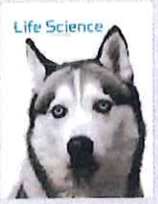
MIDDLE & HIGH **Science**

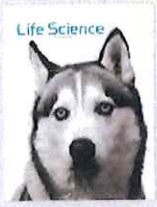
	Science 6 (4th ed.)	Life Science (5th ed.)	Earth Science (5th ed.)
			
	Increase your appreciation of God's wonderful creation through a study of various concepts about earth science, life science, physical science, and the human body in *Science 6*. Learn about new and current technology being developed that utilizes and benefits from science. Explore earthquakes and volcanoes, weathering and erosion, natural resources, and astronomy while learning about the Earth and space.	*Life Science* surveys the structures and functions of living things such as plants, animals, and human beings. All these concepts are unfolded as a quest to understand the life that God has created. Case studies, webquests, lab activities, ethics boxes, and questions help students think like scientists and see life science from a biblical perspective.	*Earth Science* is an expansive study that moves from the Earth's lithosphere to the rest of the universe. Students will study major theories in earth science, guided by biblical and scientific principles. Ultimately, this course leads to a better understanding of our Creator and a greater appreciation of His creation. The process of teaching encourages students to think like scientists who are eager to learn and discover. By equipping students to be conscious of earth science issues, they will be able to discover new ways to exercise dominion through science.
Biblical Worldview Shaping	• **Creator**—Explaining how order in Creation reflects the Creator • **Dominion**—Explaining ways that people have harnessed discoveries to improve life • **People**—Defending the value of human life • **Worldview**—Evaluating approaches to the study of science	• **Design**—Synthesizing observations and biblical teachings about design • **Ethics**—Formulating positions on bioethics from Scripture • **Gender**—Describing a biblical view of human sexuality • **History**—Evaluating claims about the origin of life • **Modeling**—Explaining how modeling affects scientific theories • **Worldview**—Relating the significance of the Creation Mandate to life science	• **Life**—Explaining why Earth is well-suited for life • **Glory**—Explaining how earth science declares God's glory • **Origins**—Evaluating old-earth positions • **Creation Mandate**—Explaining why Christians should be concerned about the environment • **Modeling**—Evaluating the usefulness of models in earth science
General Science	• Process skills • Science tools • Microscopes • The scientific method	• Definition of science • Science and worldview • Biblical vs. naturalistic worldviews • Science and biblical ethics • Modeling • Thinking scientifically • Limitations of science	• Worldviews and science • The structure of science • The scientific process • Scientific models
General Physical Science			• Introduction to physical science • Measuring
Physical Science: Matter	• Atomic structure • Atomic theory • Periodic table of the elements • Compounds • Chemical formulas • Chemical reactions • Atomic bonds • Acids and bases		• Describing the forms of matter • Describing how matter changes from one state to another • Demonstrating ways to measure matter • Comparing atoms and ions • Distinguishing between elements and compounds
Physical Science: Motion	• Distance and Speed • Velocity • Acceleration • Momentum • Newton's laws of motion • Work • Simple machines • Compound machines		• Classifying forces into different kinds • Describing how forces work in the universe • Explaining the significance of the force of gravity

	Science 6 (4th ed.)	Life Science (5th ed.)	Earth Science (5th ed.)
			
Physical Science: Energy	• Static and current electricity • Series and parallel circuits • Measuring electricity • Batteries • Magnetism • Electronics • Integrated circuits • Computers		• Describing energy • Classifying energy into different types • Explaining the significance of the principle of the conservation of energy • Describing work
Physical Science: Waves	• Earthquake waves		• Earthquake waves • Ocean waves

General Life Science	• Cells and classification
	  • Characteristics of living things
	  • Cell theory
	  • Tissues, organs, and systems
	  • Cell reproduction
	  • Six kingdoms of classification
	  • Scientific names
	• Genetics
	  • Heredity
	  • Traits
	  • DNA structure
	  • Mendel's experiments
	  • Dominant and recessive genes
	  • Punnett squares
	  • Genetic disorders and diseases
	  • Genetic engineering
		• God's living world
		  • Characteristics of life
		  • Homeostasis
		  • Design of life
		  • Life science and modeling
		  • Scientific inquiry
		  • Classification of life
		• Cell structure
		  • Cell theory
		  • Cell types
		  • Cell structure and function
		  • Cellular respiration
		  • Photosynthesis
		• Information in the cell
		  • Genes
		  • DNA replication
		  • RNA transcription
		  • Protein synthesis
		  • Cell division
		  • Mitosis and meiosis
		• Genetics
		  • Mendelian genetics
		  • Genetic crosses
		  • Variations on simple genetics
		  • Population genetics
		  • Natural selection
		• Change in nature
		  • Evidence of change
		  • Biblical creationism vs. evolutionism
		  • Worldview and change
			• Earth's design to support life

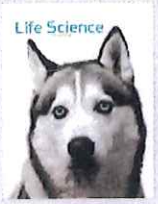
Life Science: Microorganisms and Plants	• Plant classification
	  • Nonvascular plants (mosses and liverworts)
	  • Seedless vascular plants (ferns, horsetails, and club mosses)
	  • Seed-bearing vascular plants (gymnosperms and angiosperms)
	• Parts of a plant
	• Plant reproduction
	  • Parts of a flower
	  • Pollination and fertilization
	  • Types of fruit
	  • Seeds
	  • Spores
	  • Asexual reproduction
		• Bacteria and viruses
		  • Archaebacteria vs. eubacteria
		  • Bacterial structure, reproduction, and importance
		  • Antibiotic resistance in bacteria
		  • Viruses
		• Protists and fungi
		  • Protist movement, nutrition, classification, and reproduction
		  • Fungi classification, structure, nutrition, and importance
		• The plant kingdom
		  • Plant classification
		  • Plant structure
		• Plant functions
		  • Plant hormones, tropisms, and photoperiodism
		  • Plant reproduction and life cycles	

MIDDLE & HIGH **Science**

	Science 6 (4th ed.)	Life Science (5th ed.)	Earth Science (5th ed.)
			

