Life Science

Unit 1: Life and Science

1 Week

7.10, 7.11

What is the biblical view of science?
What is the purpose of studying life science?
How do we see the image of God in humans?
How does the Creation Mandate affect us today?

Objectives	Methods	Resources	Assessment
The student will: • list and evaluate 3 methods for discerning if a statement is true • differentiate between physical and recorded evidence • define *science* • list 4 Biblical characteristics that support the belief that the Bible is God's Word • list and describe the steps of the scientific method • differentiate between problems solved best by experiment or survey • describe several ways in which the scientific method is subject to error • explain why science is a tool, not a final answer • discuss ways that bias can affect scientific observations	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • class survey to demonstrate scientific method • experiment to demonstrate scientific method • truth discernment activity	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 1 • teacher made assignments for experiment • scientific statement examples for truth discernment activity	• responses on survey activity • responses on experiment activity • responses on truth discernment activity • participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test

Life Science

Unit 2: Characteristics and Classification of Life

1.5 Weeks

7.1, 7.3, 7.10, 7.11

In whose image are we created?
How can we use the resources God has given us to solve problems?
How are molecules an example of God's provision?
How are species and biblical kind different?

Objectives	Methods	Resources	Assessment
The student will: • list the 4 characteristics of all living things • recognize that living things only come from other living things • list and explain the stages of an organism's life span • recognize the cell as the basic unit of life • compare and contrast spiritual and physical life • state the cell theory • describe four functions common to all cells • name and describe the functions of four molecules which are essential to life • express reasons for classifying organisms • list in order the 7 steps of classification • explain the need for, parts of and correct notation of a scientific name • explain the 2 major problems with the modern classification system • give explanations and examples arguing	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • "Is It Alive?" activity • button classification activity • "classify yourself" activity	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 2 • teacher made "Is It Alive?" activity • buttons • pictures of organisms from the 5 Living Kingdoms	• responses on "Is It Alive?" activity • responses on classification activities • participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test

against the evolutionary significance of the modern classification system • distinguish between species and biblical kind • name the 5 Living Kingdoms and give the major characteristics of each • name at least 2 organisms from each kingdom			

Life Science

Unit 3: Cellular Structure

1 Week

7.2, 7.11

How is complexity of life evidence of God's design?
How is God's glory declared in creation?
How can we serve God as a pathologist?
How does cell design show irreducible complexibilty?

Objectives	Methods	Resources	Assessment
The student will: • describe the structure, composition and properties of cell membranes • describe the processes of osmosis and diffusion • differentiate between passive and active transport • describe the three basic parts of a cell • describe the structure and function of 8 cytoplasmic organelles • discuss the function of a nucleus in a cell • list the two main ways by which organisms obtain energy • list two major organism activities which require energy	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • organelle comic strips	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 3 • cellular molecule models • teacher made assignments for organelle comic strips	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • organelle comic strips • teacher made test

Life Science

Unit 4: Cellular Activities

1.5 Weeks

7.2

How can we be good stewards of the bodies God has given us?
How is cellular respiration an example of God's handiwork?
What are the implications of leaven in the Bible?

Objectives	Methods	Resources	Assessment
The student will: • differentiate between tissues and organs • describe the division of labor within cells and multicellular organisms, and relate it to the division of labor within the body of Christ • define and describe the effects of turgor pressure • discuss the process of cellular respiration • differentiate between aerobic and anaerobic cellular respiration • name the reactants and products and give examples of each type of cellular respiration • explain the process of photosynthesis, naming the reactants and products of the process	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • turgor pressure demonstration • alcoholic fermentation experiment	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 4 • lettuce leaves for turgor pressure demonstration • materials for alcoholic fermentation experiment • Bibles	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test

Life Science

Unit 5: The Cell Cycle and Protein Synthesis

1 Week

7.2, 7.7

When does God first know us?
How can we use the resources God has given us to solve problems?
How does the Fall affect man today?
What does creation tell us about the Creator?

Objectives	Methods	Resources	Assessment
The student will: • describe the relationship between genes and chromosomes • describe the process of mitotic cell division • name and describe the four phases of mitosis • explain the dependence of asexual reproduction on mitosis • give examples of several forms of asexual reproduction • describe the basic structure of a DNA molecule • differentiate between transcription and replication	• lecture • discussion • individual reading • completing workbook activities individually, in pairs and as a class • mitosis demonstration	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 5 • paper and string mitotic phases	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test

Life Science

Unit 6/7: Genetics

3 Weeks

7.4, 7.11

How does genetics reveal God's orderliness?
What does the bible say about genetic disorders and human disorders?
What die sthe Bible say about abortion and euthanasia?
What is the biblical perspective on cloning?

