

Curriculum Guide for 5<sup>th</sup> Grade Science

Unit 1: Earth Science

4 weeks

S5.3

**Biblical Worldview Essential Questions**

**How do evolutionary and Creation scientists view Creation?**

Objectives	Methods	Resources	Assessment
<p>The students will</p> <p><u>Minerals and Rocks</u></p> <ol style="list-style-type: none"> <li>1. Recognize the interrelationships of science concepts</li> <li>2. Distinguish facts and assumptions in the evolution/Creation debate</li> <li>3. Evaluate evolutionary assumptions from a Christian worldview</li> <li>4. Identify the layers of the earth</li> <li>5. Examine the Flood's effect of the earth</li> <li>6. Identify characteristics of minerals</li> <li>7. Apply the Mohs scale to determine hardness</li> <li>8. Measure mass to the nearest gram</li> <li>9. Measure volume to the nearest milliliter</li> <li>10. Observe the formation of Epsom-salt crystals</li> <li>11. Measure and record observational data</li> <li>12. Differentiate between characteristics of precious and semi-precious stones</li> <li>13. Research minerals found in foods or beverages</li> <li>14. Use the PQ3R method to read informational text</li> <li>15. Identify types of rocks and explain how each is formed</li> <li>16. Label and classify rocks in a collection</li> </ol> <p><u>Fossils and Dinosaurs</u></p> <ol style="list-style-type: none"> <li>17. Evaluate evolution from a Christian worldview</li> <li>18. Compare and describe some types of fossils that form in sediment</li> <li>19. Compare beliefs of evolutionists and Creationists</li> <li>20. Make inferences as to the viewpoint from which literature is written</li> <li>21. Make models of fossils</li> </ol>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Guided class discussion</li> <li>• Group reading</li> <li>• Completing <i>Science 5</i> worksheets individually, in groups, and within classroom discussion</li> <li>• Labs</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher and student text (BJU Press) <i>Science 5</i></li> <li>• School science resource tubs for labs (containers, testing materials, etc.)</li> <li>• <a href="http://teachertoolsonline.com">teachertoolsonline.com</a> (BJU Press) for PowerPoints, videos, and other digital teaching aids</li> </ul>	<ul style="list-style-type: none"> <li>• Student workbook (BJU Press) <i>Science 5</i></li> <li>• Response to classroom questions</li> <li>• Classroom games</li> <li>• Chapter quizzes</li> <li>• Chapter tests</li> </ul>

<p>22. Describe how fossils are excavated and reconstructed</p> <p>23. Describe how paleontologists use carbon dating to guess the age of fossils</p> <p>24. Model the procedures a paleontologist uses while excavating</p> <p>25. Recognize that what is known about dinosaurs is based on the observation of fossils</p> <p>26. Recognize the types of information that can be inferred from fossils</p> <p>27. Explore mankind's God-given curiosity</p> <p>28. Realize that man and dinosaurs lived at the same time</p> <p>29. Identify biblical animals that may have been dinosaurs</p> <p>30. Name some causes of extinction</p> <p>31. Identify reasons why dinosaurs may have become extinct</p> <p>32. Examine scientific evidence to show that dinosaurs are thousands of years old and not millions</p>			
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## Unit 2: Matter