Life Science: Animals	• Classification
	  • Invertebrate phyla (Porifera, Cnidaria, echinoderms, mollusks, worms, arthropods)
	  • Vertebrates (fish, amphibians, reptiles, birds, mammals)
	• Reproduction
	  • Gestation
	  • Placental and marsupial mammals
	  • Eggs
	  • Parental care
		• Classification
		  • Characteristics of animals
		  • Characteristics and classifications of invertebrates: sponges, cnidarians, worms, mollusks, echinoderms, arthropods
		  • Characteristics and classifications of vertebrates: endotherms vs. ectotherms; fish, amphibians, reptiles, birds, and mammals
		• Structure and function
		  • Nutrition
		  • Maintaining homeostasis
		  • Transport
		  • Support, movement, and control
		• Reproduction and behavior
		  • External and internal fertilization
		  • Egg structure and development
		  • Placental reproduction
		  • Innate and learned behavior
		  • Communication	

Life Science: The Human Body	• Nervous system
	  • Central nervous system
	  • The brain
	  • Peripheral nervous system
	  • Neurons
	  • Reflexes
	  • The five senses
	  • Memory
	  • Sleep
	  • Endocrine system
	  • Disorders
	  • Drug abuse
	• Immune system
	  • Communicable and noncommunicable diseases
	  • Pathogens
	  • Vectors
	  • Epidemics
	  • Nonspecific responses
	  • The immune response
	  • Functions of white blood cells
	  • Immunity
	  • Antibiotics
	  • Antibodies
	  • Auto-immune diseases
	  • Allergies
	  • Transfusions and transplants
	  • Immune deficiencies
		• Support and movement
		  • Tissues and organs
		  • Structure and function of skin, bones, joints, and muscles
		  • Types of muscles
		• Energy
		  • Digestive system structure and function
		  • Food and nutrition
		  • Chemical vs. mechanical digestion
		  • Alimentary canal organs
		  • Accessory organs
		  • Urinary system structure and function
		• Transport
		  • Respiratory system structure and function
		  • Connection between the respiratory and circulatory systems
		  • Circulatory system structure and function
		  • Heart, blood cells, and plasma; blood vessels
		  • Flow of blood through the heart and lungs
		  • Connection between the circulatory and lymphatic systems
		  • Lymphatic system and immunity
		  • Lymph vessels and nodes
		• Control
		  • Components of the immune system
		  • Nonspecific vs. specific immunity
		  • Vaccines
		  • Active vs. passive immunity
		  • Parts of the nervous system
		  • Central nervous system vs. peripheral nervous system
		  • Nerves, reflex arc, and nerve impulses
		  • Sense organs structure and function
		  • Eyes, ears, touch, smell, and taste	

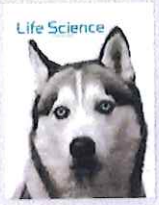
	Science 6 (4th ed.)	Life Science (5th ed.)	Earth Science (5th ed.)
			

Life Science: The Human Body		• Reproduction, growth, and development
		  • Structure and function of the endocrine system
		  • Hormones and endocrine glands
		  • Puberty
		  • Human reproduction and biblical sexuality
		  • Human growth and development	

General Earth and Space Science			• Why study earth science? • Earth science and worldview • Exercising biblical dominion • Definition of earth science • Maps and cartography • Geographic information systems (GIS)

Earth and Space Science: The Geosphere	• Earthquakes
	  • Plate tectonics and faults
	  • Causes of earthquakes
	  • Detecting seismic activity
	  • Recording and interpreting data from earthquakes
	  • Building for earthquakes
	• Volcanoes
	  • Causes of volcanoes
	  • Locations of volcanoes
	  • Classifying volcanoes by shape and eruption
	  • Effects and products of volcanoes
	• Weathering and erosion
	  • The rock cycle
	  • Types and examples of mechanical and chemical weathering
	  • Agents of erosion: gravity, water, wind, and ice
	• Soil
	  • Particles and texture of soil
	  • Formation of soil
	  • Layers of soil
	• Natural resources
	  • Renewable energy resources (fossil fuels, nuclear energy)
	  • Nonrenewable energy resources (hydroelectric energy, geothermal energy, wind energy, solar energy)
	  • Minerals
	  • Metals
	  • Soil conservation
	  • Water
	  • Conservation: reduce, reuse, recycle
		• Ecology
		  • Abiotic vs. biotic factors
		  • Ecosystems and biomes
		  • Cycles in the environment
		  • Food chains
		  • Energy pyramids
		  • Food webs
		  • Relationships between organisms
		  • Symbiosis
		  • Succession
		• Managing and protecting the environment
		  • Pollution classification and solutions
		  • Substance vs. energy pollution
		  • Using natural resources
		  • Renewable vs. nonrenewable resources
		  • Management philosophy
		  • Conservation vs. preservation
		  • Management principles
			• Geology
			  • A brief history of geology
			  • Operational and historical geology
			  • The earth's interior structure
			  • Natural resources
			  • Old- and young-earth origin theories of the earth
			  • Evidences for catastrophic changes in the earth's history
			  • Models for geologic tectonics
			  • Tectonic forces, faults, and earthquakes
			  • Earthquakes and seismology
			  • Effects of earthquakes
			  • Mountains and hills
			  • Tectonic mountains and landforms
			  • Nontectonic mountains and landforms
			  • Volcanic emissions, volcano activity, and classification
			  • Intrusive volcanism
			• Rocks and minerals
			  • Describing minerals
			  • Identifying and classifying minerals
			  • Minerals as resources
			  • Classifying rocks
			  • Igneous rocks, sedimentary rocks, and metamorphic rocks
			  • Critiquing the uniformitarian rock cycle
			  • The process of fossilization
			  • Paleontology, fossil fuels
			  • Weathering, erosion, and deposition
			  • Soils and soil formation

