Biology, 4th Edition

Lesson Plan Overview

| Day(s) | Topic | Pages | Support Materials | Bible Integration\* |
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| Chapter 1: The Science of Life and the God of Life |
| 1–2 | 1.1 What Is Truth? | 2–8 |  | Relationship between God and scienceRedemption of the worldGod and CreationDeductive reasoning and worldviewsGod and syllogismsGod’s Word as Truth |
| 1.2 What Is Science? | 8–10 |  | Dominion through modeling |
| 3 | 1.3 Using the Scientific Method | 10–15 |  |  |
| 1.4 The Limits of Science | 15–17 |  |  |
| 4 | 1.5 Science and the Christian | 17–20 |  | Christian philosophy of scienceDivinely ordained destruction in conquering the Promised LandProper view of worship |
| 1.6 The Attributes of Life | 20–23 |  |  |
| 5 |  |  | Lab 1a The Scientific Method |  |
| 6 | 1.7 The Study of Life | 23–30 | Physical and spiritual life |
| 7 |  |
| 8 |  |  | Lab 1b The Microscope |  |
| 9 | Chapter 1 Review |
| 10 | Chapter 1 Test |
| Chapter 2: The Chemistry of Life |
| 11–13 | 2.1 Matter | 31–36 |  |  |
| 2.2 Energy | 36–40 |  | Sustaining power of God in nature |
| 2.3 Solutions | 41–45 |  |
| 2.4 Organic Compounds | 45–47 |  | God’s role both in creating and sustaining life |
| 14 |  |  | Lab 2 Osmosis |  |
| 15–16 | 2.5 Carbohydrates and Lipids | 47–50 |  |  |
| 2.6 Proteins and Nucleic Acids | 50–54 |  |  |
| Chapter 2 Review |
| 17 | Chapter 2 Test |
| Chapter 3: Introduction to Cells Cytology Part I |
| 18–19 | 3.1 Cell Theory | 55–58 |  | God’s power revealed through His creation |
| 3.2 Levels of Cellular Organization | 59–60 |  |  |
| 3.3 Cellular Anatomy | 60–70 |  | Creation and the law of conservation |
| 20 | 3.4 Homeostasis | 70–73 |  | Evidence of design in creation |
| 3.5 Transportation Across the Membrane | 74–76 |  |  |
| 21 |  |  | Lab 3a Basic CytologyLab 3b Cellular Organelles and Processes |  |
| 22 | Chapter 3 Review |
| 23 | Chapter 3 Test |
| Chapter 4: Cellular Processes Cytology Part II |
| 24–25 | 4.1 Energy Relationships | 77–80 |  | Evidence of God’s design at the molecular level |
| 4.2 Photosynthesis | 80–85 | Lab 4 Photosynthesis | Creation vs. evolution in studying photosynthesis |
| 26 | 4.3 Cellular Respiration | 85–91 |  |  |
| 27 | 4.4 Protein Synthesis | 91–97 |  | Creator’s design of the “code of life”Evidence of design in mitochondrial DNA |
| 28 | 4.5 Metabolism and Homeostasis | 97–100 |  |  |
| Chapter 4 Review |
| 29 | Chapter 4 Test |
| Chapter 5: Genetics The Continuity of Life Part I |
| 30–31 | 5.1 The Mechanism of Heredity | 101–5 |  | Genetics and environment as excuses for sin by secularistsInfluence of man’s spiritual nature in his developmentJesus’s power to save from sin |
| 5.2 Cell Division | 105–8 |  |  |
| 5.3 Meiosis | 108–12 |  |  |
| 32 |  |  | Lab 5a Mitosis and Meiosis |  |
| 33 | 5.4 Mendelian Genetics | 112–17 | Lab 5b, Genetics Parts I–II\*\* |  |
| 34 | 5.5 Variations of Mendelian Genetics | 117–22 | Lab 5b, Genetics Parts III–V\*\* |  |
| 35 | 5.6 Sex Determination and Sex-Linked Traits | 123–26 | Lab 5b, Genetics Part VI\*\* |  |
| 36 | Chapter 5 Review |
| 37 | Chapter 5 Test |
| Chapter 6: Advanced Genetics The Continuity of Life Part II |
| 38 | 6.1 Changes Affecting the Numbers of Chromosomes | 128–33 | Lab 6 Genetic Research\*\* | Stewardship in agriculture |