4 weeks

S5.6

### Biblical Worldview Essential Questions

**How does Scripture show that God created matter from nothing?**

Objectives	Methods	Resources	Assessment
<p>The students will</p> <p><u>Matter</u></p> <ol style="list-style-type: none"> <li>1. Recognize that God created distinct kinds of matter to melt at different temperatures</li> <li>2. Explain how to find the volume of a solid and of a liquid</li> <li>3. Differentiate between mass and weight</li> <li>4. Measure length, to the nearest millimeter</li> <li>5. Measure volume using cubic centimeters</li> <li>6. Measure temperature to the nearest degree Centigrade</li> <li>7. Identify and describe the three states of matter</li> <li>8. Recognize that a change of state is a physical change</li> <li>9. Use the scientific method to discern what is true</li> <li>10. Identify atoms as small particles of matter</li> <li>11. Differentiate between elements and compounds</li> <li>12. Contrast chemical changes and physical changes</li> <li>13. Plan a procedure for separating the parts of a mixture</li> <li>14. Experiment to test predictions</li> <li>15. Infer how to physically remove a dissolved item from water</li> <li>16. Explain the difference between a mixture and a compound</li> <li>17. Identify a solution as a type of mixture</li> <li>18. Identify the parts of a solution</li> <li>19. Provide examples from Scripture of how the universe was formed</li> <li>20. Predict how surface area will affect the rate of dissolving</li> <li>21. Demonstrate buoyancy</li> </ol> <p><u>Energy and Heat</u></p> <ol style="list-style-type: none"> <li>22. Explain the importance of energy and heat in designing useful technology</li> <li>23. Differentiate between potential energy and kinetic energy</li> <li>24. Differentiate between thermal energy and temperature</li> </ol>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Guided class discussion</li> <li>• Group reading</li> <li>• Completing <i>Science 5</i> worksheets individually, in groups, and within classroom discussion</li> <li>• Labs</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher and student text (BJU Press) <i>Science 5</i></li> <li>• School science resource tubs for labs (containers, testing materials, etc.)</li> <li>• <a href="http://teachertoolsonline.com">teachertoolsonline.com</a> (BJU Press) for PowerPoints, videos, and other digital teaching aids</li> </ul>	<ul style="list-style-type: none"> <li>• Student workbook (BJU Press) <i>Science 5</i></li> <li>• Response to classroom questions</li> <li>• Classroom games</li> <li>• Chapter quizzes</li> <li>• Chapter tests</li> </ul>

<p>25. Predict how the mass of a substance affects the amount of thermal energy it can transfer</p> <p>26. Experiment to test a hypothesis</p> <p>27. Recognize that increasing or decreasing thermal energy can cause matter to change to a different state</p> <p>28. Explain what happens during thermal expansion</p> <p>29. Recognize that a food calorie is also called a kilocalorie</p> <p>30. Calculate the resting metabolic rate</p> <p>31. Track calorie consumption for three days</p> <p>32. Recognize that heat always flows from a warmer substance to a cooler substance</p> <p>33. Identify and describe three ways that heat occurs</p> <p>34. Differentiate between conductors and insulators</p> <p>35. Predict which type of insulation will best keep hot water warm</p> <p>36. Test several types of insulation to determine which is the most effective</p> <p>37. Measure and use numbers in an activity</p> <p>38. Identify some common fuels</p> <p>39. Distinguish between renewable and nonrenewable resources</p> <p>40. Name some ways fuel is used</p> <p>41. Give examples of unwanted heat</p> <p>42. Explain why controlling heat is necessary</p> <p>43. Name some ways thermal energy is part of our everyday lives</p> <p>44. Show how Christian scientists can do operational science to exercise biblical dominion</p> <p>45. Explain why biomimicry is an example of exercising dominion to love our neighbor and to glorify God</p> <p>46. Design a piece of equipment for a moon station</p> <p>47. Research equipment developed for the space program</p>			
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## Unit 3: Climate

4 weeks

S5.2

### Biblical Worldview Essential Questions

**How did the climate and biomes change after the Flood?**

Objectives	Methods	Resources	Assessment
<p>The students will</p> <p><u>Weather</u></p> <ol style="list-style-type: none"> <li>1. Recognize, from a Christian worldview, reasons for studying climate</li> <li>2. Describe the atmosphere</li> <li>3. Identify and describe the two lower layers of the atmosphere</li> <li>4. Compare and contrasts high-pressure and low-pressure air masses</li> <li>5. Explain how temperature affects wind</li> <li>6. Predict whether water and soil will warm or cool at the same rate</li> <li>7. Measure and record temperature</li> <li>8. Differentiate among rain, sleet, snow, and hail</li> <li>9. Identify and describe the three basic shapes of clouds</li> <li>10. Describe characteristics of thunderstorms, tornadoes, and hurricane</li> <li>11. Differentiate between a weather warning and a weather watch</li> <li>12. Research the safety precautions for a type of severe weather</li> <li>13. Describe the job of a meteorologist</li> <li>14. Read and interpret types of symbols on a weather map</li> <li>15. Correctly use weather instruments to gather information about the weather</li> <li>16. Record data</li> <li>17. Use data to make weather predictions</li> <li>18. Explain how clouds form</li> <li>19. Defend a biblical view of evidence for one ice age against a secular view of evidence for multiple ice ages</li> </ol> <p><u>Biomes</u></p> <ol style="list-style-type: none"> <li>20. Appreciate the effect of human intervention on a wetland biome</li> <li>21. Apply the Bible's teaching of stewardship of creation to biomes</li> <li>22. Differentiate between a biome</li> </ol>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Guided class discussion</li> <li>• Group reading</li> <li>• Completing <i>Science 5</i> worksheets individually, in groups, and within classroom discussion</li> <li>• Labs</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher and student text (BJU Press) <i>Science 5</i></li> <li>• School science resource tubs for labs (containers, testing materials, etc.)</li> <li>• <a href="http://teachertoolsonline.com">teachertoolsonline.com</a> (BJU Press) for PowerPoints, videos, and other digital teaching aids</li> </ul>	<ul style="list-style-type: none"> <li>• Student workbook (BJU Press) <i>Science 5</i></li> <li>• Response to classroom questions</li> <li>• Classroom games</li> <li>• Chapter quizzes</li> <li>• Chapter tests</li> </ul>

