investigation to demonstrate how magnets attract and repel each other and the effect of magnets on common objects.	Level 3 M4 L19–21

Life Science	Aligned *PhD Science* Lessons
S1L1. Obtain, evaluate, and communicate information about the basic needs of plants and animals.	**Level K M3 L1–3, 9–29** **Level K M4 L1–5, 8–9, 11–16** **Level 1 M1 L1**
a. Develop models to identify the parts of a plant—root, stem, leaf, and flower.	Level 1 M1 L7–8
b. Ask questions to compare and contrast the basic needs of plants (air, water, light, and nutrients) and animals (air, water, food, and shelter).	Level K M3 L1–3, 9–29 Level K M4 L1–5, 8–9, 11–13
c. Design a solution to ensure that a plant or animal has all of its needs met.	Level K M4 L1–16, 18–25

Science and Engineering Practices

Science and Engineering Practices	Aligned *PhD Science* Lessons
Asking Questions and Defining Problems	Level 1 M1 L1–3, 11–15 Level 1 M2 L1–3 Level 1 M3 L1–3 Level 1 M4 L1–3, 14–16
Developing and Using Models	Level 1 M1 L1–9, 11–15, 18, 28–29 Level 1 M2 L1–7, 10–23 Level 1 M3 L7, 11–14 Level 1 M4 L1–3, 7–8
Planning and Carrying Out Investigations	Level 1 M1 L19–20 Level 1 M2 L4–12, 15–18, 22–23 Level 1 M3 L1–9, 11–13, 15–29 Level 1 M4 L1–6, 14–16, 19–21
Analyzing and Interpreting Data	Level 1 M1 L10, 16–21, 27–29 Level 1 M2 L1–9 Level 1 M3 L8–13, 15–16, 26–29 Level 1 M4 L4–6, 9–13
Constructing Explanations and Designing Solutions	Level 1 M1 L7–8, 11–17, 22–23, 26–29 Level 1 M2 L4–7, 21–23 Level 1 M3 L4–6, 14, 21–29
Obtaining, Evaluating, and Communicating Information	Level 1 M1 L24–25, 27–29 Level 1 M2 L21–23 Level 1 M3 L18–19, 26–29 Level 1 M4 L9–18, 23–25

Core Ideas

The following core ideas appear in the GSE First Grade Curriculum Map.

Plants, Animals, and Weather	**Aligned *PhD Science* Lessons**
Plants have different parts.	Level 1 M1 L1–15, 27–29
Plants and animals grow and change.	Level 1 M1 L24–29 Level 3 M3 L7–8, 23–28
Basic needs of plants and animals	Level K M3 L1–3, 9–29 Level K M4 L1–5, 8–9, 11–13 Level 1 M1 L1
Interactions, energy, and dynamics	Level 2 M3 L1–29
Cycles of matter and energy transfer in ecosystems	Level 2 M2 L2–4 Level 2 M4 L7–8 Level 5 M2 L6–7, 10–13
Ecosystem dynamics, functioning and resilience	Level 3 M2 L16–28
Roles of water in Earth's surface processes	Level 2 M4 L1–6, 16, 22–25
Weather and climate	Level K M1 L1–11, 17–24, 28–30 Level K M4 L25

Light and Sound	**Aligned *PhD Science* Lessons**
Sound can make matter vibrate, and vibrating matter can make sound.	Level 1 M3 L1–17, 26–29
Light is needed to see.	Level 1 M2 L1–3, 10–23
Sources of light	Level 1 M2 L1–9, 21–23
Light and sound are used to communicate.	Level 1 M3 L18–29

Magnets	**Aligned *PhD Science* Lessons**
When objects touch or collide, they push on one another and can change motion or shape.	Level K M2 L13–23

Crosscutting Concepts

Crosscutting Concepts	Aligned *PhD Science* Lessons
Patterns	Level 1 M1 L1–6, 16–29 Level 1 M2 L1–9, 21–23 Level 1 M3 L1–7, 11–13, 17–20, 26–29 Level 1 M4 L1–25
Cause and Effect	Level 1 M2 L1–7, 10–23 Level 1 M3 L4–7, 14–17, 26–29 Level 1 M4 L4–6, 9–13, 17–21, 23–25
Energy and Matter	Level 2 M1 L10–11, 29–31 Level 2 M2 L3–4, 8–13, 22–24
Systems and System Models	Level 1 M1 L1–8, 16–17 Level 1 M2 L1–3, 10–23 Level 1 M3 L1–3, 8–10, 14, 21–29

PhD Science® Correlation to Georgia Standards of Excellence (GSE) for Science: Level 2

The *PhD Science* Level 2 curriculum mostly aligns with the Grade 2 GSE for Science. A detailed analysis of alignment follows.