Objectives	Methods	Resources	Assessment
The student will: • give examples of inherited traits • discuss Gregor Mendel's work with peas • differentiate between purebred and hybrid • differentiate between dominant and recessive • demonstrate the ability to use Punnet squares to determine simple genetic crosses • describe incomplete dominance, multiple gene inheritance, inheritance of sex in humans, and sex linked traits and be able to give examples of each • discuss a biblical position on inherited disorders • define and list several types of mutations • differentiate between somatic and germ mutations, and gene and somatic mutations • differentiate between	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • dominant and recessive traits project • Punnet square activity	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 6 & 7 • teacher made dominant and recessive traits project • teacher made Punnet square activity	• participation in class discussion • responses to questions from text • responses on Punnet square activity • responses to questions on workbook activities • teacher made test • teacher made rubrics for dominant and recessive traits project

selective breeding and crossbreeding			

Life Science

Unit 8: Creationism and Evolution

2 Weeks

7.1

What is the role of faith in beliefs about origins?
What is the literal view of creation?
How can dinosaurs be explained using the Bible?
What are some of the problems with evolution?
What do you think God thinks about evolution?

Objectives	Methods	Resources	Assessment
The student will: • contrast Biblical creationism and evolutionism and explain how both views are based on faith • list and describe 7 Biblical teachings concerning Creation • list the sequence of creation as given in Genesis 1 • describe the 4 Creation-week theories and give a scriptural basis for each • describe the canopy theory and give a scriptural basis for it • relate the flood theory of fossil formation • define and describe the *young-earth* and *old-earth theories* • discuss the significance of the behemoth and the leviathan described in Job 40-41 • differentiate between evolution, the theory of evolution, and	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • group and individual reading of Bible passages • evolutionary essay activity • shake it up activity	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 8 • Bibles • Essays with evolutionary viewpoint • pieces of broken toys	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test • responses on essay activity • responses on shake it up activity

biological evolution • describe the theories of inheritance of acquired characteristics, evolution by mutation, natural selection and mutation-selection, and present arguments against each • discuss the purpose of phylogenetic trees and present arguments against them • describe the theory of recapitulation and present arguments against it • explain what is meant by the “fossil record”, describe an evolutionist’s view of fossil formation, and tell what the fossil record does support			

Life Science

Unit 9: Kingdoms Archaebacteria, Eubacteria, Protista, Fungi

1 Week

7.2, 7.7, 7.11

How can we use a microscope to undercover God's unseen world?
What are the creation/evolutionists views on the origin of protozoa?

Objectives	Methods	Resources	Assessment
The student will: • understand the importance and function of bacteria, protists, and fungi in the natural world • explain the characteristics of the organisms in each of the 4 kingdoms (Archaebacteria, Eubacteria, Protista, and Fungi) that cause scientists to place the organisms in those kingdoms • describe several positive and negative effects of bacteria • describe the rapid growth capability of bacteria • distinguish between bacteria and viruses • differentiate between prokaryotic and eukaryotic organisms • differentiate between a colony and a tissue • distinguish between protozoa and algae • describe the ways by which protists obtain energy • describe fragmentation	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • bacterial multiplication activity	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 9	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test • responses to questions on bacterial multiplication activity

and conjugation • distinguish between saprophytes and parasites as it relates to fungi			

Life Science

Unit 10: Plant Structure, Function, and Responses

1.5 Weeks

7.2, 7.5, 7.11

How does the plant world bear testimony to an omniscient Creator?
How can we use resources in the plants God has given us to meet human's needs?
How did Job trust the Lord in Job 8?