| 6.2 Mutations | 133–37 |  |
| 39 | 6.3 Gene Expression | 137–42 | God’s wisdom and power seen through the development of an embryoSuffering as evidence of man’s sin and God’s grace |
| 40 | 6.4 The Gene Pool | 142–46 |  |
| 41 | 6.5 Eugenics | 146–51 | Importance of understanding biblical principles as they apply to scientific issuesInfluence of man’s spiritual nature on his behaviorChristians and surrogacyChristians’ use of genetic technologiesEthical and moral issues surrounding artificial reproductionThe Bible as the source of valuesMan’s suffering because of sinMan’s need of salvationSanctity of human life |
| If assigned, have students present Lab 6 research. |
| 42 | Chapter 6 Test |
| Chapter 7: Biotechnology |
| 43 | 7.1 Clones and Cloning | 152–56 |  | Sanctity of human lifeBiblical response to human cloning |
| 44 | 7.2 Genetic Engineering | 156–58 |  |  |
| 7.3 Stem Cell Technology | 158–61 |  | Evaluating stem cell research in light of the BibleUsing scientific discoveries to glorify God and help others |
| 45 | 7.4 Gene Therapy | 161–62 |  |  |
| 7.5 DNA Fingerprints | 163–65 |  |  |
| 7.6 Genetically Modified Plants | 165–67 |  | Stewardship of God-given resources |
| 46 |  |  | Lab 7a DNA Extraction |  |
|  |  | Lab 7b DNA Analysis\*\* |  |
| 47 | Chapter 7 Test |
| Chapter 8: The History of Life |
| 48 | 8.1 What Is a Worldview? | 168–70 |  | Importance of presuppositions to a worldview |
| 8.2 Which Worldview Should We Use? | 170–74 |  | Christian worldview vs. secular worldviewAuthority of ScriptureResults of believing evolutionary theoryStewardshipDeclaring God’s glorySpreading the gospelShowing love for othersNeed for faith in ChristCreationist presuppositions vs. evolutionist presuppositions |
| 49 | 8.3 The Beginnings of Evolutionary Theory | 174–76 | Lab 8 Creationism: My Beliefs and Their Defense\*\* | Creation with apparent ageGod’s Word vs. man’s wisdom |
| 8.4 Darwin’s Theory of Evolution | 176–80 | Biblical response to environmental determinismSpecial creation of manGod’s glory in creation |
| 50 | 8.5 Later Developments in Evolutionary Theory | 180–88 | Role of the Flood in fossil formationGod’s design and efficiency in creation |
| 51 | 8.6 Interpretation of Genesis | 189–93 | Inerrancy of ScriptureResponse to nonliteral interpretations of CreationGenesis account of CreationImportance of and support for a literal interpretation of ScriptureAuthority of ScriptureRelevance of the literal Creation account to the Christian faithIntelligent design and biblical CreationismScripture as the ultimate, unchanging standard |
| 52 | 8.7 Noah’s Flood and Fossilization | 193–99 | Genesis account of the FloodNoah’s arkScripture passages comparing the antediluvian and postdiluvian earthSupport for a universal FloodGod’s covenant with NoahNoah’s Flood as an explanation for fossilization |
| 53 | Chapter 8 Review |
| 54 | Chapter 8 Test |
| Chapter 9: The Classification of Organisms |
| 55 | 9.1 The Classification Hierarchy | 202–9 |  | God’s design in creation |
| 9.2 Scientific Names | 209–12 |  |  |
| 56 | 9.3 The Species | 212–16 |  | God’s design in creationCreationist view of speciation |
| 9.4 The Biblical Kind | 217–20 |  | Noah’s Flood and the biblical kindGod’s design in creationImportance of evaluating things based on Scripture |
| 57 |  |  | Lab 9 The Use of Biological Keys |  |