Key: Module (M), Lesson (L)

Grade 2 Standards

Earth and Space Science	**Aligned *PhD Science* Lessons**
S2E1. Obtain, evaluate, and communicate information about stars having different sizes and brightness.	**Level 1 Module 4**
a. Ask questions to describe the physical attributes (size and brightness) of stars.	Level 1 M4 L1–8, 14–25
b. Construct an argument to support the claim that although the sun appears to be the brightest and largest star, it is actually medium in size and brightness.	Level 1 M4 L4–8, 14–25
S2E2. Obtain, evaluate, and communicate information to develop an understanding of the patterns of the sun and the moon and the sun's effect on Earth.	**Level K Module 1** **Level 1 Module 2** **Level 1 Module 4**
a. Plan and carry out an investigation to determine the effect of the position of the sun in relation to a fixed object on Earth at various times of the day.	Level K M1 L8–9, 12–16 Level 1 M2 L1–3, 10–12
b. Design and build a structure that demonstrates how shadows change throughout the day.	Level K M1 L8–9, 12–16 Level 1 M2 L1–3, 10–12
c. Represent data in tables and/or graphs of the length of the day and night to recognize the change in seasons.	Level 1 M4 L9–13
d. Use data from personal observations to describe, illustrate, and predict how the appearance of the moon changes over time in a pattern.	Level 1 M4 L19–22
S2E3. Obtain, evaluate, and communicate information about how weather, plants, animals, and humans cause changes to the environment.	**Level K Module 4**
a. Ask questions to obtain information about major changes to the environment in your community.	Level K M4 L1–10, 14–16, 26–28
b. Construct an explanation of the causes and effects of a change to the environment in your community.	Level K M4 L1–10, 14–16, 26–28

Physical Science	Aligned *PhD Science* Lessons
S2P1. Obtain, evaluate, and communicate information about the properties of matter and changes that occur in objects.	**Level 2 Module 1** **Level 2 Module 2**
a. Ask questions to describe and classify different objects according to their physical properties.	Level 2 M1 L1–16, 19, 23, 29–31 Level 2 M2 L3–4, 14–17
b. Construct an explanation for how structures made from small pieces (linking cubes, building blocks) can be disassembled and then rearranged to make new and different structures.	Level 2 M1 L10–11, 24–31
c. Provide evidence from observations to construct an explanation that some changes in matter caused by heating or cooling can be reversed and some changes are irreversible.	Level 2 M1 L14–19, 29–31
S2P2. Obtain, evaluate, and communicate information to explain the effect of a force (a push or a pull) in the movement of an object (changes in speed and direction).	**Level K Module 2**
a. Plan and carry out an investigation to demonstrate how pushing and pulling on an object affects the motion of the object.	Level K M2 L7–23
b. Design a device to change the speed or direction of an object.	Level K M2 L1–23
c. Record and analyze data to decide if a design solution works as intended to change the speed or direction of an object with a force (a push or a pull).	Level K M2 L17–20

Life Science	Aligned *PhD Science* Lessons
S2L1. Obtain, evaluate, and communicate information about the life cycles of different living organisms.	**Level 2 Module 3** **Level 3 Module 2**
a. Ask questions to determine the sequence of the life cycle of common animals in your area: a mammal such as a cat, dog or classroom pet, a bird such as a chicken, an amphibian such as a frog, and an insect such as a butterfly.	Level 3 M2 L16–19
b. Plan and carry out an investigation of the life cycle of a plant by growing a plant from a seed and by recording changes over a period of time.	Level 2 M3 L1–7, 25–29
c. Construct an explanation of an animal's role in dispersing seeds or in the pollination of plants.	Level 2 M3 L8–29
d. Develop models to illustrate the unique and diverse life cycles of organisms other than humans.	Level 3 M2 L16–19

Science and Engineering Practices

Science and Engineering Practices	Aligned *PhD Science* Lessons
Asking Questions and Defining Problems	Level 2 M1 L1–3 Level 2 M2 L1–2 Level 2 M3 L1–6, 14–18 Level 2 M4 L1–3
Developing and Using Models	Level 2 M1 L1–3, 14–16, 19, 29–31 Level 2 M2 L1–2, 14–17, 20–24 Level 2 M3 L1–6, 8–12, 14–20, 23–29 Level 2 M4 L1–8, 20–21, 23–25
Planning and Carrying Out Investigations	Level 2 M1 L1–3, 17–18, 20–22, 24–31 Level 2 M2 L1–6, 8–12, 14–19, 22–24 Level 2 M3 L3–11, 13, 21–22, 25–29 Level 2 M4 L16–19
Using Mathematics and Computational Thinking	Level 2 M1 L20–22 Level 2 M2 L14–17 Level 2 M3 L8–11, 23–29 Level 2 M4 L7–8, 17–22
Constructing Explanations and Designing Solutions	Level 2 M1 L8–9, 12–13, 17–19, 23–31 Level 2 M2 L3–4, 7–17, 22–24 Level 2 M4 L23–25
Obtaining, Evaluating, and Communicating Information	Level 2 M1 L29–31 Level 2 M2 L1–2, 5–6, 14–19, 22–24 Level 2 M3 L8–12, 14–20, 25–29 Level 2 M4 L4–9, 11–16, 23–25

Core Ideas

The following core ideas appear in the GSE Second Grade Curriculum Map.