MIDDLE & HIGH **Science**

	Science 6 (4th ed.)	Life Science (5th ed.)	Earth Science (5th ed.)
			
Earth and Space Science: The Hydrosphere			• Ocean basins and landforms • Seawater composition • Ocean environments: tides, currents, and waves • History of oceanography, methods, and instruments • Deep-sea exploration • Underwater habitats • Research vehicles • Stream characteristics • Lakes and ponds • Limnology • Groundwater reservoirs and groundwater chemistry • Water as a resource • Solution caves and karst topography

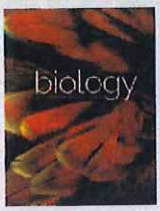
Earth and Space Science: The Atmosphere		• Cycles of matter
		  • Water cycle
		  • Oxygen and carbon cycles
		  • Nitrogen cycle
			• Composition and thermal structure of the atmosphere
			• Special regions
			• Energy in the atmosphere
			• Measurable weather data
			• Causes of wind
			• Global wind patterns
			• Sources of local winds
			• Cloud formation
			• Classifying clouds
			• Precipitation, dew, and frost
			• Air masses and weather fronts
			• Causes of precipitation
			• Winter storms, thunderstorms, tornadoes, and hurricanes
			• Weather forecasting, weather maps, and applications of GIS in weather modeling
			• Describing climate and climate zones
			• Climate data and interpretation
			• Observed short-term climate changes from volcanism and oceanic cycles
			• Climate models, worldviews, and long-term climate change
			• Environmentalism and biblical stewardship of the environment

	Science 6 (4th ed.)	Life Science (5th ed.)	Earth Science (5th ed.)
			

Earth and Space Science: The Cosmos	• Stars
	  • Magnitude
	  • Size
	  • Distances between
	  • Kinds of stars
	  • Constellations
	  • Telescopes
	  • Spectroscopes
	  • Star groups
	  • Asteroids
	  • Meteoroids
	  • Comets
	• Solar system
	  • Satellites
	  • Probes
	  • Parts of the sun
	  • Solar storms
	  • Seasons
	  • Inner planets
	  • Phases of the moon
	  • Eclipses
	  • Outer planets
	  • Dwarf planets
	  • Space exploration
			• The sun-Earth-moon system
			• The sun's structure, composition, and energy
			• The solar spectrum
			• The moon's structure, surface, and origin theories
			• Earth's orbit
			• Seasons and timekeeping
			• Lunar phases
			• Eclipses and tidal effects
			• Models of the solar system
			• Kepler's laws
			• Classification and brief description of the planets
			• Dwarf planets and small solar system bodies
			• Evidences for a young solar system
			• Constellations and star properties
			• Stellar classification and the H-R diagram
			• Stellar aging
			• Classification of galaxies
			• Nonstellar objects
			• Cosmology and worldviews
			• Challenges of space exploration
			• Rocketry
			• Satellites and space probes
			• Challenges and need for manned space exploration

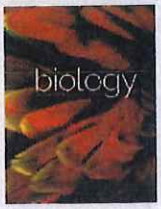
Engineering Design: STEM		• Following the engineering design process to solve a problem
		  • Building a better insect trap
			• Following the engineering design process to solve a problem
			  • Building earthquake-resistant structures
			  • Building a model rocket

MIDDLE & HIGH **Science**

	Physical Science (6th ed.)	Biology (6th ed.)	Chemistry (5th ed.)
			