| 58 | Chapter 9 Review |
| 59 | Chapter 9 Test |
| Chapter 10: Bacteria and Viruses |
| 60–61 | 10.1 Bacterial Classification and Morphology | 221–26 |  | Evidence of detail in God’s creation |
| 10.2 Bacterial Reproduction and Growth | 226–32 |  | Creationism and accelerated mutation ratesGod’s design in creation |
| 10.3 Virology | 232–35 |  |  |
| 62 |  |  | Lab 10a Bacterial BasicsLab 10b Bacteria and Antibiotics or Lab 10c Epidemic Alert |  |
| 63 | 10.3 Virology (cont’d) | 235–38 |  | Evolutionary bias in the search for the “first living thing” |
| 10.4 Viral Diseases | 238–40 |  |  |
| 64–65 | 10.5 Infectious Disease | 240–45 |  | Disease as a result of the Fall and CurseDisease as a means of graceChrist’s miracles of healingHelping those who suffer from diseaseLeprosy in Bible timesDisease and God’s providence |
| 10.6 Defense Against Infectious Disease | 245–50 |  | The body’s defenses against disease as evidence of God’s loving care for His creation and as evidence against evolution |
| 10.7 Disorders | 250–54 |  | Biblical perspective on aging and deathFuture glorified body and eternal life for believersGod’s power over life and deathChrist’s victory over physical and spiritual death |
| 66 | Chapter 10 Review |
| 67 | Chapter 10 Test |
| Chapter 11: The Kingdom Protista |
| 68–69 | 11.1 General Characteristics (of Protozoans) | 255–56 |  | Creation of protozoans |
| 11.2 Protozoan Classification | 257–63 |  |  |
| 11.3 General Characteristics (of Algae) | 263–66 |  |  |
| 70 | 11.4 Algal Classification | 266–72 |  | The first plague of Egypt and a biblical response to a modernist interpretation of Scripture |
| 11.5 The Water Molds | 272–73 |  |  |
| 11.6 The Slime Molds | 273–74 |  |  |
| 71–73 |  | Lab 11 Protista |  |
| 74 | Chapter 11 Review |
| 75 | Chapter 11 Test |
| Chapter 12: The Kingdom Fungi |
| 76 | 12.A Fungi and Man | 275–79 |  | Leavening in the Bible |
| 12.B Characteristics of Fungi | 279–81 |  |  |
| 77 | 12.C Classification of Fungi | 281–86 |  |  |
| 78 |  |  | Lab 12 Fungi and Lichens |  |
| 79 | Chapter 12 Test |
| Chapter 13: The Plant Kingdom Botany Part I |
| 80 | 13.1 Nonvascular Plants | 287–91 |  | God’s care of His creation |
| 81 | 13.2 Vascular Plants Without Seeds | 291–93 |  |  |
| 13.3 Vascular Plants with Seeds | 294–98 |  | The cedar of Lebanon and Solomon’s templeBiblical response to the evolutionary interpretation of the age of trees |
| 82 |  |  | Lab 13a Plant Identification |  |
| 83 | 13.4 Plant Tissues | 298–300 |  |  |
| 13.5 The Leaf | 300–304 |  |  |
| 84 | 13.6 The Root | 304–7 |  |  |
| 13.7 The Stem | 307–13 |  |  |
| 85 |  |  | Lab 13b Plant Organs |  |
| 86 | Chapter 13 Test |
| Chapter 14: The Life Processes of Plants Botany Part II |
| 87 | 14.1 Plants and Water | 314–19 |  | God’s design of plantsA plant’s needing water for physical growth as an analogy for a Christian’s needing God’s Word for spiritual growth |
| 14.2 Plants and Minerals | 319–22 |  |  |
| 88 | 14.3 Plant Hormones | 322–26 |  |  |
| 14.4 Plants and Light | 326–28 |  |  |
| 89 | 14.5 Vegetative Reproduction | 328–31 |  | Grafting in the Bible |
| 14.6 Sexual Reproduction | 332–39 |  |  |
| 90 |  |  | Lab 14 Flowers, Fruits, and Seeds |  |
| 91 | Chapter 14 Review |
| 92 | Chapter 14 Test |
| Chapter 15: The Invertebrates Zoology Part I |