Patterns in Day and Night	**Aligned *PhD Science* Lessons**
Sunlight warms the Earth's surface.	Level K M1 L8–16, 28–30
Patterns of sun, moon, and stars apparent motion in the day and night sky	Level 1 M4 L1–8, 14–25
Seasonal changes of sunrise and sunset	Level 1 M4 L9–13, 23–25
Some events on Earth occur in cycles, like day and night.	Level 1 M4 L9–13, 23–25

Forces at Work	**Aligned *PhD Science* Lessons**
Forces and Motion	Level 3 M4 L1–30
Pushes and pulls	Level K M2 L7–23
Energy transfer	Level 4 M2 L8–9, 24–26
Size of the object impacts force and motion	Level 3 M4 L12–14

What Is Matter and How Does It Change?	**Aligned *PhD Science* Lessons**
Structure and properties of matter	Level 2 M1 L1–16, 20–31 Level 2 M2 L3–4, 14–17
Heating or cooling can change the properties of matter	Level 2 M1 L14–19, 29–31

Stability and Change in Plants and Animals	Aligned *PhD Science* Lessons
Plants and the function of their structures	Level 1 M1 L1–15, 27–29 Level 2 M3 L21–22
Life cycles of plants and animals	Level 3 M3 L7–8, 23–28
Pollination of plants by animals	Level 2 M3 L8–29
Changes in habitat and its effects on plants and animals	Level K M4 L1–29
Plants and animals can change their environment.	Level K M4 L1–10, 14–16, 26–28
Plants and animals (including humans) can change their environment (e.g., the shape of the land, the flow of water).	Level K M4 L1–10, 14–16, 26–28 Level 2 M2 L9, 12, 14–17
Humans can impact the environment.	Level K M4 L14–24, 26–28 Level 2 M2 L14–17 Level 2 M3 L14–18

Crosscutting Concepts

Crosscutting Concepts	Aligned *PhD Science* Lessons
Patterns	Level 2 M1 L4–9 Level 2 M2 L1–2, 5–6 Level 2 M4 L1–8, 11–15, 20–21, 23–25
Cause and Effect	Level 2 M1 L14–19, 29–31 Level 2 M2 L8–12, 20–21 Level 2 M3 L3–11
Structure and Function	Level 2 M1 L24–28 Level 2 M2 L14–17 Level 2 M3 L8–11, 14–22
Scale, Proportion, and Quantity	Level 2 M1 L8–9 Level 2 M2 L18–21 Level 2 M3 L3–6, 14–18, 25–29 Level 2 M4 L1–6, 17–19, 22–25
Stability and Change	Level 2 M2 L1–2, 18–24 Level 2 M3 L1–2, 25–29
Energy and Matter	Level 2 M1 L10–11, 29–31 Level 2 M2 L3–4, 8–13, 22–24

PhD Science® Correlation to Georgia Standards of Excellence (GSE) for Science: Level 3

The *PhD Science* Level 3 curriculum mostly aligns with the Grade 3 GSE for Science. A detailed analysis of alignment follows.

Key: Module (M), Lesson (L)

Grade 3 Standards

Earth and Space Science	Aligned *PhD Science* Lessons
S3E1. Obtain, evaluate, and communicate information about the physical attributes of rocks and soils.	**Level 2 Module 2** **Level 4 Module 1**
a. Ask questions and analyze data to classify rocks by their physical attributes (color, texture, luster, and hardness) using simple tests.	Level 2 M2 L3–4
b. Plan and carry out investigations to describe properties (color, texture, capacity to retain water, and ability to support growth of plants) of soils and soil types (sand, clay, loam).	Level 2 M2 L3–4
c. Make observations of the local environment to construct an explanation of how water and/or wind have made changes to soil and/or rocks over time.	Level 2 M2 L1–17, 20, 22–24 Level 4 M1 L1–11, 25–27
S3E2. Obtain, evaluate, and communicate information on how fossils provide evidence of past organisms.	**Level 3 Module 2**
a. Construct an argument from observations of fossils (authentic or reproductions) to communicate how they serve as evidence of past organisms and the environments in which they lived.	Level 3 M2 L1–8
b. Develop a model to describe the sequence and conditions required for an organism to become fossilized.	Level 3 M2 L3

Physical Science	Aligned *PhD Science* Lessons
S3P1. Obtain, evaluate, and communicate information about the ways heat energy is transferred and measured.	**Level K Module 1** **Level 4 Module 2**
a. Ask questions to identify sources of heat energy.	Level 4 M2 L4–5, 10–11
b. Plan and carry out an investigation to gather data using thermometers to produce tables and charts that illustrate the effect of sunlight on various objects.	Level K M1 L8–9
c. Use tools and every day materials to design and construct a device/structure that will increase/decrease the warming effects of sunlight on various materials.	Level K M1 L12–16, 28–30

Life Science	Aligned *PhD Science* Lessons
S3L1. Obtain, evaluate, and communicate information about the similarities and differences between plants, animals, and habitats found within geographic regions (Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, and Appalachian Plateau) of Georgia.	Level K Module 3 Level K Module 4 Level 1 Module 1 Level 2 Module 4 Level 3 Module 2 Level 4 Module 3 *PhD Science* does not specifically cite Georgia.
a. Ask questions to differentiate between plants, animals, and habitats found within Georgia's geographic regions.	Level K M4 L1–5, 8–9
b. Construct an explanation of how external features and adaptations (camouflage, hibernation, migration, mimicry) of animals allow them to survive in their habitat.	Level 1 M1 L10–15 Level 3 M2 L16–19 Level 4 M3 L1–6, 20, 26–31
c. Use evidence to construct an explanation of why some organisms can thrive in one habitat and not in another.	Level K M3 L1–3, 9–16, 19–21, 27–29 Level 2 M4 L1–3, 7–25 Level 3 M2 L1–2, 9–12, 16–19, 22–28