	This research-based science course introduces students to chemistry and physics, equipping them to be student scientists. A clean, uncluttered layout helps students focus on key details and information. Going beyond science facts, students will learn to think critically about real-world science problems. Case studies, worldview sleuthing activities, ethics boxes, and mini-labs all give students opportunities for hands-on experiences with real-world problems. Additionally, they will be given strategies for making ethical decisions based on a biblical worldview.	Help your students explore the wonders of the living world. The biology course endeavors to equip students to ethically engage in biological inquiry and to recognize life's design, homeostasis, and conservation from a biblical worldview. Students will be able to discuss the process of homeostasis to biological structures at multiple levels, analyze living organisms, evaluate current and historical biological models, and apply a biblical framework to ethical issues in the realm of biology. Going beyond science facts, students will learn to think critically about real-world science problems. Case studies, worldview investigations (formerly worldview sleuthing) activities, ethics boxes, and mini-labs all give students opportunities for hands-on experiences with real-world problems.	Show your students the wonder of how matter and energy interact in the food we eat, the cars we drive, and the medicine we take. This chemistry course explores macroscopic and microscopic changes of matter in chemical reactions, organic chemistry, biochemistry, and nuclear changes. Students will learn how chemistry impacts the world around us and how to be good stewards of the physical world with what we know about chemistry. Going beyond science facts, students will learn to think critically about real-world science problems. Case studies, worldview investigations (formerly worldview sleuthing) activities, ethics boxes, and mini-labs all give students opportunities for hands-on experiences with real-world problems.
Biblical Worldview Shaping	• **Dominion**—Evaluating the effectiveness of solutions to problems in physics and chemistry • **Ethics**—Formulating a biblical pattern for answering ethical questions raised in science • **Modeling**—Evaluating how well models of matter represent physical matter • **Pursuit of Science**—Defending a Christian pursuit of science as the normative approach to science • **Order**—Evaluating modern theories regarding order in nature	• **Design**—Evaluating prevailing cultural views that contradict God's design • **Ethics**—Applying the biblical ethics triad to questions of bioethics • **Foundations**—Defending the influence of worldview on biological studies • **Modeling**—Evaluating models used in the study of biology	• **Community**—Explaining how chemistry is valuable for a community • **Environment**—Proposing solutions to problems that impact the environment • **Ethics**—Proposing ethical solutions to problems raised by advancements in chemical technology • **Foundations**—Formulating a biblical approach to the study of chemistry • **Models**—Formulating a biblical view of modeling's influence upon scientific knowledge
General Science	• Modeling • Biblical versus secular worldview • Laws, theories, and hypotheses • The Creation Mandate • Methodologies of science	• Creation, Fall, Redemption • The Creation Mandate • Evolutionary and biblical views of history • The nature of science • Modeling • Scientific inquiry • Microscopes • Basic chemistry	• Chemistry and worldview • Scientific inquiry • Thinking like a scientist • Modeling • Foundations of chemistry

	Physics (4th ed.)	Health (2nd ed.)	
			
	Physics equips students to ethically engage in the work of physics through a program of instruction, practice, inquiry, and engineering design based on real-world problems. Students will extend their knowledge and skills through strategic modeling and practice, case studies, evaluation of scientific models, and ethics activities. Going beyond science facts, students will learn to think critically about real-world science problems. Case studies, worldview investigations (formerly worldview sleuthing) activities, ethics boxes, and mini-labs all give students opportunities for hands-on experiences with real-world problems. Students will also be able to collect and analyze data as well as create their own models using discovery labs, inquiry labs, and collaborative STEM experiences.	Personal health and community health are important topics that are debated on many different levels today and have a great impact on our lives. Current news headlines include health topics such as viruses and vaccines, health care fraud, abortion laws, and staying safe in natural disasters. Some health questions involve choosing between what is wise and what is foolish, while others involve choosing between what is righteous and what is sinful. Students need to be given the tools to make wise and righteous decisions. Our health course guides students to a biblical thinking process as they evaluate the many health issues prevalent today. Health knowledge and skills will be used throughout the students' lives. This book provides the knowledge, skills, and appropriate worldview to help students make healthy choices.	
	• **Ethics**—Formulating positions on issues of ethics related to physics and engineering • **Foundations**—Defending the position that the Earth exhibits good design • **Environment**—Evaluating the environmental impact of technological innovations • **Models**—Applying models to interpret data	• **Identity**—Relating personality and self-image to overall health • **Relationship**—Applying biblical principles to family and peer relationships to promote personal and community health • **Discernment**—Evaluating the reliability of health information, products, and services • **Ethics**—Formulating positions on health-related issues, such as reproductive issues, organ donation, and disabilities • **Virtue**—Applying biblical principles to become healthy and holy people	**Biblical Worldview Shaping**
	• The structure and limitations of science • Overview of physics • Scientific methodology and modeling		**General Science**

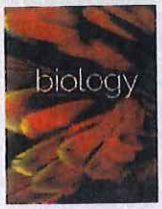
MIDDLE & HIGH **Science**

	Physical Science (6th ed.)	Biology (6th ed.)	Chemistry (5th ed.)
			

Physical Science: Structure of Matter	• Scientific measurement
	  • The metric system
	  • Accuracy and precision
	  • Repeatability
	• Introduction to the nature and classification of matter and energy
	• Changes in matter
	• The atomic model
	• Structure of the atom
	• The periodic table
	  • Origin
	  • Elements and their symbols
	  • Classification of the elements
	  • Periodic trends
	• Electronegativity and valence electron structure
	• Covalent, ionic, and metallic bonds
	• Compounds classified according to bond-type
	• Chemical formulas and equations
	• Oxidation numbers
	• Introduction to organic chemistry and biochemistry
		• Elements and compounds
		• Chemical bonding
		• Physical changes
		• Organic chemistry
			• Matter
			  • Classification of matter
			  • Properties and changes of matter
			  • Elements, compounds, atoms, and molecules
			  • Energy and matter
			  • Work and energy
			  • Conservation of mass-energy
			  • The law of entropy
			  • Thermal energy
			  • Temperature and heat
			  • States of matter
			  • Changes of state
			• Scientific measurement
			  • Measurement systems
			  • Metric system
			  • Unit conversion
			  • Limitations of measurements
			  • Accuracy and precision
			  • Significant figures
			  • Problem-solving in chemistry
			  • Calculations with measured data
			• Atomic structure
			  • Early thoughts about matter
			  • Investigating atoms
			  • Development of atomic models
			  • Useful notations
			  • Isotopes
			• Electron arrangement
			  • Bohr model
			  • Electron energy levels
			  • The quantum mechanical model
			  • Electron configurations
			  • Valence electrons
			  • Electron dot notation
			  • Ions
			• Periodic table and elements
			  • Early organization
			  • Element periodicity
			  • Mendeleev's periodic table
			  • The modern periodic table
			  • Periodic trends
			  • Elements by their groups
			• Chemical bonds
			  • Bonding basics
			  • Octet rule
			  • Types of chemical bonds
			  • Polarity and bond character
			  • Covalent bonding
			  • Diatomic elements
			  • Lewis structures
			  • Ionic bonding
			  • The structure of ionic compounds
			  • Polyatomic ions
			  • Metallic bonding
			  • Properties of compounds
			• Bond theories
			  • Limits of Lewis structures
			  • Orbitals and valence bond theory
			  • Molecular resonance
			  • Molecular orbital theory