<p>and the biosphere</p> <ol style="list-style-type: none"> <li>23. Identify climate as a major influence on land biomes</li> <li>24. Describe basic characteristics of deciduous and coniferous forests</li> <li>25. Describe characteristics of grasslands and savannas</li> <li>26. Identify types of water-efficient plants</li> <li>27. Relate the effectiveness of a petroleum-jelly coating on a sponge to the waxy surfaces of some leaves and stems</li> <li>28. Describe basic characteristics of a tropical rain forest</li> <li>29. Recognize that biomes are only a general way to classify sections of the biosphere</li> <li>30. Explain how a mountain can have several biomes</li> <li>31. Research a biome</li> <li>32. Create a model of that biome</li> <li>33. Name the two categories of aquatic biomes</li> <li>34. Identify the force that keeps river water moving</li> <li>35. Recognize that people have the God-given responsibility to be good stewards of the earth</li> <li>36. Compare the description of the Garden of Eden to a map of modern-day Iraq</li> <li>37. Explain why the climate and biomes changed after the Flood</li> <li>38. Demonstrate how wetlands purify water</li> <li>39. Infer how the activity models the purifying process of a real wetland</li> </ol>			
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**Unit 4: Ecosystems**

4 weeks

S5.1; S5.5

**Biblical Worldview Essential Questions**

**How does Genesis 1:28 relate to the study of ecosystems?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
<p>The students will</p> <p><u>Interactions in an Ecosystem</u></p> <ol style="list-style-type: none"> <li>1. Recognize the interrelationship of science concepts</li> <li>2. Apply the Bible’s teaching of stewardship to creatures in a habitat</li> <li>3. Identify the two parts of an ecosystem</li> <li>4. Explain the relationships between individuals, communities, and populations</li> <li>5. Identify the functions of producers, consumers, and decomposers</li> <li>6. Explain why scavengers and decomposers are important to an ecosystem</li> <li>7. Investigate a habitat</li> <li>8. Distinguish between living things and nonliving things</li> <li>9. Identify the predators and prey in a food chain</li> <li>10. Differentiate between a food chain and a food web</li> <li>11. Make a visual representation of a food web</li> <li>12. Describe relationships among animals and plants in a simple ecosystem</li> <li>13. Explain why the kinds of teeth in a skull may not determine the kind of food an animal eats</li> <li>14. Identify the basic needs of plants and animals</li> <li>15. Identify and describe adaptations that help plants and animals survive</li> <li>16. Identify different kinds of symbiosis</li> <li>17. Differentiate between learned behaviors and instincts</li> </ol> <p><u>Changes in an Ecosystem</u></p> <ol style="list-style-type: none"> <li>18. Recognize that the earth has many cycles</li> <li>19. Identify the seasonal changes that may occur in an ecosystem</li> <li>20. Explain the carbon cycle</li> <li>21. Differentiate between photosynthesis and respiration</li> <li>22. name two ways that nitrogen is</li> </ol>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Guided class discussion</li> <li>• Group reading</li> <li>• Completing <i>Science 5</i> worksheets individually, in groups, and within classroom discussion</li> <li>• Labs</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher and student text (BJU Press) <i>Science 5</i></li> <li>• School science resource tubs for labs (containers, testing materials, etc.)</li> <li>• <a href="http://teachertoolsonline.com">teachertoolsonline.com</a> (BJU Press) for PowerPoints, videos, and other digital teaching aids</li> </ul>	<ul style="list-style-type: none"> <li>• Student workbook (BJU Press) <i>Science 5</i></li> <li>• Response to classroom questions</li> <li>• Classroom games</li> <li>• Chapter quizzes</li> <li>• Chapter tests</li> </ul>