Life Science	Aligned *PhD Science* Lessons
S3L2. Obtain, evaluate, and communicate information about the effects of pollution (air, land, and water) and humans on the environment.	**Level K Module 4** **Level 1 Module 3** **Level 2 Module 3** **Level 3 Module 3** **Level 5 Module 3**
a. Ask questions to collect information and create records of sources and effects of pollution on the plants and animals.	Level K M4 L18–19 Level 3 M3 L12 Level 5 M3 L19–23
b. Explore, research, and communicate solutions, such as conservation of resources and recycling of materials, to protect plants and animals.	Level K M4 L19–24 Level 1 M3 L1–3 Level 2 M3 L14–18

Science and Engineering Practices

Science and Engineering Practices	Aligned *PhD Science* Lessons
Asking Questions and Defining Problems	Level 3 M1 L1–3, 21–26, 28–29 Level 3 M2 L1–2 Level 3 M3 L1–3, 12–13 Level 3 M4 L1–3, 7–9, 15–16, 19–30
Developing and Using Models	Level 3 M1 L1–3, 19–20 Level 3 M2 L1–3, 6–12, 22–25, 27–28 Level 3 M3 L7–11, 21–25, 27–28 Level 3 M4 L1–3, 17–18, 23–30
Planning and Carrying Out Investigations	Level 3 M2 L4–5 Level 3 M3 L12–13 Level 3 M4 L7–18, 23–30
Using Mathematics and Computational Thinking	Level 3 M1 L4–12 Level 3 M2 L3, 16–19 Level 3 M3 L7–8 Level 3 M4 L23–27
Constructing Explanations and Designing Solutions	Level 3 M1 L13–15, 18, 21–29 Level 3 M2 L6–8, 22–28 Level 3 M3 L9–11, 14–15, 21–28 Level 3 M4 L10–14, 19–21, 28–30
Engaging in Argument from Evidence	Level 3 M1 L21–26, 28–29 Level 3 M2 L9–15, 20–21, 27–28 Level 3 M3 L16–20 Level 3 M4 L12–14
Obtaining, Evaluating, and Communicating Information	Level 3 M1 L11–17, 28–29 Level 3 M2 L13–15, 20–21 Level 3 M4 L22

Core Ideas

The following core ideas appear in the GSE Third Grade Curriculum Map.

Rocks, Soils, and Fossils	**Aligned *PhD Science* Lessons**
History of Planet Earth	Level 2 M2 L3–4, 8–13, 18–24 Level 4 M1 L1–11, 18, 25–27
Earth and Earth's Materials	Level 2 M2 L3–4, 8–9, 13, 22–24 Level 4 M1 L6–11, 25–27
Roles of Water in Earth's Surface Processes	Level 2 M2 L8–9, 13 Level 5 M3 L3–5, 12–13
Biogeology	Level 4 M1 L6–11, 25–27
Evidence of Common Ancestry	Level 3 M2 L3–8, 26–28
Adaptation	Level 3 M2 L1–2, 9–12, 16–19, 22–28

Under the Sun	**Aligned *PhD Science* Lessons**
Structure and Function	Level 4 M3 L1–6, 20, 26–31
Adaptation	Level 3 M2 L1–2, 9–12, 16–19, 22–28
Conservation of Energy and Energy Transfer	Level 4 M2 L1–5, 8–9, 24–26

Pollution and Conservation	**Aligned *PhD Science* Lessons**
Earth and Human Activity	Level 4 M1 L21–27
Human Impacts on Earth Systems	Level 5 M3 L14–27
Adaptation	Level 3 M2 L1–2, 9–12, 16–19, 22–28

Crosscutting Concepts

Crosscutting Concepts	Aligned *PhD Science* Lessons
Patterns	Level 3 M1 L11–15, 19–20, 27–29 Level 3 M2 L3–8, 13–15, 27–28 Level 3 M3 L1–8, 14–18, 26–28 Level 3 M4 L1–9, 28–30
Cause and Effect	Level 3 M1 L1–3, 16–18, 21–29 Level 3 M2 L9–12, 16–28 Level 3 M3 L9–13, 19–25, 27–28 Level 3 M4 L1–3, 10–30
Structure and Function	Level 3 M2 L1–3, 9–12 Level 3 M3 L4–6, 21–28
Stability and Change	Level 3 M1 L4–15, 27–29 Level 3 M2 L16–19 Level 3 M3 L7–8, 12–13, 19–20, 26–28
Energy and Matter	Level 4 M2 L1–3, 8–26 Level 4 M3 L10–19, 30–31 Level 5 M1 L5–8, 13–14, 23–26 Level 5 M2 L6–11, 14–19, 24–26 Level 5 M3 L10–11 Level 5 M4 L3–4
Systems and System Models	Level 3 M1 L1–3, 16–20 Level 3 M2 L6–15, 20–28 Level 3 M3 L9–11 Level 3 M4 L1–30

PhD Science® Correlation to Georgia Standards of Excellence (GSE) for Science: Level 4

The *PhD Science* Level 4 curriculum partially aligns with the Grade 4 GSE for Science. A detailed analysis of alignment follows.

