# Science 2 5ed
# Lesson Plan Overview

# Unit 1: Let's Explore Matter and Motion
## Chapter 1: What Science Is

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 1 | 1–9 | 1–9 | 1–4 | • Identify and locate the key text features<br>• Infer from key text features the topics for Chapter 1<br>• Identify that students and scientists can use their minds to solve problems and study God's world ***BWS***<br>• Explain, using biblical truth, the purposes for what scientists do (Genesis 1:28; Mark 12:30–31) ***BWS***<br>• Explain what a worldview is and that all scientists have a worldview ***BWS*** |
| 2 | 10–14 | 10–14 | 5–8 | • Demonstrate observing, classifying, measuring, inferring, predicting, and communicating as science inquiry skills<br>• Explain from Genesis 1:28 why accurate measurement is important ***BWS***<br>• Demonstrate proper use of a hand lens, ruler, meter stick, beaker, balance, and thermometer as science tools |
| 3 | 15–18 | 15–18 | 9–15 | **Investigation: Keeping Cool**<br>• Demonstrate safety skills for Explorations and Investigations<br>• Identify the purpose of investigations<br>• Apply the steps of the scientific method to an investigation ***BWS***<br>• Judge whether or not the design of an investigation presents a controlled investigation |
| 4 | 19–23 | 19–21 | 16–18 | • Recall what an engineer does<br>• Relate the work of engineering to the command of Genesis 1:28 ***BWS***<br>• Identify the steps of the engineering design process<br>**STEM: Bugged!**<br>• Apply the engineering design process to solve a real-life problem<br>• Communicate to others how the design solves the problem |

# Chapter 2: What Matter Is

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 5 | 24–27 | 22–25 | 19–22 | • Define *matter*<br>• Explain from Genesis 1 where matter came from BWS<br>• Identify the mass of an object<br>• Observe that matter takes up space |
| 6 | 28–32 | 26–30 | 20, 23–28 | • Identify seven properties of matter<br>• Classify objects based on the properties of matter<br>• Explain from Genesis 1:11–13 that God created plants with different properties of matter BWS |
| 7 | 33–35 | 31 | 29–31 | **Exploration: Classifying by Property**<br>• Observe properties of common objects<br>• Collaborate to choose two properties of matter for comparison<br>• Compare and contrast common objects using two properties of matter<br>• Classify objects by using two properties of matter |
| 8 | 36–38 | 32–34 | 33–38 | • Identify the states of matter<br>• Classify objects as solid, liquid, or gas<br>• Observe the shapes of solids, liquids, and gases<br>• Compare and contrast states of matter |
| 9 | 39–41 | 35 | 39–40 | **Investigation: How Slow Is the Flow?**<br>• Create a hypothesis to predict the rate at which thin and thick liquids flow<br>• Record observations<br>• Draw conclusions about the texture and flow of liquids |
| 10 | 42 | 22–35 | 19–40 | **Review**<br>• Recall terms and concepts from Chapter 2 |
| 11 | 43 | | | **Assessment**<br>• Apply terms and concepts from Chapter 2 |

# Chapter 3: How Matter Changes

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 12 | 44–48 | 36–40 | 41–44 | • Explain the origin of matter by using Genesis 1 *BWS*<br>• Recall the three states of matter<br>• Explain what happens to the temperature of matter when it is heated and when it is cooled<br>• Explain the changes to the solid state of matter when heat is added |
| 13 | 49–51 | 41 | 45–46 | **Investigation: Changing a Solid**<br>• Create a hypothesis to predict which solid will change to a liquid the fastest when it is heated<br>• Measure time using a timing device, such as a stopwatch<br>• Observe and record the rates at which different solids melt<br>• Draw conclusions from data collected |
| 14 | 52–56 | 42–46 | 42, 47–50 | • Identify changes to the state of water when it is heated<br>• Explain why the water level in an open container drops<br>• Identify the changes to water vapor when it is cooled<br>• Identify the changes to the state of matter when heat is removed from a liquid<br>• Identify the state of water in the water cycle using the terms *evaporation*, *condensation*, and *precipitation*<br>• Develop a biblical response to a rainy day by using Psalm 147:7–8 *BWS* |
| 15 | 57–61 | 47 | 51–55 | **Investigation: Reversible or Irreversible Changes?**<br>• Identify the states of matter and properties of a crayon and an uncooked egg<br>• Formulate a hypothesis to determine the effects of heating and cooling on the state and properties of a crayon<br>• Formulate a hypothesis to determine the effects of heating and cooling on the state and properties of an egg<br>• Record observations<br>• Draw conclusions about reversible and irreversible changes caused by heating and cooling crayons and an egg |
| 16–17 | 62–68 | 48–54 | 57–58 | • Identify changes to matter<br>• Identify changes to matter as either reversible or irreversible<br>• Manipulate paper to illustrate reversible and irreversible changes<br>• Identify the characteristics of a mixture<br>• Observe that matter can be combined in different ways to make a new object |

