

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

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

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

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

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

<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?

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

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

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

<p>properly</p> <ol style="list-style-type: none">21. Describe what happens during an asthma attack22. Recognize that allergies are not contagious23. Name some reasons why smoking is harmful to your health24. Explain why it is hard to quit smoking25. Identify reasons people smoke26. List biblical reasons for not smoking			
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