Next Generation Content Standards and Objectives for Science in West Virginia Schools Correlation to *PhD Science*®

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Key: Module (M), Lesson (L)

PhD Science Level K

The Grade K Next Generation Content Standards and Objectives for Science in West Virginia Schools are fully covered by the *PhD Science* K–2 curriculum. A detailed analysis of alignment appears in the table below.

Grade K Content Standards			
Physical Science			
Forces and Interactions: Pushes and Pulls			**Aligned *PhD Science* Lessons**
S.K.GS.1	Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.		Level K M2 L1–23
S.K.GS.2	Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.		Level K M2 L17–23

Life Science			
Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment			**Aligned *PhD Science* Lessons**
S.K.GS.3	Use observations to describe patterns of what plants and animals (including humans) need to survive.		Level K M3 L4–16, 19–22, 27–29
S.K.GS.4	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.		Level K M4 L1–10, 14–16, 26–28
S.K.GS.5	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.		Level K M3 L1–3, 9–29 Level K M4 L1–2, 8–9, 11–13
S.K.GS.6	Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.		Level K M4 L14–24, 26–28
Earth and Space Science			
Weather and Climate			**Aligned *PhD Science* Lessons**
S.K.GS.7	Use and share observations of local weather conditions to describe patterns over time.		Level K M1 L1–11, 17–24, 28–30 Level K M4 L25
S.K.GS.8	Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.		Level K M1 L22–30
S.K.GS.9	Make observations to determine the effect of sunlight on Earth's surface.		Level K M1 L8–11, 28–30
S.K.GS.10	Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.		Level K M1 L12–16, 28–30

Grade K Engineering, Technology, and Applications of Science Standards			
Engineering Design			**Aligned *PhD Science* Lessons**
S.K–2.ETS.1	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.		Level K M1 L12–16
S.K–2.ETS.2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.		Level K M2 L17–20
S.K–2.ETS.3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.		Level K M4 L20–24

Science and Engineering Practices	
Asking Questions and Defining Problems	**Aligned *PhD Science* Lessons**
	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	**Aligned *PhD Science* Lessons**
	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	**Aligned *PhD Science* Lessons**
	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
Analyzing and Interpreting Data	**Aligned *PhD Science* Lessons**
	Level K M1 L4–7, 22–24 Level K M2 L4–8, 21–23 Level K M3 L1–20, 22–26 Level K M4 L1–2, 6–7, 10, 14–17, 20–28
Using Mathematics and Computational Thinking	**Aligned *PhD Science* Lessons**
	Level K M1 L17–21, 25–30 Level K M2 L17–20
Constructing Explanations and Designing Solutions	**Aligned *PhD Science* Lessons**
	Level K M2 L17–20 Level K M3 L4–16, 23–29

Engaging in Argument from Evidence		Aligned *PhD Science* Lessons
		Level K M3 L17–21, 27–29 Level K M4 L3–5, 11–13, 25
Obtaining, Evaluating, and Communicating Information		**Aligned *PhD Science* Lessons**
		Level K M1 L12–16, 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

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Key: Module (M), Lesson (L)

PhD Science Level 1

The Grade 1 Next Generation Content Standards and Objectives for Science in West Virginia Schools are fully covered by the *PhD Science* K–2 curriculum. A detailed analysis of alignment appears in the table below.

Grade 1 Content Standards			
Physical Science			
Waves: Light and Sound			**Aligned *PhD Science* Lessons**
S.1.GS.1	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.		Level 1 M3 L1–17, 26–29
S.1.GS.2	Make observations to construct an evidence-based account that objects can be seen only when illuminated.		Level 1 M2 L1–9, 21–23
S.1.GS.3	Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.		Level 1 M2 L1–3, 10–23
S.1.GS.4	Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.		Level 1 M3 L18–29

Life Science			
Structure, Function, and Information Processing			**Aligned *PhD Science* Lessons**
S.1.GS.5	Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.		Level 1 M1 L1–21, 27–29
S.1.GS.6	Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.		Level 1 M1 L24–29
S.1.GS.7	Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.		Level 1 M1 L22–23, 26–29
Earth and Space Science			
Space Systems: Patterns and Cycles			**Aligned *PhD Science* Lessons**
S.1.GS.8	Use observations of the sun, moon, and stars to describe patterns that can be predicted.		Level 1 M4 L1–8, 14–25
S.1.GS.9	Make observations at different times of year to relate the amount of daylight to the time of year.		Level 1 M4 L9–13, 23–25

Grade 1 Engineering, Technology, and Applications of Science Standards			
Engineering Design			**Aligned *PhD Science* Lessons**
S.K–2.ETS.1	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.		Level 1 M1 L11–15
S.K–2.ETS.2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.		Level 1 M3 L21–25
S.K–2.ETS.3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.		Level 1 M3 L21–25