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 18 | 69–71 | 55 | 42, 59–60 | **STEM: Built to Last**<br>• Design a structure that will stand up on its own by combining materials<br>• Create a model of a structure that will stand on its own<br>• Evaluate designs to determine which structures are best able to stand up on their own<br>• Redesign models to make the structures better able to stand up on their own<br>• Communicate to others how the redesign solves the problem<br>• Explain by using biblical truth why it is important to build structures that will stand up on their own ***BWS*** |
| 19 | 72 | 36–55 | 41–60 | **Review**<br>• Recall terms and concepts from Chapter 3 |
| 20 | 73 | | | **Assessment**<br>• Apply terms and concepts from Chapter 3 |

# Chapter 4: How Matter Moves

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 21–22 | 74–83 | 56–65 | 61–66 | • Demonstrate an understanding of force<br>• Determine that a stronger force makes an object go faster and farther<br>• Determine what force is needed to move heavier objects<br>• Illustrate ways objects can move in terms of direction<br>• Determine what happens to objects when they touch or collide<br>• Identify what speed is<br>• Explain how we know that God made force ***BWS*** |
| 23 | 84–88 | 66 | 67–70 | **Investigation: Speed and Force**<br>• Conduct an investigation using the science inquiry skills of measure, predict, and observe<br>• Compare and contrast the effects of ramps on the speed of a ball<br>• Determine the effect of force on an object<br>• Determine that a ramp increases the speed of a ball |
| 24 | 89–91 | 67 | 62, 71–72 | **STEM: Send Off!**<br>• Design and create a model of a ball launcher to increase the strength of force to move or knock over an object<br>• Demonstrate that the greater the amount of force applied to an object, the greater the change in motion of the object<br>• Analyze data from tests of the ball launcher to determine if it works as intended<br>• Redesign the ball launcher to make it better able to solve the problem<br>• Communicate to others how the design solves the problem<br>• Explain why it is important to know how to change the strength of force ***BWS*** |
| 25 | 92–94 | 68–70 | 62, 73–76 | • Identify what friction is<br>• Describe the kinds of surfaces that have more or less friction<br>• Explain that sometimes more friction is needed and other times less friction is needed<br>• Explain that learning about friction can help us use it in better ways to help others ***BWS*** |
| 26 | 95–99 | 71–73 | 73, 77–80 | • Identify what gravity is<br>• Identify what weight is<br>• Identify the tool used to measure weight<br>**Exploration: All Fall Down**<br>• Determine effects of gravity on various objects when dropped in an Exploration<br>• Apply science inquiry skills to an Exploration |

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 27 | 100–102 | 74 | 81–82 | **Investigation: Magnetic Attraction**<br>• Write a hypothesis predicting whether items will be attracted to a magnet<br>• Observe items that are attracted to a magnet<br>• Summarize why some objects are more attracted to a magnet than others are<br>• Classify the objects in the paper bag |
| 28 | 103–5 | 75–77 | 73, 83–85 | • Describe the kinds of things that are attracted to a magnet<br>• Identify the areas on a magnet that have the strongest magnetism<br>• Identify which poles of magnets attract each other and which ones repel each other<br>• Explain why we learn about force ***BWS***<br>• Write an explanation about what force causes a scooter to roll down a hill |
| 29 | 106 | 56–77 | 61–85 | **Review**<br>• Recall terms and concepts from Chapter 4 |
| 30 | 107 | | | **Assessment**<br>• Apply terms and concepts from Chapter 4 |