| 93 | 15.1 Characteristics of the Kingdom Animalia | 340–42 |  | Adam’s naming of the animalsMan’s dominion over animalsThe Fall’s effect on animals |
| 15.2 Animal Anatomy and Classification | 342–44 |  |  |
| 94 | 15.3 Phylum Porifera: The Sponges | 345–47 |  |  |
| 15.4 Phylum Cnidaria | 347–51 |  | Stewardship |
| 95 |  |  | Lab 15a PoriferaLab 15b Cnidaria |  |
| 96 | 15.5 Phylum Platyhelminthes: The Flatworms | 351–57 |  | Jewish dietary laws and trichinosis |
| 15.6 Phylum Nematoda: The Roundworms | 357–59 |  | Worms in the Bible |
| 97 | 15.7 Phylum Annelida: The Segmented Worms | 359–62 |  |  |
| 98 | 15.8 Phylum Mollusca | 362–66 | Lab 15c Worms I: Platyhelminthes and NematodaLab 15d Worms II: Annelida |  |
| 15.9 Phylum Echinodermata | 366–68 | Unique design in echinoderms as evidence for creation |
| 99 | Chapter 15 Review |  |
| 100 | Chapter 15 Test |
| Chapter 16: The Arthropods Zoology Part II |
| 101 | 16.1 Characteristics of Arthropods | 369–71 |  |  |
| 16.2 Subphylum Crustacea | 371–73 |  |  |
| 102 |  |  | Lab 16a Crustaceans |  |
| 103 | 16.3 Subphylum Chelicerata | 374–76 |  |  |
| 16.4 Characteristics of Insects | 377–83 |  | God’s design and care of His creation |
| 104 | 16.5 Major Orders of Insects | 384–90 |  | Insects as a plague recorded in ExodusStewardship |
| 105 |  |  | Lab 16b The GrasshopperLab 16c Insect Orders |  |
| 106 | Chapter 16 Review |
| 107 | Chapter 16 Test |
| Chapter 17: The Ectothermic Vertebrates Zoology Part III |
| 108 | 17.1 The Chordates | 391–93 |  |  |
| 109 | 17.2 Vertebrate Form and Function | 394–96 |  | Carnivores a result of the FallGod’s glory and design seen in creation |
| 17.3 Vertebrate Behavior | 396–98 |  | Animal intelligence and God’s designHumans created in the image of God |
| 110 | 17.4 Class Osteichthyes | 398–405 |  | The fish as a symbol of ChristianityFish in the Bible |
| 111 | 17.5 Classes Agnatha and Chondrichthyes | 406–8 |  |  |
| 17.6 Introduction to Amphibians | 409–13 |  | Frogs as a plague recorded in Exodus |
| 112 | 17.7 Structure and Function in the Frog | 413–17 |  |  |
| 113 |  |  | Lab 17a Live Bony FishLab 17b Dissection of a Bony Fish |  |
| 114 | 17.8 Characteristics of Reptiles | 417–20 | God’s design and use of reptilesReptiles as a symbol of God’s power and redemptionAmniotic egg as evidence of designDinosaurs in the Bible |
| 115 | 17.9 Classification of Living Reptiles | 420–26 |  | Satan’s (the serpent’s) temptation of EveThe Fall, the resulting Curse, and the promise of a RedeemerTwo groups of people—the people of God and the enemies of GodChrist’s certain victory over Satan |
| 116 | Chapter 17 Review |
| 117 | Chapter 17 Test |
| Chapter 18: The Endothermic Vertebrates Zoology Part IV |
| 118 | 18.1 Bird Characteristics | 427–31 |  | The bird’s body as evidence of God’s designArchaeopteryx as an example of creation and not evolutionThe ostrich in the Bible |
| 119 | 18.2 Bird Systems | 431–34 |  | Bird bills as evidence of God’s designRole of birds in the Battle of Armageddon |
| 120 | 18.3 Bird Family Life | 434–38 | Lab 18a Birds | Birds in the BibleChrist’s comparison of a hen’s care for her brood to His care for the Israelites |
| 121 | 18.4 Characteristics of Mammals | 439–45 |  |  |