Key: Module (M), Lesson (L)

Grade 4 Standards

Earth and Space Science	Aligned *PhD Science* Lessons
S4E1, Obtain, evaluate, and communicate information to compare and contrast the physical attributes of stars and planets.	**Level 5 Module 4** ***PhD Science* does not address other planets in the K–5 curriculum.**
a. Ask questions to compare and contrast technological advances that have changed the amount and type of information on distant objects in the sky.	Level 5 M4 L7
b. Construct an argument on why some stars (including the Earth's sun) appear to be larger or brighter than others.	Level 5 M4 L18–19, 24–26
c. Construct an explanation of the differences between stars and planets.	*PhD Science* does not address planets.
d. Evaluate strengths and limitations of models of our solar system in describing relative size, order, appearance and composition of planets and the sun.	*PhD Science* does not address planets.
S4E2. Obtain, evaluate, and communicate information to model the effects of the position and motion of the Earth and the moon in relation to the sun as observed from the Earth.	**Level 5 Module 4**
a. Develop a model to support an explanation of why the length of day and night change throughout the year.	Level 5 M4 L7–8
b. Develop a model based on observations to describe the repeating pattern of the phases of the moon (new, crescent, quarter, gibbous, and full).	Level 5 M4 L13–17
c. Construct an explanation of how the Earth's orbit, with its consistent tilt, affects seasonal changes.	*PhD Science* does not address the effects of Earth's orbit and tilt on seasonal changes.
S4E3. Obtain, evaluate, and communicate information to demonstrate the water cycle.	**Level 5 Module 3**
a. Plan and carry out investigations to observe the flow of energy in water as it changes states from solid (ice) to liquid (water) to gas (water vapor) and changes from gas to liquid to solid.	Level 5 M1 L9–12
b. Develop models to illustrate multiple pathways water may take during the water cycle (evaporation, condensation, and precipitation).	Level 5 M3 L3–8

Earth and Space Science	Aligned *PhD Science* Lessons
S4E4. Obtain, evaluate, and communicate information to predict weather events and infer weather patterns using weather charts/maps and collected weather data.	**Level K Module 1** **Level 3 Module 1**
a. Construct an explanation of how weather instruments (thermometer, rain gauge, barometer, wind vane, and anemometer) are used in gathering weather data and making forecasts.	Level K M1 L4–7 Level 3 M1 L4–7
b. Interpret data from weather maps, including fronts (warm, cold, and stationary), temperature, pressure, and precipitation to make an informed prediction about tomorrow's weather.	Level 3 M1 L1–15, 19–20, 27–29
c. Ask questions and use observations of cloud types (cirrus, stratus, and cumulus) and data of weather conditions to predict weather events.	Level 3 M1 L4–7
d. Construct an explanation based on research to communicate the difference between weather and climate.	Level 3 M1 L11–15, 27–29

Physical Science	Aligned *PhD Science* Lessons
S4P1. Obtain, evaluate, and communicate information about the nature of light and how light interacts with objects.	**Level 1 Module 2** **Level 4 Module 4**
a. Plan and carry out investigations to observe and record how light interacts with various materials to classify them as opaque, transparent, or translucent.	Level 1 M2 L1–3, 10–23
b. Plan and carry out investigations to describe the path light travels from a light source to a mirror and how it is reflected by the mirror using different angles.	Level 4 M4 L3–4, 21
c. Plan and carry out an investigation utilizing everyday materials to explore examples of when light is refracted.	*PhD Science* does not specifically address refraction.
S4P2. Obtain, evaluate, and communicate information about how sound is produced and changed and how sound and/or light can be used to communicate.	**Level 1 Module 3** **Level 4 Module 4**
a. Plan and carry out an investigation utilizing everyday objects to produce sound and predict the effects of changing the strength or speed of vibrations.	Level 1 M3 L1–17, 26–29
b. Design and construct a device to communicate across a distance using light and/or sound.	Level 1 M3 L18–25 Level 4 M4 L18–24

Physical Science	Aligned *PhD Science* Lessons
S4P3. Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.	**Level 3 Module 4**
a. Plan and carry out an investigation on the effects of balanced and unbalanced forces on an object and communicate the results.	Level 3 M4 L10–18
b. Construct an argument to support the claim that gravitational force affects the motion of an object.	Level 3 M4 L12–14
c. Ask questions to identify and explain the uses of simple machines (lever, pulley, wedge, inclined plane, wheel and axle, and screw) and how forces are changed when simple machines are used to complete tasks.	Level 3 M4 L12–14