# Unit 2: Let's Explore Earth and Space

## Chapter 5: How the Earth Moves

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 31 | 108–14 | 78–84 | 87–92 | • Identify the location of the sun in the solar system<br>• Explain by using Genesis 1 that the solar system was created by God *BWS*<br>• Evaluate different worldviews of the origins of the solar system *BWS*<br>• Formulate a biblical worldview of origins *BWS*<br>• Identify how many planets are in the solar system<br>• Identify the location of the earth in the solar system |
| 32 | 115–19 | 85–89 | 93–94 | • Describe the earth's shape<br>• Identify three ways a globe is a model of the earth<br>• Identify that the earth tilts on its axis<br>• Explain the importance of the rotation of the earth |
| 33 | 120–22 | 90 | 95–96 | **Exploration: Day and Night Around the World**<br>• Observe how the earth's rotation causes daytime and nighttime<br>• Collaborate to model the rotation of the earth<br>• Explain the cause of daytime and nighttime on the earth |
| 34 | 123–25 | 91–93 | 88, 97–99 | • Demonstrate the orbit of the earth around the sun<br>• Identify the length of time the earth takes to orbit the sun<br>• Explain how the earth's revolution and tilt on its axis provide us with seasons<br>• Explain by using Genesis 8:22 that God created the seasons *BWS* |
| 35 | 126 | 80–93 | 87–99 | **Review**<br>• Recall terms and concepts from Chapter 5 |
| 36 | 127 | | | **Assessment**<br>• Apply terms and concepts from Chapter 5 |

# Chapter 6: What Makes Up the Earth

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 37 | 128–35 | 94–101 | 101–4 | • Explain from Genesis 1 the origin of water on the earth *BWS*<br>• Identify that water, in liquid or solid state, covers most of the earth's surface<br>• Classify bodies of water as having either salt water or fresh water<br>• Identify the seven continents and some of their characteristics<br>• Identify various landforms and their characteristics |
| 38 | 136 | 102 | 105 | **Exploration: Shape of the Land**<br>• Create a model depicting landforms and bodies of water on the earth's surface<br>• Classify bodies of water as having either fresh water or salt water<br>• Explain how the model accurately represents landforms and water on the earth's surface |
| 39 | 137–41 | 103–7 | 107–9 | • Identify ways that scientists learn about the earth's crust<br>• Explain how scientists can infer what layers are inside the earth<br>• Explain why scientists can only infer what layers are inside the earth *BWS*<br>• Identify characteristics of each layer of the earth<br>• Label a diagram showing the layers of the earth |
| 40 | 142–44 | 108 | 111–12 | **Exploration: The Earth's Layers**<br>• Create a model of the earth's layers<br>• Measure each layer of the model to represent what scientists believe about the thickness of the earth's layers<br>• Infer, using the model, information about the earth's layers |
| 41 | 145–48 | 109–12 | 113–14 | • Identify four causes of weathering<br>• Identify two causes of erosion<br>• Compare and contrast weathering and erosion<br>• Evaluate using biblical truth the statement that all weathering and erosion occur slowly *BWS* |
| 42 | 149–51 | 113 | 102, 115–16 | **STEM: Erosion Control**<br>• Design a solution to slow or prevent wind erosion by using the engineering design process<br>• Construct a model to slow or prevent wind erosion<br>• Test and compare models to improve the original design<br>• Communicate how the design slows or prevents wind erosion<br>• Explain from Genesis 1:27–28 and Matthew 22:37–39 why slowing or preventing erosion is important *BWS* |

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 43 | 152–55 | 114–17 | 117–19 | • Compare and contrast volcanoes and earthquakes<br>• Identify what lava is and where it comes from<br>• Describe ways that volcanoes and earthquakes change the earth's surface<br>• Explain why learning about the movement of the earth's surface helps people to live safely ***BWS*** |
| 44 | 156 | 94–117 | 101–19 | **Review**<br>• Recall terms and concepts from Chapter 6 |
| 45 | 157 | | | **Assessment**<br>• Apply terms and concepts from Chapter 6 |

# Chapter 7: What Natural Resources Are

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 46–47 | 158–67 | 118–27 | 121–29 | • Identify what a natural resource is *BWS*<br>• Explain why people should conserve natural resources *BWS*<br>• Identify examples of natural resources<br>• Describe how natural resources can be conserved<br>• Explain how plants can help prevent erosion<br>• Identify how fossil fuels are used as natural resources<br>• Identify three kinds of fossil fuels<br>• Evaluate the use of fossil fuels |
| 48 | 168–70 | 128–30 | 131–32 | • Identify what a product is<br>• Identify common products that come from natural resources |
| 49 | 171–74 | 131–34 | 122, 133–35 | • Describe the three Rs of conservation<br>• Formulate a statement explaining how conserving natural resources is obeying God *BWS* |
| 50 | 175–77 | 135 | 137–38 | **Exploration: Recycled Paper**<br>• Measure and record accurately<br>• Recycle old newspapers to make new paper<br>• Compare and contrast old newspaper to recycled paper<br>• Infer what the new recycled paper can be used for<br>• Formulate a statement from Matthew 22:37–39 to explain how recycling helps people obey God's commands *BWS* |
| 51 | 178 | 118–35 | 121–38 | **Review**<br>• Recall terms and concepts from Chapter 7 |
| 52 | 179 | | | **Assessment**<br>• Apply terms and concepts from Chapter 7 |