Objectives	Methods	Resources	Assessment
The student will: • explain the key parts of a technical definition of plants • list and describe the 3 main types of plant organs • compare tap and fibrous root systems • differentiate between woody and herbaceous stems • identify and describe the function of the parts of a leaf • discuss the two main methods of support in plants • describe the structure and function of xylem, phloem, fibers, epidermis, bark, and cork • differentiate between the 3 main groups of plants • differentiate between angiosperms and gymnosperms • discuss the 5 primary	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • begin plant germination and growth project • xylem function demonstration • tropism experiment • video series *The Private Life of Plants*	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 10 • materials for plant germination and growth project, and xylem function demonstration • examples of leaves, root systems, and annual rings • plants for tropism experiment • video series *The Private Life of Plants*	• Fuparticipation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test

functions of plants • describe the structure of a leaf and its role in photosynthesis • describe the effects of hormones on plant function • define and differentiate between 4 types of tropisms • discuss photoperiodism and its effects on plant life cycles			

Life Science

Unit 11: Plant Classification and Reproduction

2 Weeks

7.2, 7.5, 7.7, 7.10, 7.11

How are plants testimony to God's beauty and design?
How is the lily of the field evidence of God's care for us?
How can we compare fruit growth to spiritual growth?

Objectives	Methods	Resources	Assessment
The student will: • classify plants into their respective groups based on current taxonomic guidelines • identify and describe the structure and function of each part of a flower • differentiate between pollination and fertilization • describe the processes of pollination and fertilization • explain the various methods of pollination • list 3 ways a plant may reproduce asexually • list and explain several methods by which plants disperse seeds	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • asexual reproduction experiment • complete seed germination project begun in unit 10 • video series *The Private Lives of Plants* • flower dissection	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 11 • plant cuttings for asexual reproduction experiment • video series *The Private Lives of Plants* • flowers and teacher made worksheets for flower dissection • enlarged cross-section of a flower	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test • responses on seed germination project • responses on teacher made worksheets for flower dissection

Life Science

Unit 12: The Invertebrates

2 Weeks

7.3, 7.6, 7.11

What is the role of invertebrates in God's creation?
What are the differences between plants and animals in the Bible?
How is King Herod and "worms" connected in Scripture?
What is the role of mollusk and enchinoderms in the Bible?
How can we learn from the ant in the book of Proverbs?
How does God care for His creation?
How can we use the study of animals to see God's greatness and design

Objectives	Methods	Resources	Assessment
The student will: • explain the key parts of the definition of an animal • state the distinguishing characteristic of an invertebrate • explain the function of pores in filter feeding of sponges • describe the structure and movement of a jellyfish • describe the function of nematocysts in cnidarians • describe the formation of coral reefs • define radial and bilateral symmetry • differentiate between free living and parasitic worms • describe structure and function of the nervous, digestive, and excretory systems of planarians and earthworms • list at least 3 nematodes • describe the structure and movement of	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • hydrostatic skeleton demonstration • insect study	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 12 • pictures of various invertebrates • posters • tube of toothpaste (hydrostatic skeleton demonstration) • insects and magnifying glasses for insect study	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • responses to questions on insect study • teacher made test

earthworms • describe structure and function of the circulatory and respiratory systems of earthworms • explain the significance of earthworms to soil • describe the morphology and movement of gastropods • describe the morphology and feeding of bivalves • discuss the processes of circulation, respiration and excretion in insects • differentiate between open and closed circulatory systems • describe molting and its significance to arthropods • differentiate between complete and incomplete metamorphosis and describe the stages of each • compare advantages and disadvantages of exoskeletons • describe the morphology and movement of gastropods			

Life Science

Unit 13: The Cold-Blooded Vertebrates (Fish, Reptiles, and Amphibians)

2 Weeks

7.3, 7.6, 7.11

What is the theme of blood in the Bible?
How is the vertebrate heart evidence of irreducible complexibility?
What is God's design for fish?
How can we care for His creation?

Objectives	Methods	Resources	Assessment
The student will: • differentiate between bone and cartilage • define vertebral column and skull and explain their significance in vertebrates • compare and contrast oxygenated and deoxygenated blood • describe circulation in animals with 2, 3, or 4 chambered hearts and give an example of an animal with each • compare respiration with gills and lungs • differentiate between central and peripheral nervous systems and cranial and spinal nerves • distinguish between sensory receptors and sense organs • describe the structures of a vertebrate digestive system and their functions	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • frog model dissection • preserved frog dissection	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 13 • pictures of various reptiles, amphibians and fish • frog models • preserved frogs • dissection equipment • posters • examples of bone and cartilage	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test • responses on frog dissection

• describe the structures of a vertebrate excretory system and their functions • describe fish characteristics which make it suitable for living in water • identify the characteristics of each of the 3 fish groups and give examples from each • describe the metamorphosis of a frog • describe the eating habits of frogs • identify major vertebrate body systems through the dissection of a frog • differentiate between tailed and tailless amphibians and give examples of each • describe the characteristics and habitats of each of the 4 groups of reptiles			

Life Science

Unit 14: The Warm-Blooded Vertebrates (Birds and Mammals)
1 Week

7.3, 7.6, 7.11

How are birds and mammals a showcase for God's glory?
How is flight evidence of God's design in birds/
How are humans different from mammlas?
How does God care for His creation?