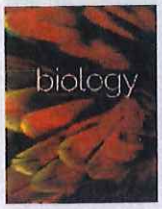
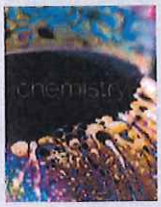
Physics (4th ed.)	Health (2nd ed.)	
		

• The SI system of measurement
• Unit conversions and analysis
• Principles of measurement
• Accuracy and precision
• Significant figures in measurements and calculations
• Quantum physics
  • Quantum theory
  • Quantum mechanics
  • The atom
  • Modern atomic models
• Nuclear physics
  • Subatomic particles
		Physical Science: Structure of Matter

	Physical Science (6th ed.)	Biology (6th ed.)	Chemistry (5th ed.)
			

Physical Science: Structure of Matter			• Molecular geometry
			  • VSEPR and molecular shape
			  • Orbital hybridization
			  • Measure of polarity
			  • Water molecules designed for usefulness
			  • Seeking the perfect bonding model
			• Chemical compounds
			  • Ionic compounds
			  • Oxidation numbers
			  • Covalent compounds
			  • Nonmetals with multiple oxidation numbers
			  • Writing chemical formulas
			  • Naming compounds
			  • Acids: binary acids, ternary acids
			• Gases
			  • Properties of gases
			  • Kinetic-molecular description of gases
			  • Gas laws
			  • Standard conditions
			  • Dalton's law of partial pressures: mixtures of gases
			  • Molar volume
			  • Ideal gases
			  • Ideal gas law
			• Solids and liquids
			  • Intermolecular forces
			  • Kinetic description of solids
			  • Crystalline and amorphous solids
			  • Crystalline structures
			  • Kinetic description of liquids
			  • Effects of intermolecular attractions
			  • Vapor pressure and boiling point
			  • Distilling liquids
			  • Phase diagrams
			• Solutions
			  • The dissolving process
			  • Types of solutions
			  • Solvent selectivity
			  • Solution equilibria
			  • Rate of solution
			  • Solubility
			  • Measures of concentration
			  • Colligative properties
			  • Suspensions and colloids
			• Organic chemistry
			  • Organic compounds
			  • Unique carbon atom
			  • Structural formulas
			  • Classification of hydrocarbons
			  • Substituted hydrocarbons
			  • Carboxylic acids
			  • Esters
			  • Amines and amides
			  • Organic reactions roperties of colloids

Physics (4th ed.)	Health (2nd ed.)	
		**Physical Science: Structure of Matter**

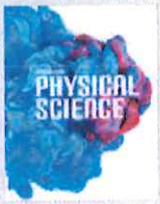
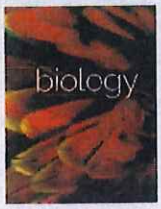
	Physical Science (6th ed.)	Biology (6th ed.)	Chemistry (5th ed.)
			

Physical Science: Changes in Matter	• Writing balanced chemical equations
	• Stoichiometry
	• Types of chemical reactions
	• Energy in chemical reactions
	• Reaction rates and equilibrium
	• Radiation and nuclear changes
	• Classifying mixtures
	• Solutions and the solution process
	• Measuring concentration
	• Acids and bases
	• Salts from acid-base reactions
	• pH system and measurement
		• Chemical changes
		• Chemical equations
		• Solutions
			• Chemical reactions and equations
			  • Chemical equations
			  • Balancing equations
			  • Special symbols in equations
			  • Limitations of balanced equations
			  • Types of reactions
			  • Ionic equations
			• Chemical calculations
			  • The mole
			  • Molar mass
			  • Types of formulas
			  • Percent composition
			  • Empirical formulas
			  • Stoichiometry
			  • Limiting reactants
			  • Percent yield
			• Gases
			  • Gas stoichiometry
			• Chemical equilibrium
			  • Equilibrium
			  • Equilibrium constants
			  • Le Châtelier's principle
			  • Equilibria and industry
			  • Solution equilibrium
			  • Ionic equilibria
			  • Common-ion effect
			  • Precipitation reactions
			• Acids, bases, and salts
			  • Defining acids and bases
			  • Properties of acids and bases
			  • Models of acids and bases
			  • Acid-base equilibria
			  • Self-ionization of water
			  • pH and pOH scales
			  • Acid-base strength
			  • Amphoteric substances
			  • Polyprotic acids
			  • Measuring pH
			  • Neutralization
			  • Salts
			  • Titration
			  • Buffers
			• Oxidation and reduction
			  • Redox reactions
			  • Oxidizing and reducing agents
			  • Balancing redox reactions
			  • Electrochemical reactions
			  • Electrochemical cells
			  • Electrolytic cells
			  • Voltaic cells
			• Nuclear chemistry
			  • Inside the nucleus
			  • Nuclear stability
			  • Energy and nuclear changes
			  • Measuring radiation
			  • Radioactive decay
			  • Types of decay
			  • Radioactive decay series
			  • Half-life
			  • Using nuclear chemistry
			  • Nuclear reactions
			  • Fission
			  • Fusion

Physics (4th ed.)	Health (2nd ed.)	
		