<p>changed into usable compounds</p> <p>23. Describe the nitrogen cycle</p> <p>24. Identify the parts of the water cycle</p> <p>25. Identify and infer some ways that cycles work together in an ecosystem</p> <p>26. Recognize that decomposers are a part of many cycles</p> <p>27. Identify water as a variable that affects decomposition</p> <p>28. Analyze the effects of water on the rate of decomposition</p> <p>29. Identify three natural stresses on an ecosystem</p> <p>30. Explain how fires and floods can benefit an ecosystem</p> <p>31. Identify some effects of drought</p> <p>32. Recognize that sometimes what seems to like a disaster is actually God's way of maintaining the earth</p> <p>33. Research a historical stress</p> <p>34. Organize and present information about the stress</p> <p>35. Collect and record information about ecosystems</p> <p>36. Organize the information into a presentation</p> <p>37. Explain the water cycle using a model</p> <p>38. Relate the cycles of nature to God's care of His creation</p> <p>39. Identify some manmade stresses</p> <p>40. List differing opinions about using natural resources</p> <p>41. Differentiate between an extinct, threatened, and an endanger species</p>			
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## Unit 5: Energy

3 weeks

S5.6, S5.7

### Biblical Worldview Essential Questions

**How does the design of the animal life cycles reveal God as the Designer?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
<p>The students will</p> <p><u>Sound</u></p> <ol style="list-style-type: none"> <li>1. Recognize the interrelationship of science concepts</li> <li>2. Recognize that technology can be designed to control sound because sound moves in predictable ways</li> <li>3. Identify a compression of a sound wave</li> <li>4. Differentiate between the frequency and speed of sound waves</li> <li>5. Observe how the sound of a vibration affects its sound</li> <li>6. Change a variable and compare results</li> <li>7. Predict the highness of lowness of a sound</li> <li>8. Explain how the pitch of a sound wave is related to its frequency</li> <li>9. Identify the frequency range of human hearing</li> <li>10. Explain how the volume of a sound is related to the intensity of its sound waves</li> <li>11. Define and describe timber</li> <li>12. Compare the amount of sound absorbed by varied materials</li> <li>13. Predict which material will absorb the most sound</li> <li>14. Rate the loudness of sounds</li> <li>15. Identify relationships between materials and their abilities to absorb sound</li> <li>16. Summarize that the Bible has to say about hearing</li> <li>17. Explain why a creationary approach to science is a better approach to solving problems (like hearing loss) than an evolutionary approach</li> <li>18. Differentiate between sound and noise</li> <li>19. Recognize that a sound fades as its energy is used up</li> <li>20. Test the abilities of different mediums to carry sound</li> <li>21. Write a paragraph that compares and contrasts the</li> </ol>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Guided class discussion</li> <li>• Group reading</li> <li>• Completing <i>Science 5</i> worksheets individually, in groups, and within classroom discussion</li> <li>• Labs</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher and student text (BJU Press) <i>Science 5</i></li> <li>• School science resource tubs for labs (containers, testing materials, etc.)</li> <li>• <a href="http://teachertoolsonline.com">teachertoolsonline.com</a> (BJU Press) for PowerPoints, videos, and other digital teaching aids</li> </ul>	<ul style="list-style-type: none"> <li>• Student workbook (BJU Press) <i>Science 5</i></li> <li>• Response to classroom questions</li> <li>• Classroom games</li> <li>• Chapter quizzes</li> <li>• Chapter tests</li> </ul>

results

Light

22. Recognize that God provides for the needs of people
23. Identify light as a form of energy
24. Compare and contrast electromagnetic and mechanical waves
25. Identify the four properties of waves
26. Differentiate between the frequency of a wave and the speed of a wave
27. Differentiate between refraction and reflection
28. Recognize that the color of an object depends on which colors of light are being reflected
29. Identify the primary colors of light.
30. Test the visibility of colors
31. Infer which colors are most visible in fog
32. Explain how light reflects off smooth and rough surfaces
33. Identify and describe three kinds of mirrors
34. Differentiate between the angle of incidence and the angle of reflection
35. Measure the angle of reflection
36. Infer the relationship between the angle of reflection and the angle of incidence
37. Identify characteristics of waves found in the electromagnetic spectrum
38. Name some uses for each type of electromagnetic wave
39. Contrast the naturalistic view of the sun's origin with the biblical view
40. Recognize that the Bible calls for Christians to defend their faith
41. Identify different ways that light is used in technology
42. make a collage that explains how various products use light