Objectives	Methods	Resources	Assessment
The student will: • differentiate between warm and cold blooded • give examples of ways that animals regulate their body temperature • explain how the structure of a bird's bones suit it for flight • explain why flight muscles require large amounts of energy and oxygen • describe how birds care for their eggs • describe the structure of feathers and differentiate between the different types of feathers • give hair and mammary glands as the key characteristics of mammals • discuss the 3 ways mammals bear young • name and describe the 2 monotremes • name and describe several marsupials • describe the characteristics of hair and fur	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • feather observation activity • bird/mammal report	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 14 • feathers and magnifying lenses • bird and mammal bones • posters	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test • bird/mammal report • responses on feather observation activity

Life Science

Unit 15: Animal Behavior

1 Week

7.6, 7.9, 7.11

How is the wisdom of God shown in animal behavior?
What are the evolutionary/biblical views on migration and instinct?
How can we use life science to help others and serve God?
Why is the biblical command to honor your parents important?
How can you serve God as a marine biologist?

Objectives	Methods	Resources	Assessment
The student will: • differentiate between the 3 levels of animal behavior and give examples of each • describe and give examples of each of the 2 types of innate behavior • explain the function of pheromones in animal behavior • define intelligence	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • show examples of behaviors using live animals • "Which Behavior?" activity	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 15 • small animals such as fish and class pet	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test • responses on "Which Behavior?" activity

Life Science

Unit 16: Relationships within Ecosystems and Organisms

1.5 Weeks

7.8, 7.9, 7.11

How are we to be good stewards of Creation?
How is taming an animal similar to taming the tongue?
How can love our neighbors through good stewardship?
What is a Christian's role in pollution?
How can we serve God through ecology?

Objectives	Methods	Resources	Assessment
The student will: • Define ecology and state the 3 relationships studied by ecologists • describe the main components of an ecosystem • describe the 3 major physical environment factors affecting ecosystems • describe the water cycle • explain the steps of succession • explain the roles of producer and consumer organisms • describe the effects of limiting factors • explain the importance of rhythms in an ecosystem • explain dormancy and hibernation and their importance in seasonal rhythms • identify examples of inter-species relationships • discuss energy exchange between	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • artificial ecosystem activity • backyard ecosystem activity • video • completing biome outline	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 16 and 17 • aquarium for artificial ecosystem activity • posters • video: "Understanding Ecosystems" • teacher made biome outline	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test • responses on ecosystem activities

organisms • complete the connections in a food web • categorize animals according to their feeding habits and explain the significance of each in an ecosystem • define and give examples of each of the types of relationships within a population • define and give examples of competition, mutualism, commensalism, camouflage, warning coloration, and mimicry • list and describe 8 terrestrial and 2 aquatic biomes • discuss how animal behaviors and relationships and the physical environment show God's design, not accident			

Life Science

Unit 16: Man's Relationship with the Environment

1.5 Weeks

7.8, 7.9, 7.11

What is the biblical view of the relationship between humans and animals?
How can we be good stwards of God's resources?
What are some limiting factors to spiritual growth?
How are rhythms in creation designed by God?

Objectives	Methods	Resources	Assessment
The student will: • list and define several natural resources • relate God's promise to supply our needs even though resources are limited • give a Scriptural position for man's use of natural resources • differentiate between renewable and nonrenewable resources • explain man's dependence on producer, consumer and decomposer organisms • discuss problems associated with man's use of wildlife • define farming and domesticated organism • explain the factors affecting population growth • discuss doomsday ecology in light of population growth and God's Word • define conservation and list several resources that may need to be conserved • differentiate between	• lecture • discussion • individual reading • completing workbook activities individually and in pairs • stewardship project • trash solution discussion activity	• textbook: Bob Jones *Life Science for Christian Schools, 4th* ed., Chapter 18	• participation in class discussion • responses to questions from text • responses to questions on workbook activities • teacher made test • stewardship project • responses to trash solution discussion activity

different types of pollutants • describe water pollution and sewage treatment • list several common components of air pollution • discuss the problems associated with trash disposal and recycling			