• Nuclear physics
  • Radiation and radioactivity
  • Radioactive decay
  • Nuclear reactions
		Physical Science: Changes in Matter

MIDDLE & HIGH **Science**

	Physical Science (6th ed.)	Biology (6th ed.)	Chemistry (5th ed.)
			
Physical Science: Motion	• Kinematics • Describing motion • Frames of reference • Freefall • Momentum • Dynamics • Forces • Free-body diagrams • Newton's laws of motion • Gravity • Mechanical work and power • Mechanical advantage and efficiency • Simple machines • Compound machines • Fluids and pressure • Buoyancy • Archimedes' and Pascal's principles • Basic hydraulic theory • Gas laws • Fluid mechanics		

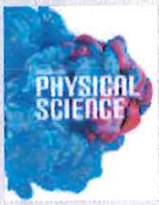
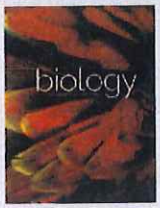
Physical Science: Energy	• Kinetic and potential energy
	• Energy transformations and conservation
	• Energy resources
	• Thermodynamics—thermal energy, temperature, and heat
	• Specific heat
	• Static electricity
	• Electric fields
	• Electric current and Ohm's law
	• Circuits and electrical safety
	• Magnets and magnetism
	• Electromagnetism
	• Electromagnets and their uses
	• AC and DC generators and motors
	• Transformers
	• Electromagnetic spectrum
		• Thermodynamics	• Thermochemistry
			  • Thermodynamics and physical changes
			  • Measuring heat and temperature
			  • Enthalpy of phase changes
			  • Specific heat
			  • Thermodynamics and chemical changes
			  • Reaction tendency
			  • Chemical bonds and enthalpy
			  • Entropy and reaction tendency
			  • Entropy changes
			  • Free-energy change
			  • Worldview conflict in thermodynamics
			• Chemical kinetics
			  • Reaction rates
			  • Kinetics
			  • Energy diagrams
			  • Collision theory
			  • Activation energy and the activated complex
			  • Rates of reactions
			  • Reaction mechanisms
			  • Rate laws and reaction orders
			  • Kinetics in the real world

Physics (4th ed.)	Health (2nd ed.)	
		

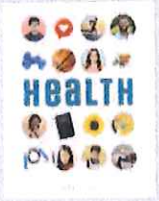
• Mathematical description of motion in one and two dimensions
• Freefall
• Vectors and scalars
  • Vector operations, graphical and analytical
  • Review of trigonometry
  • Vector components
• Projectile motion
• Force (dynamics)
  • Balanced and unbalanced forces
  • Types of forces
  • Newton's laws of motion
  • Free-body diagrams
  • Motion of multibody systems
• Friction
• Rotational and circular motion
  • Torque
  • Centripetal acceleration and force
  • Newton's law of universal gravitation
  • Kepler's laws of planetary motion
• Relativity
  • Galilean relativity
  • Special relativity
  • General relativity
		Physical Science: Motion

• Work, energy, and power
• Types of energy
• Total mechanical energy
• Conservation of energy
• Momentum and its conservation
• Collisions
• Center of mass and angular momentum
• Thermal properties of matter
  • Thermal expansion
  • Measuring temperature
  • Gas laws
• Theories of heat and thermal energy
  • Thermal energy and phase changes
  • Mechanisms for heat transfer
• The four laws of thermodynamics
  • Heat engines and pumps
  • Carnot cycle
  • Entropy and its consequences
• Fluid mechanics (hydrostatics and hydrodynamics)
  • Hydrostatics
  • Pressure
  • Hydraulic devices
  • Buoyancy
  • Hydrodynamics
  • Bernoulli's principle
• Static electricity
  • Electrostatics and charges
  • Electric fields and capacitors
• Current electricity
  • Current, voltage, and resistance
  • Ohm's law
  • Electric power and work
  • DC circuits
		Physical Science: Energy

MIDDLE & HIGH **Science**

	Physical Science (6th ed.)	Biology (6th ed.)	Chemistry (5th ed.)
			