<p>results</p> <p><u>Light</u></p> <ol style="list-style-type: none"><li>22. Recognize that God provides for the needs of people</li><li>23. Identify light as a form of energy</li><li>24. Compare and contrast electromagnetic and mechanical waves</li><li>25. Identify the four properties of waves</li><li>26. Differentiate between the frequency of a wave and the speed of a wave</li><li>27. Differentiate between refraction and reflection</li><li>28. Recognize that the color of an object depends on which colors of light are being reflected</li><li>29. Identify the primary colors of light.</li><li>30. Test the visibility of colors</li><li>31. Infer which colors are most visible in fog</li><li>32. Explain how light reflects off smooth and rough surfaces</li><li>33. Identify and describe three kinds of mirrors</li><li>34. Differentiate between the angle of incidence and the angle of reflection</li><li>35. Measure the angle of reflection</li><li>36. Infer the relationship between the angle of reflection and the angle of incidence</li><li>37. Identify characteristics of waves found in the electromagnetic spectrum</li><li>38. Name some uses for each type of electromagnetic wave</li><li>39. Contrast the naturalistic view of the sun's origin with the biblical view</li><li>40. Recognize that the Bible calls for Christians to defend their faith</li><li>41. Identify different ways that light is used in technology</li><li>42. make a collage that explains how various products use light</li></ol>			
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## Unit 6: Human Body

3 weeks

S5.8

### Biblical Worldview Essential Questions

**How did God uniquely create man?**

Objectives	Methods	Resources	Assessment
<p>The students will</p> <p><u>Respiratory System</u></p> <ol style="list-style-type: none"> <li>1. Contrast technology with the marvels found in the human body</li> <li>2. Demonstrate how people are being inspired by God’s designs to develop new technology</li> <li>3. Identify the respiratory system as the breathing system</li> <li>4. Differentiate between involuntary breathing and voluntary breathing</li> <li>5. Identify the muscles that help with breathing</li> <li>6. Describe the movement of the body and air when inhaling and exhaling</li> <li>7. Make a model of a lung</li> <li>8. Use the lung model to explain how the diaphragm moves during breathing</li> <li>9. Explain how mucus and cilia help keep the respiratory system clean</li> <li>10. List the parts of the respiratory system from the nose to the larynx</li> <li>11. Describe the function of the epiglottis</li> <li>12. Explain how the vocal cords produce sound</li> <li>13. Identify and describe the trachea, bronchi, and lungs</li> <li>14. Describe the function of the lungs</li> <li>15. Explain causes of snoring, hiccupping, coughing, and sneezing</li> <li>16. Calculate the amount of air exhaled</li> <li>17. Identify variables that may affect the results</li> <li>18. Describe the unique way God created man</li> <li>19. Relate the physical position of Jesu son the cross to His inability to breathe normally, a part of his suffering</li> <li>20. Identify some diseases that make it difficult to breathe</li> </ol>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Guided class discussion</li> <li>• Group reading</li> <li>• Completing <i>Science 5</i> worksheets individually, in groups, and within classroom discussion</li> <li>• Labs</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher and student text (BJU Press) <i>Science 5</i></li> <li>• School science resource tubs for labs (containers, testing materials, etc.)</li> <li>• <a href="http://teachertoolsonline.com">teachertoolsonline.com</a> (BJU Press) for PowerPoints, videos, and other digital teaching aids</li> </ul>	<ul style="list-style-type: none"> <li>• Student workbook (BJU Press) <i>Science 5</i></li> <li>• Response to classroom questions</li> <li>• Classroom games</li> <li>• Chapter quizzes</li> <li>• Chapter tests</li> </ul>

<p>properly</p> <ol style="list-style-type: none"><li>21. Describe what happens during an asthma attack</li><li>22. Recognize that allergies are not contagious</li><li>23. Name some reasons why smoking is harmful to your health</li><li>24. Explain why it is hard to quit smoking</li><li>25. Identify reasons people smoke</li><li>26. List biblical reasons for not smoking</li></ol>			
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