Science and Engineering Practices	
Asking Questions and Defining Problems	**Aligned *PhD Science* Lessons**
	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	**Aligned *PhD Science* Lessons**
	Level 1 M1 L1–9, 11–15, 18 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	**Aligned *PhD Science* Lessons**
	Level 1 M1 L19–20 Level 1 M2 L4–12, 15–18, 20–23 Level 1 M3 L1–9, 11–13, 15–29 Level 1 M4 L1–6, 14–16, 19–21
Analyzing and Interpreting Data	**Aligned *PhD Science* Lessons**
	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, L9–13
Using Mathematics and Computational Thinking	**Aligned *PhD Science* Lessons**
	Level 1 M2 L15–18 Level 1 M3 L21–25
Constructing Explanations and Designing Solutions	**Aligned *PhD Science* Lessons**
	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

Engaging in Argument from Evidence		Aligned *PhD Science* Lessons
		Level 1 M3 L4–6, 8–9, 18–20 Level 1 M4 L4–25
Obtaining, Evaluating, and Communicating Information		**Aligned *PhD Science* Lessons**
		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

Crosscutting Concepts		
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
Stability and Change		Level K M1 L8–9, 17–21 Level K M4 L14–16 Level 2 M2 L1–2, 18–24 Level 2 M3 L1–2, 25–29

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Key: Module (M), Lesson (L)

PhD Science Level 2

The Grade 2 Next Generation Content Standards and Objectives for Science in West Virginia Schools are fully covered by the *PhD Science* K–2 curriculum. A detailed analysis of alignment appears in the table below.

Grade 2 Content Standards			
Physical Science			
Structure and Properties of Matter			**Aligned *PhD Science* Lessons**
S.2.GS.1	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.		Level 2 M1 L1–9, 12–16, 19, 23, 29–31 Level 2 M2 L3–4, 14–17
S.2.GS.2	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.		Level 2 M1 L20–31
S.2.GS.3	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.		Level 2 M1 L10–11, 29–31
S.2.GS.4	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.		Level 2 M1 L14–19, 29–31

Life Science			
Interdependent Relationships in Ecosystems			**Aligned *PhD Science* Lessons**
S.2.GS.5	Plan and conduct an investigation to determine if plants need sunlight and water to grow.		Level 2 M3 L1–7, 25–29
S.2.GS.6	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.		Level 2 M3 L8–29
S.2.GS.7	Make observations of plants and animals to compare the diversity of life in different habitats.		Level 2 M4 L1–3, 7–25
Earth and Space Science			
Earth's Systems: Processes that Shape the Earth			**Aligned *PhD Science* Lessons**
S.2.GS.8	Use information from several sources to provide evidence that Earth events can occur quickly or slowly.		Level 2 M2 L18–24
S.2.GS.9	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.		Level 2 M2 L1–17, 20, 22–24
S.2.GS.10	Develop a model to represent the shapes and kinds of land and bodies of water in an area.		Level 2 M2 L1–2, 5–6 Level 2 M4 L1–6, 11–16, 20–21, 23–25
S.2.GS.11	Obtain information to identify where water is found on Earth and that it can be solid or liquid.		Level 2 M4 L1–6, 16, 22–25

Grade 2 Engineering, Technology, and Applications of Science Standards			
Engineering Design			**Aligned *PhD Science* Lessons**
S.K-2.ETS.1	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.		Level 2 M1 L24–28 Level 2 M2 L8–12
S.K-2.ETS.2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.		Level 2 M3 L14–18
S.K-2.ETS.3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.		Level 2 M2 L8–12, 14–17

Science and Engineering Practices	
Asking Questions and Defining Problems	**Aligned *PhD Science* Lessons**
	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	**Aligned *PhD Science* Lessons**
	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	**Aligned *PhD Science* Lessons**
	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
Analyzing and Interpreting Data	**Aligned *PhD Science* Lessons**
	Level 2 M1 L4–11, 14–18, 20–22, 24–28 Level 2 M2 L5–6, 8–9 Level 2 M3 L14–20 Level 2 M4 L22–25
Using Mathematics and Computational Thinking	**Aligned *PhD Science* Lessons**
	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	**Aligned *PhD Science* Lessons**
	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

Engaging in Argument from Evidence		Aligned *PhD Science* Lessons
		Level 2 M2 L3–4, 10–13, 20–24 Level 2 M3 L14–18, 21–22 Level 2 M4 L4–6, 9–13, 16, 20–21, 23–25
Obtaining, Evaluating, and Communicating Information		**Aligned *PhD Science* Lessons**
		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 L L4–9, 11–16, 23–25
Systems and System Models		Level 2 M1 L1–7, 12–13, 20–23, 29–31 Level 2 M2 L3–4, 7–12, 14–17 Level 2 M3 L8–13, 19–24 Level 2 M4 L7–16, 23–25
Stability and Change		Level 2 M2 L1–2, 18–24 Level 2 M3 L1–2, 25–29