Life Science	Aligned *PhD Science* Lessons
S4L1. Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem.	**Level 5 Module 2**
a. Develop a model to describe the roles of producers, consumers, and decomposers in a community.	Level 5 M2 L1–2, 6–14, 20, 24–26
b. Develop simple models to illustrate the flow of energy through a food web/food chain beginning with sunlight and including producers, consumers, and decomposers.	Level 5 M2 L1–2, 8–14, 20, 24–26
c. Design a scenario to demonstrate the effect of a change on an ecosystem.	Level 5 M2 L21–23
d. Use printed and digital data to develop a model illustrating and describing changes to the flow of energy in an ecosystem when plants or animals become scarce, extinct or over–abundant.	Level 5 M2 L20–23, 24–26

Science and Engineering Practices

Science and Engineering Practices	Aligned *PhD Science* Lessons
Asking Questions and Defining Problems	Level 4 M1 L1–2, 12–17, 23 Level 4 M2 L1–3, 8–9, 11, 17–23, 25–26 Level 4 M3 L1–3, 6, 15–19 Level 4 M4 L1–2, 14–17
Developing and Using Models	Level 4 M1 L1–2, 26–27 Level 4 M2 L1–3, 8–11, 15–16, 25–26 Level 4 M3 L1–3, 7–14, 30–31 Level 4 M4 L1–8, 10–24, 26–27
Planning and Carrying Out Investigations	Level 4 M1 L8–11, 21–22 Level 4 M2 L6–7, 10–14 Level 4 M3 L15–19 Level 4 M4 L7–9, 14–21, 26–27
Analyzing and Interpreting Data	Level 4 M1 L12–20, 23–24, 26–27 Level 4 M2 L25–26 Level 4 M4 L10–17
Constructing Explanations and Designing Solutions	Level 4 M1 L3–7, 10, 12–18, 21–22, 25–27 Level 4 M2 L4–5, 15–26 Level 4 M3 L4–5, 24–25, 29–31 Level 4 M4 L14–27
Engaging in Argument from Evidence	Level 4 M3 L21–23, 26–28, 30–31 Level 4 M4 L7–8
Obtaining, Evaluating, and Communicating Information	Level 4 M1 L3–5, 23–24 Level 4 M3 L4–6, 10–11, 20–23, 26–28, 30–31 Level 4 M4 L22–24

Core Ideas

The following core ideas appear in the GSE Fourth Grade Curriculum Map.

Weather and Moon Phases	**Aligned *PhD Science* Lessons**
Cloud formation	Level 3 M1 L4–7
Weather Instruments	Level K M1 L4–7, 17–20 Level 3 M1 L4–7
Moon phases	Level 5 M4 L13–17

Stars, Planets, and Moon	**Aligned *PhD Science* Lessons**
Technological advances for space	Level 5 M4 L7–8
Stars	Level 5 M4 L7–8, 18–19, 24–26
Planets	*PhD Science* does not address other planets in the K–5 curriculum.
Moon Phases	Level 5 M4 L13–17
Earth's orbit and tilt	*PhD Science* does not address Earth's tilt in the K–5 curriculum.
Light refraction	*PhD Science* does not address refraction in the K–5 curriculum.

Forecasting the Weather	**Aligned *PhD Science* Lessons**
States of water	Level 5 M1 L9–12
Water cycle	Level 5 M3 L1–8
Weather instruments	Level K M1 L4–7, 17–20 Level 3 M1 L4–7
Weather maps	Level 3 M1 L1–15, 19–20, 27–29
Cloud types	*PhD Science* does not address cloud types in the K–5 curriculum.
Weather and climate	Level 3 M1 L11–15, 27–29

Role of Organisms and Flow of Energy	**Aligned *PhD Science* Lessons**
Ecosystems	Level 5 M2 L1–2, 6–14, 20, 24–26
Food chains/webs	Level 5 M2 L1–2, 6–14, 20, 24–26
Changes impacting ecosystems	Level 5 M2 L20–23
Scarcity, extinction, overabundance	Level 5 M2 L1–2, 20–26

Light and Sound	**Aligned *PhD Science* Lessons**
Opaque, transparent, translucent	Level 1 M2 L1–3, 10–23
Reflection	Level 4 M4 L1–17, 25–27
Refraction	*PhD Science* does not address refraction in the K–5 curriculum.
Strength and speed of sound vibration	Level 1 M3 L1–17, 26–29
Communication device	Level 1 M3 L21–25 Level 4 M4 L18–24

Force and Motion	Aligned *PhD Science* Lessons
Balanced and unbalanced forces	Level 3 M4 L10–18, 28–30
Gravitational force	Level 3 M4 L12–14
Simple machines	Level 3 M4 L12–14

Crosscutting Concepts

Crosscutting Concepts	Aligned *PhD Science* Lessons
Patterns	Level 4 M1 L1–5, 18–20, 26–27 Level 4 M2 L4–5, 8–11, 24–26 Level 4 M3 L1–3, 7–11, 20, 24–31 Level 4 M4 L1–4, 7–8, 14–17, 22–27
Cause and Effect	Level 4 M1 L6–17, 21–27 Level 4 M2 L1–7, 10–14, 24–26 Level 4 M3 L6–23, 30–31 Level 4 M4 L3–13, 18–21, 25–27
Structure and Function	Level 4 M3 L4–6, 20, 24–25, 29–31 Level 4 M4 L7–9, 25–27
Scale, Proportion, and Quantity	Level 4 M1 L3–5
Energy and Matter	Level 4 M2 L1–3, 8–26 Level 4 M3 L10–19, 30–31
Systems and System Models	Level 4 M1 L1–2, 12–17, 21–24 Level 4 M2 L1–11, 15–26 Level 4 M3 L7–9, 15–19, 21–23, 26–28, 30–31 Level 4 M4 L1–6, 10–27

PhD Science® Correlation to Georgia Standards of Excellence (GSE) for Science: Level 5

The *PhD Science* Level 5 curriculum partially aligns with the Grade 5 GSE for Science. A detailed analysis of alignment folliows.