| 122–123 | 18.5 Classification of Placental Mammals | 445–52 | Lab 18b Mammals | Rodents in the BibleBiblical references to lionsMan a special creation of GodMammals and Jewish dietary laws in the BibleMan’s dominion over animalsGod’s preservation of His creationNoah’s faith in and gratitude toward God |
| 124 | Chapter 18 Test |
| Chapter 19: Ecology |
| 125–126 | 19.1 The Nature of Ecology | 453–55 | Lab 19 Succession and Pollution (will continue for several weeks) | Stewardship |
| 19.2 The Ecosystem Defined | 455–66 | Reference to the water cycle in the Bible |
| 127–128 | 19.3 Interactions in the Biosphere | 466–71 | The Bible and extraterrestrial life |
| 19.4 Changes in the Biosphere | 471–74 |  |
| 129 | 19.5 Man’s Ecological Niche | 474–80 | Biblical response to deep ecologyNeed for balance in man’s stewardship of the earthGod’s care and provision for His creationThe Bible and animal rightsBiblical response to the New Age movement and pantheismThe Bible and vegetarianism |
| 130 | 19.6 Pollution | 480–85 | A biblical look at global warmingGod’s future destruction of the earthGod’s judgments described in RevelationMan’s responsibility to be good stewards of God’s creation |
| 131 | Chapter 19 Test |
| Chapter 20: Introduction to Human Anatomy and Physiology |
| 132 | 20.1 In the Image of God | 488–91 | Lab 20a Readings on the Human Body Systems (will continue throughout Chapters 20–25)\* | Human intelligence: evidence against the evolutionary idea that man is merely a highly intelligent animalBiblical perspective on animals and spiritsThe meaning of man’s being created in God’s imageThe image of God in man marred by the FallSanctification of believersGod as the source of all truth and moral authorityMan as a spiritual beingMan’s sinful nature and need of salvationGod’s provision of salvation through Jesus Christ |
| 20.2 Human Tissues, Organs, and Systems | 492–95 |  |
| 133 | 20.3 The Skin | 496–98 |  |  |
| 20.4 Hair and Nails | 498 |  |  |
| 20.5 Skin Glands | 498–500 |  | The Bible and human races |
| 134 | 20.6 Bone Anatomy and Physiology | 500–504 |  |  |
| 20.7 Joints | 505–7 |  |  |
| 135 |  |  | Lab 20b The Human Body and the Skeletal System |  |
| 136 | 20.8 Muscle Anatomy | 507–9 |  |  |
| 20.9 Muscle Physiology | 510–11 |  | Importance of caring for the body to enable better service for the Lord |
| 20.10 Muscles and Body Movements | 511–15 |  |  |
| 137 |  |  | Lab 20c The Human Muscular and Integumentary Systems |  |
| Chapter 20 Review |
| 138 | Chapter 20 Test |
| Chapter 21: Incoming Substances |
| 139–140 | 21.1 Anatomy of the Respiratory System | 516–19 |  |  |
| 21.2 Respiration | 519–22 |  |  |
| 21.3 Control of Breathing | 522–25 |  | Scriptural objections to smoking |
| 141 |  |  | Lab 21a The Human Respiratory System |  |
| 142 | 21.4 Organs of the Digestive System | 525–31 |  | Teleology—all that God creates has a purpose |
| 21.5 Foods and Digestion | 531–38 |  | Scriptural warning against gluttony |
| 143 |  |  | Lab 21b The Human Digestive System\* |  |
| Chapter 21 Review |
| 144 | Chapter 21 Test |
| Chapter 22: Internal Transport |
| 145 | 22.1 The Blood | 539–45 |  | Evidence of God’s design in blood clotting |
| 146 | Lab 22a Human Blood |  |
| 147 | 22.2 The Heart | 545–47 |  |  |
| 148 |  | Lab 22b Human Blood Circulation |  |
| 149 | 547–50 |  |  |
| 22.3 Blood Vessels and Circulations | 550–54 |  |  |