Physical Science: Energy			
Physical Science: Waves	• Description of periodic motion • Waves and wave phenomena • Sound and its properties • The human voice and hearing • Applications of sound • Speed of light measurement • The properties of visible light • The nature of color • Reflection and mirrors • Refraction and lenses		

Life Science		• The study of life
		  • Attributes of life
		  • The energy and information of life
		• The cell
		  • Cell theory and structure
		  • Organelles
		  • Homeostasis
		  • Osmosis
		  • Membrane transport
		  • Metabolism
		  • DNA synthesis
		  • Protein synthesis
		  • Photosynthesis
		  • Aerobic cellular respiration
		  • Fermentation
		• Genetics
		  • Mitosis and meiosis
		  • Mendelian genetics
		  • Genetic crosses
		  • Sex-linked traits
		  • Gene expression
		  • Population genetics
		  • Gene and chromosomal mutations
		  • Cancer
		  • Genetic engineering
		• Origins
		  • Historical development of biological evolution
		  • Tenets of biological evolution
		  • Evaluating evolutionary theory
		• Classification of life
		  • Taxonomy
		  • Binomial nomenclature
		  • Use of dichotomous keys
		  • Comparison of species and kind
		  • Speciation
		  • Phylogenetic trees
			• Biochemistry
			  • Chemistry of life
			  • Chemical reactions in cells
			  • Biochemistry and ultimate questions
			  • Carbohydrates
			  • Lipids
			  • Proteins
			  • Polypeptide chains
			  • Enzymes
			  • Nucleic acids
			  • Amino acids
			  • Worldview conflict in biochemistry

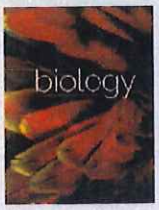
Physics (4th ed.)	Health (2nd ed.)	
		

• Magnetism and its relationship to current and conductors
  • Magnetic fields
  • Magnetism and charges
  • Magnetism and current
• Electromagnetism and alternating currents
		Physical Science: Energy

• Periodic and simple harmonic motion • The pendulum • Damped and driven oscillations • Physical waves • Wave interactions • Sound • The electromagnetic spectrum • Sources and propagation of light • Intensity and color of light • Reflection and mirrors • Refraction and lenses • Wave interference, diffraction, and polarization		**Physical Science: Waves**

	• Defining health
	  • Health care basics
	  • Health risks
	  • Health skills
	  • Health literacy
	• Health and safety
	  • Personal hygiene
	  • Assessing risks
	  • Personal safety
	  • Basic first aid
	• Mental health
	  • Personality
	  • Self-image
	  • Responding to stress
	  • Mental disorders
	  • Medical model and biblical model of treatment
	  • Mental health's effect on wellbeing
	  • Suicide
	• Health and life management
	  • Money management
	  • Budgeting
	  • Decision-making
	  • Character
	  • Motivation and success
	  • Communication skills
	  • Empathy
	  • Resilience
	  • Coping skills
	  • Handling loss
	• Social health
	  • Family relationships
	  • Peer relationships
	  • Making positive choices
	  • Helping others
	  • Preventing violence
	  • Resources for abuse victims
	  • Self-defense
	  • Media and technology
	  • Technology and health
		Life Science

MIDDLE & HIGH **Science**

	Physical Science (6th ed.)	Biology (6th ed.)	Chemistry (5th ed.)
			

Life Science: Microorganisms and Plants		• Prokaryotes
		  • Archaea and bacteria
		  • Bacterial structure
		  • Bacterial reproduction
		  • Control of bacteria
		• Viruses
		  • Viruses and related organisms
		  • Structure of viruses
		  • Diseases
		• Protists and fungi
		  • Protozoan classification and structure
		  • Protozoan reproduction and role in the environment
		  • Chromist classification and structure
		  • Chromist reproduction and role in the environment
		  • Evolution and protists
		  • Fungi classification and structure
		  • Fungi reproduction and role in the environment
		• Plants
		  • Plant classification and structure
		  • Nutrient transport in plants
		  • Plant hormones
		  • Tropisms
		  • Plant reproduction and role in the environment for mankind's use	

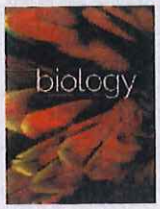
Life Science: Animals		• Characteristics of animals • Classification and structure of sponges, cnidarians, worms, mollusks, echinoderms, and arthropods • Invertebrate reproduction and role in the environment • Classification and structure of ectothermic vertebrates • The reproduction and role in the environment for fish, amphibians, and reptiles • Classification and structure of birds and mammals • The reproduction and role in the environment of endothermic vertebrates	

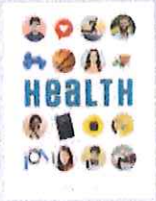
Life Science: The Human Body		• The essence of humanity
		• Tissues, organs, and systems
		• Structure, function, and role of the human systems
		  • Integumentary system
		  • Lymphatic system
		  • Skeletal system
		  • Muscular system
		  • Respiratory system
		  • Circulatory system
		  • Digestive system
		  • Excretory system
		  • Nervous system
		  • Endocrine system
		  • Reproductive system
		• Human growth and development
		• Balanced living	

Physics (4th ed.)	Health (2nd ed.)	
		
		Life Science: Microorganisms and Plants
		Life Science: Animals

	• Structure, function, and role of the human systems
	  • Immune system
	  • Skeletal system
	  • Muscular system
	  • Pulmonary system
	  • Cardiovascular system
	  • Digestive system
	  • Urinary system
	  • Nervous system
	  • Endocrine system
	  • Reproductive system
		Life Science: The Human Body

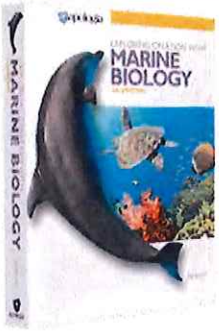
MIDDLE & HIGH **Science**

	Physical Science (6th ed.)	Biology (6th ed.)	Chemistry (5th ed.)
			