Grade 5 Standards

Earth and Space Science	**Aligned *PhD Science* Lessons**
S5E1. Obtain, evaluate, and communicate information to identify surface features on the Earth caused by constructive and/or destructive processes.	**Level 3 Module 1** **Level 4 Module 1** **Level 5 Module 3**
a. Construct an argument supported by scientific evidence to identify surface features (examples could include deltas, sand dunes, mountains, volcanoes) as being caused by constructive and/or destructive processes (examples could include deposition, weathering, erosion, and impact of organisms).	Level 4 M1 L1–2, 6–11, 18–22 Level 5 M3 L12–13
b. Develop simple interactive models to collect data that illustrate how changes in surface features are/were caused by constructive and/or destructive processes.	Level 4 M1 L8–11, 21–24 Level 5 M3 L9
c. Ask questions to obtain information on how technology is used to limit and/or predict the impact of constructive and destructive processes.	Level 3 M1 L1, 19, 26 Level 4 M1 L8–11, 21–24

Physical Science	Aligned *PhD Science* Lessons
S5P1. Obtain, evaluate, and communicate information to explain the differences between a physical change and a chemical change.	**Level 5 Module 1**
a. Plan and carry out investigations of physical changes by manipulating, separating and mixing dry and liquid materials.	Level 5 M1 L13–17
b. Construct an argument based on observations to support a claim that the physical changes in the state of water are due to temperature changes, which cause small particles that cannot be seen to move differently.	Level 5 M1 L9–12
c. Plan and carry out an investigation to determine if a chemical change occurred based on observable evidence (color, gas, temperature change, odor, new substance produced).	Level 5 M1 L1–2, 13–26
S5P2. Obtain, evaluate, and communicate information to investigate electricity.	**Level 3 Module 4** **Level 4 Module 2**
a. Obtain and combine information from multiple sources to explain the difference between naturally occurring electricity (static) and human–harnessed electricity.	Level 3 M4 L19–21 Level 4 M2 L1–3, 12–16
b. Design a complete, simple electric circuit, and explain all necessary components.	Level 4 M2 L12–14
c. Plan and carry out investigations on common materials to determine if they are insulators or conductors of electricity.	*PhD Science* does not address insulators or conductors in the K–5 curriculum.
S5P3. Obtain, evaluate, and communicate information about magnetism and its relationship to electricity.	**Level 3 Module 4**
a. Construct an argument based on experimental evidence to communicate the differences in function and purpose of an electromagnet and a magnet.	Level 3 M4 L19–22
b. Plan and carry out an investigation to observe the interaction between a magnetic field and a magnetic object.	Level 3 M4 L19–22

Life Science	Aligned *PhD Science* Lessons
S5L1. Obtain, evaluate, and communicate information to group organisms using scientific classification procedures.	***PhD Science* does not address scientific classification in the K–5 curriculum.**
a. Develop a model that illustrates how animals are sorted into groups (vertebrate and invertebrate) and how vertebrates are sorted into groups (fish, amphibian, reptile, bird, and mammal) using data from multiple sources.	*PhD Science* does not address the terms *vertebrate* and *invertebrate* in the K–5 curriculum.
b. Develop a model that illustrates how plants are sorted into groups (seed producers, non-seed producers) using data from multiple sources.	*PhD Science* does not address plant sorting in the K–5 curriculum.
S5L2. Obtain, evaluate, and communicate information showing that some characteristics of organisms are inherited and other characteristics are acquired.	**Level 3 Module 3**
a. Ask questions to compare and contrast instincts and learned behaviors.	Level 3 M3 L9–13, 26–28
b. Ask questions to compare and contrast inherited and acquired physical traits.	Level 3 M3 L14–18, 26–28
S5L3. Obtain, evaluate, and communicate information to compare and contrast the parts of plant and animal cells.	***PhD Science* does not address plant and animal cells in the K–5 curriculum.**
a. Gather evidence by utilizing technology tools to support a claim that plants and animals are comprised of cells too small to be seen without magnification.	*PhD Science* does not cover this topic.
b. Develop a model to identify and label parts of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts) and of an animal cell (membrane, cytoplasm, and nucleus).	*PhD Science* does not cover this topic.
c. Construct an explanation that differentiates between the structure of plant and animal cells.	*PhD Science* does not cover this topic.
S5L4. Obtain, evaluate, and communicate information about how microorganisms benefit or harm larger organisms.	***PhD Science* does not address microorganisms in the K–5 curriculum.**
a. Construct an argument using scientific evidence to support a claim that some microorganisms are beneficial.	*PhD Science* does not cover this topic.
b. Construct an argument using scientific evidence to support a claim that some microorganisms are harmful.	*PhD Science* does not cover this topic.