| 150–151 | 22.4 The Lymphatic System | 555–57 |  | The ability of the body to resist disease as evidence of God’s design |
| 22.5 Immunity | 557–63 |  | God’s providence in diseaseA Christian response to those suffering from HIV/AIDSChallenge to share the gospel |
| 152 | 22.6 The Kidneys | 564–65 |  |  |
| 22.7 Accessory Excretory Organs | 565 |  |  |
| 22.8 Urine | 565–66 |  |  |
| 153 | Chapter 22 Review |
| 154 | Chapter 22 Test |
| Chapter 23: The Nervous System Control Part I |
| 155 | 23.1 Neurons | 567–71 |  | God’s design of the nervous system |
| 156 | 23.2 Divisions of the Nervous System | 571–76 |  | Job as an example of God’s sovereignty in difficultiesChrist as the source of the believer’s strengthBiblical response to stress (1 Peter 5:7) |
| 157 |  |  | Lab 23a Human Reflexes |  |
| 158 | 23.3 Minor Senses | 577–79 |  |  |
| 23.4 The Ear: Hearing and Balance | 579–82 |  |  |
| 159 |  |  | Lab 23b Minor Senses in Humans |  |
| 23.5 The Eye and Sight | 582–85 |  | Structure of the eye as evidence of intelligent designThe healing of the blind man in Mark 8 |
| 160 |  |  | Lab 23c The Human Eye and Ear |  |
| Chapter 23 Review |
| 161 | Chapter 23 Test |
| Chapter 24: Hormones and the Human Mind Control Part II |
| 162–163 | 24.1 Hormones | 586–89 | Lab 24 Drugs in Our Culture\*\* |  |
| 24.2 The Endocrine Glands | 589–96 |  | Principles of spiritual maturityBiblical principles regarding peer pressureUnbiblical use of feelings or circumstances as an excuse for sinImportance of witnessingLaying up treasures in heavenImportance of spending time in God’s Word |
| 164–165 | 24.3 Drugs and Addiction | 596–604 |  | Submission to the Lord’s willGod’s provision of ways of escape from temptationChristians’ responsibility to care for their bodiesMiraculous healings in the BibleBiblical principles regarding alcohol |
| 24.4 Addiction | 605–7 | Biblical principles regarding Christians’ use of psychoactive drugsDepending on strength from God to resist temptation |
| 166 | If assigned, have students present Lab 24 research. |
| Chapter 24 Review |
| 167 | Chapter 24 Test |
| Chapter 25: Human Reproduction |
| 168 | 25.1 Male Reproductive System | 608–11 |  | Biblical principles of marriageRelationship between man and wife as example of relationship between Christ and the churchStewardship of the bodyCircumcision in the Old and New Testaments |
| 25.2 Female Reproductive System | 611–14 |  |  |
| 169 | 25.3 Human Embryology and Birth | 614–19 |  | Parents’ responsibility to raise children to love and fear God |
| 170–171 | 25.4 Fallen Human Sexuality | 619–23 |  | Biblical view of sexual relationshipsScripture passages regarding adulteryThe Bible’s challenge to have a pure thought lifeAvoiding situations that can lead to temptationGrace to escape from temptationWalking in the SpiritScripture passages regarding homosexualityPrinciples for dealing with sexual temptationBiblical principles of disease |
| 25.5 Sanctity of Human Life | 623–26 |  | The value of human lifeScripture passages regarding capital punishmentChrist’s provision of RedemptionYielding to ChristThe Bible and abortion |
| 172 |  |  | Lab 25 Chicken Embryology |  |
| Chapter 25 Review |
| 173 | Chapter 25 Test |
| Final Material |
| 174–176 |  |  | Laboratory Final Examination: The Rat |  |
| 177 | Final Review |
| 178 | Final Exam |