# Unit 3: Let's Explore Living Things

## Chapter 8: How Plants Grow and Change

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 53 | 180–89 | 136–45 | 139–45 | • Identify the characteristics of living and nonliving things<br>• Classify items as living or nonliving<br>• Identify the needs of plants to survive and grow<br>• Explain from Genesis 3:17–18*a* how the Fall affected plants ***BWS***<br>• Identify each part of a plant and its function<br>• Create a model of a flower |
| 54 | 190–92 | 146–48 | 140, 147–48 | • Explain that God created plants to reproduce "after their own kind" ***BWS***<br>• Identify the parts of a seed<br>• Describe what a seed needs to sprout<br>• Identify the three stages of the life cycle of a plant<br>• Explain why plants have seeds |
| 55 | 193–94 | 149–50 | 149–50 | • Identify ways that seeds travel<br>• Describe how plants depend on animals to scatter seeds |
| 56 | 195–99 | 151 | 151–54 | **Investigation: Traveling Seeds**<br>• Predict how seeds can be scattered<br>• Observe how seeds are scattered<br>• Classify seeds based on the way they travel |
| 57 | 200 | 138–51 | 139–54 | **Review**<br>• Recall terms and concepts from Chapter 8 |
| 58 | 201 | | | **Assessment**<br>• Apply terms and concepts from Chapter 8 |

# Chapter 9: How Animals Grow and Change

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 59 | 202–8 | 152–58 | 155–56 | • Differentiate between living things and nonliving things<br>• Identify needs of animals<br>• Describe the relationship between what an animal needs to survive and where it lives<br>• Describe how animals can change where they live to meet their needs<br>• Formulate a biblical statement that God designed animals and where they live to work together so they can survive and grow ***BWS*** |
| 60 | 209–14 | 159–64 | 157–62 | • Classify animals with backbones according to physical characteristics<br>• Identify how animals with backbones use different external body parts |
| 61 | 215–19 | 165–69 | 163–66 | • Classify animals without backbones according to physical characteristics<br>• Identify how animals without backbones use different external body parts |
| 62 | 220–23 | 170–73 | 167–68 | • Describe how animals grow and change<br>• Identify that offspring resemble their parents<br>• Describe how parents and offspring have body parts and behaviors that help them survive<br>• Compare and contrast characteristics of offspring and their parents |
| 63 | 224–26 | 174–76 | 169–73 | • Sequence the steps of a life cycle for a butterfly and a frog<br>• Identify body parts within the life cycle of animals |
| 64 | 227–28 | 177–78 | 175–78 | • Describe the transfer of energy from one organism to another<br>• Read a food chain to understand how energy moves through where an animal lives<br>• Identify the predators and prey in a food chain<br>• Construct an explanation from Scripture of why there are predators and prey ***BWS*** |
| 65 | 229–31 | 179 | 179–80 | **STEM: Trapped!**<br>• Research the characteristics of an insect<br>• Apply the engineering design process to trap an insect without harming it<br>• Communicate to others how the design solves the problem |
| 66 | 232 | 152–79 | 155–80 | **Review**<br>• Recall terms and concepts from Chapter 9 |

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 67 | 233 | | | **Assessment**<br>• Apply terms and concepts from Chapter 9 |

# Chapter 10: Where Things Live

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 68 | 234–39 | 180–85 | 181–84 | • Explain why it is important to learn and care about living things *BWS*<br>• Compare and contrast a population and a community of living things<br>• Explain how living things depend on each other<br>• Explain how a habitat provides for the needs of plants and animals<br>• Infer whether plants and animals can survive in habitats that do not meet their needs |
| 69 | 240–44 | 186–90 | 185–88 | • Identify plants and animals living in a water habitat<br>• Explain how water habitats meet the needs of living things |
| 70 | 245–51 | 191–97 | 189 | • Identify plants and animals living in a land habitat<br>• Explain how land habitats meet the needs of living things<br>• Compare and contrast water and land habitats |
| 71 | 252–56 | 198–202 | 182, 191–96 | • Identify ways animals and plants change their habitats<br>• Identify the impacts of a wildfire on a habitat<br>• Evaluate how people impact habitats *BWS* |
| 72 | 257–59 | 203 | 197–201 | **Exploration: Home Sweet Home**<br>• Research a habitat<br>• Build a model of a habitat<br>• Communicate information about a habitat and the things living there<br>• Evaluate the researched habitat to determine if it could meet human needs |
| 73 | 260 | 180–203 | 181–201 | **Review**<br>• Recall terms and concepts from Chapter 10 |
| 74 | 261 | | | **Assessment**<br>• Apply terms and concepts from Chapter 10 |