Science and Engineering Practices

Science and Engineering Practices	Aligned *PhD Science* Lessons
Asking Questions and Defining Problems	Level 5 M1 L1–2 Level 5 M2 L1–2, 21–23 Level 5 M3 L1–3, 19–23 Level 5 M4 L1–2, 13
Developing and Using Models	Level 5 M1 L1–2, 5–10, 13–14, 23–26 Level 5 M2 L1–2, 6–7, 14, 20, 25–26 Level 5 M3 L1–3, 6–16, 24–27 Level 5 M4 L1–4, 7–17, 19–26
Planning and Carrying Out Investigations	Level 5 M1 L13–14, 18–22, 24–26 Level 5 M2 L3–5 Level 5 M3 L10–11 Level 5 M4 L5–6, 18–19, 25–26
Constructing Explanations and Designing Solutions	Level 5 M1 L5–6, 11–12, 18–26 Level 5 M2 L12–13, 15–17, 21–26 Level 5 M3 L17–23, 25–27 Level 5 M4 L3–4, 9–12, 20–21, 22–26
Engaging in Argument from Evidence	Level 5 M1 L3–4, 24–26 Level 5 M2 L3–5, 8–11, 21–23, 25–26 Level 5 M3 L19–23, 25–27 Level 5 M4 L5–6, 13–17, 20–21, 24–26
Obtaining, Evaluating, and Communicating Information	Level 5 M2 L6–7, 10–11, 18–20, 25–26 Level 5 M3 L9, 14–16, 19–27 Level 5 M4 L18–19

Core Ideas

The following core ideas appear in the GSE Fifth Grade Curriculum Map.

Earth and Changes Over Time	**Aligned *PhD Science* Lessons**
Geologic processes	Level 4 M1 L1–2, 6–11, 18–22
Formation and/or destruction of landforms	Level 4 M1 L6–11, 18–24 Level 5 M3 L12–13

Dynamics of Classification	**Aligned *PhD Science* Lessons**
Grouping animals and plants by their internal and/or external structure	*PhD Science* does not address scientific classification of plants and animals.
Inherited traits	Level 3 M3 L14–18, 19–20, 26–28
Acquired traits	Level 3 M3 L9–13, 19–20, 26–28

Cells and Microorganisms	**Aligned *PhD Science* Lessons**
Magnification tools are needed to observe very small things.	*PhD Science* does not cover this topic.
Plant cell structure and function	*PhD Science* does not cover this topic.
Animal cell structure and function	*PhD Science* does not cover this topic.
Microorganisms can be helpful or harmful.	*PhD Science* does not cover this topic.

Energy Transfer Through Electricity and Magnetism	**Aligned *PhD Science* Lessons**
Static electricity	Level 3 M4 L19–21
Current electricity (human–harnessed)	Level 4 M2 L1–3, 12–16
Energy transfer	Level 4 M2 L1–3, 8–26
Simple electric circuit	Level 4 M2 L12–14
Magnetic field and force	Level 3 M4 L19–22
Insulators and conductors of electricity	*PhD Science* does not cover this topic.

Physical and Chemical Changes	**Aligned *PhD Science* Lessons**
Physical changes	Level 5 M1 L13–17
Chemical changes	Level 5 M1 L1–2, 13–26
Phases/States of water are related to temperature changes	Level 5 M1 L9–12
Energy transfer	Level 5 M1 L7–10, 13–14, 23–26

Crosscutting Concepts

Crosscutting Concepts	Aligned *PhD Science* Lessons
Patterns	Level 5 M1 L7–8 Level 5 M2 L1–5, 8–9, 15–17, 25–26 Level 5 M3 L6–9 Level 5 M4 L1–17, 20–26
Cause and Effect	Level 5 M1 L1–2, 5–6, 9–10, 18–22, 24–26 Level 5 M2 L3–7, 12–13, 18–23, 25–26 Level 5 M3 L6–8, 12–18, 25–27 Level 5 M4 L5–6, 24–26
Structure and Function	Level 3 M2 L1–3, 9–12 Level 3 M3 L4–6, 21–28 Level 4 M3 L4–6, 20, 24–25, 29–31 Level 4 M4 L7–9, 25–27
Scale, Proportion, and Quantity	Level 5 M1 L3–4, 13–17, 23–26 Level 5 M2 L10–11 Level 5 M3 L1–5, 10–11, 24–27 Level 5 M4 L18–19, 24–26
Stability and Change	Level 5 M1 L1–2, 9–12, 18–26 Level 5 M2 L12–13, 20, 24–26 Level 5 M3 L14–18 Level 5 M4 L5–6, 9–12, 24–26
Energy and Matter	Level 5 M1 L5–8, 13–14, 23–26 Level 5 M2 L6–11, 14–19, 24–26 Level 5 M3 L10–11 Level 5 M4 L3–4
Systems and System Models	Level 5 M1 L3–4, 15–17 Level 5 M2 L1–2, 6–11, 14, 18–19, 24–26 Level 5 M3 L1–9, 12–13, 19–27 Level 5 M4 L1–2, 7–26