# Chapter 11: What Fossils Show Us

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 75 | 262–65 | 204–7 | 203–6 | • Identify prior knowledge of fossils by using a K-W-L chart<br>• Compare and contrast the worldviews of Creation and evolution ***BWS***<br>• Infer how a person's worldview affects how he interprets his observations ***BWS*** |
| 76 | 266–68 | 208 | 207–9 | **Exploration: Following Clues**<br>• Observe clues like a scientist does<br>• Infer facts about an animal from its footprint clues<br>• Draw conclusions from data collected<br>• Relate conclusions from the collected data to what science can and cannot do ***BWS*** |
| 77 | 269–73 | 209–13 | 205, 211–12 | • Explain how fossils form<br>• Compare and contrast different views of how most fossils formed ***BWS***<br>• Identify six different types of fossils<br>• Differentiate between a mold fossil and a cast fossil |
| 78 | 274–75 | 214–15 | 213–14 | • Explain what plant and insect fossils tell us about life on Earth at the time of the Flood ***BWS***<br>• Explain why some plants and insects are found only as fossils<br>• Create a model of a leaf mold fossil |
| 79–80 | 276–82 | 216–22 | 203–4, 215–18 | • Explain what dinosaur fossils can and cannot tell us<br>• Identify characteristics of the *Stegosaurus* and the *Tyrannosaurus rex*<br>• Defend with biblical truth the claim that Noah took dinosaurs on the ark ***BWS***<br>• Name one possible reason that dinosaurs became extinct |
| 81 | 283–85 | 223 | 219–21 | **Exploration: Bag of Bones**<br>• Conduct a keyword search of a specific dinosaur<br>• Create a model of a dinosaur skeleton<br>• Explain how scientists infer what dinosaurs looked like<br>• Communicate facts about the researched and modeled dinosaur<br>• Evaluate the conclusions some people draw from fossils ***BWS*** |
| 82 | 286 | 204–23 | 203–21 | **Review**<br>• Recall terms and concepts from Chapter 11 |
| 83 | 287 | | | **Assessment**<br>• Apply terms and concepts from Chapter 11 |

# Chapter 12: How the Human Body Works

| Lesson | Teacher Edition | Student Edition | Activities | Objectives |
|---|---|---|---|---|
| 84 | 288–93 | 224–29 | 223–28 | • Defend the statement that humans are the most important part of God's creation *BWS*<br>• Explain what a body system is<br>• Identify the parts of the skeletal system<br>• Identify the parts of the muscular system<br>• Demonstrate how the skeletal system and the muscular system work together according to God's design *BWS* |
| 85 | 294–97 | 230–33 | 225, 229–31 | • Identify the parts of the circulatory and respiratory systems<br>• Relate the size of the heart to the size of a person's fist<br>• Explain how the lungs work<br>• Explain how the circulatory system and the respiratory system work together according to God's design *BWS* |
| 86 | 298–301 | 234–37 | 225, 233–34 | • Identify the parts of the nervous system<br>• Explain how the skeletal system protects parts of the nervous system according to God's design *BWS*<br>• Identify the parts of the digestive system<br>• Sequence the path that food travels through the digestive system |
| 87 | 302–4 | 238–40 | 235–43 | • Identify foods needed to keep the body healthy<br>• Classify healthy foods by food groups<br>• Plan one day of healthy eating *BWS*<br>• Explain why healthy eating and exercise are important *BWS*<br>• Select ways for the body to get exercise every day *BWS*<br>• Compose a prayer of praise to God for His design of the human body systems *BWS* |
| 88 | 305–7 | 241 | 245–51 | **Exploration: Mapping My Body**<br>• Create a life-size model of the human body<br>• Create a life-size model of the heart<br>• Organize body parts in their correct locations on the model of the human body<br>• Formulate a statement to explain how the body model illustrates the teaching of Psalm 139:14 *BWS* |
| 89 | 308 | 224–41 | 223–51 | **Review**<br>• Recall terms and concepts from Chapter 12 |
| 90 | 309 | | | **Assessment**<br>• Apply terms and concepts from Chapter 12 |