Earth and Space Science		• Ecology • Ecosystems • Biomes • Food webs • Symbiosis • Biochemical cycles • Population growth and biodiversity • Climate change • Conservation	
Engineering Design: STEM	• Following the Engineering Design Process to solve a problem • Designing a better motor • Designing a paper boat • Creating coast erosion defenses • Designing a sound-dampening surface	• Following the Engineering Design Process to solve a problem • Designing a water treatment system	

Physics (4th ed.)	Health (2nd ed.)	
		

	• Environmental health
	  • Air quality
	  • Noise pollution
	  • Light pollution
	  • Land pollution
	  • Water pollution
	  • Clean water
	  • Fracking
	  • Types of natural disasters, disaster preparedness
	  • Stewardship
	  • Conservation
		Earth and Space Science

• Following the Engineering Design Process to solve a problem
  • Designing a bridge
  • Designing a loop coaster
  • Designing a better bungee
  • Designing a safer restraint system
  • Building a better solar oven
  • Designing a paper boat
  • Designing a maglev train
		Engineering Design: STEM



Scope & Sequence

Exploring Creation with Marine Biology, 2nd Edition

GRADE LEVEL: 10th–12th with prerequisite of Biology

TEXT SUMMARY: Water covers 72% of our planet and makes up close to 99% of the living space on Earth. However, we know more about the surface of Mars than we know about the ocean floor. Dive into ***Exploring Creation with Marine Biology***, 2nd Edition and discover the living waters that God has placed all around us. Journey to the farthest depths of the ocean to explore life that exists in the most unlikely places. Learn how the ocean ecology is essential to our existence. Creation exists on every part of our planet. There is not one space that our Creator has not touched. Even the ocean floor is intelligently designed in order to support life.

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 1 *The Oceans of Our Planet*	Module 1 provides an introduction to the earth's structure and to ocean geography. Module 1 also introduces the properties of water and the forces that act on the oceans.	· The Geography of the Oceans · The Earth's Structure · Continental Drift and Plate Tectonics · Plate Interactions · Features of the Ocean Bottom · Properties of Water · Seawater · Salinity, Temperature, and Density · Light in the Sea · Pressure · The Motion of the Ocean · Waves · Tides · Vertical Motion	· Mountain Formation from Plate Movement · Removing the Salt from Salt Water · The Effects of Salinity and Temperature on the Density of Water · The Coriolis Effect · The Motion of Waves
MODULE 2 *Life in the Sea*	Module 2 introduces the student to life under the water. It provides an in-depth look at the essential elements necessary for life and the reproductive processes that enable life to continue.	· The Process of Life · Photosynthesis · Respiration · Cells · Levels of Organization · The Challenge of Life in the Sea · Diffusion and Osmosis · Temperature · Reproduction in the Sea · Asexual and Sexual Reproduction · Reproductive Strategies · Classifying Life in the Sea	· Photosynthesis · Respiration · Osmosis

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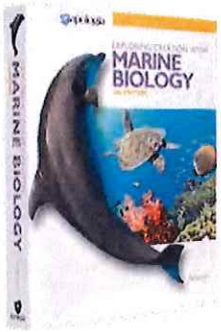

Scope & Sequence

Exploring Creation with Marine Biology, 2nd Edition

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 3 *The First Four Kingdoms*	Module 3 provides a detailed look at the Kingdoms Monera, Protista, Fungi, and Plantae.	· Kingdom Monera · Kingdom Protista: The Unicellular Algae · Diatoms · Dinoflagellates · Kingdom Protista: The Marine Protozoans · Foraminiferans · Radiolarians · Ciliates · Kingdom Protista: The Multicellular Algae · Green, Brown and Red Algae · Reproduction of Multicellular Algae · Kingdom Fungi · Kingdom Plantae · The Seagrasses · Salt Water Marsh Plants · The Mangroves	· Unicellular Algae · Marine Protozoans
MODULE 4 *Marine Invertebrates I*	Module 4 discusses invertebrates and vertebrates and provides and in-depth look at many marine invertebrates.	· Phylum Porifera · Phylum Cnidaria · Classes Hydrozoa, Scyphozoa, Anthozoa · Phylum Ctenophora · The Bilateral Worms · Phylums Platyhelminthes, Nemertea, Nematoda, Annelida · Class Polychaeta · Lophophorates	· Observation of a Sponge · One-Opening Gut vs. a True Digestive System

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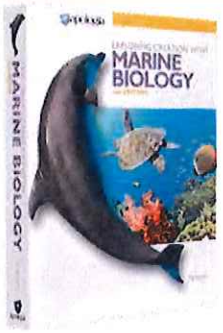

Scope & Sequence

Exploring Creation with Marine Biology, 2nd Edition

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 5 *Marine Invertebrates II*	Module 5 continues the study of marine invertebrates.	· Phylum Mollusca · Classes Gastropoda, Bivalvia, Cephalopoda, Other Classes · Mollusk Biology · Phylum Arthropoda · Class Crustacea · Crustacean Biology · Other Arthropod Classes · Phylum Echinodermata · Classes Asteroidea, Ophiuroidea, Echinoidea, Holothuroidea, Crinoidea · Echinoderm Biology · Phylum Chordata · Subphylums Urochordata and Cephalochordata	· The Clam · Crustacean Larvae · The Sea Star
MODULE 6 *Marine Vertebrates I*	Module 6 provides a study of several marine vertebrates and an in-depth look at their biology and behaviors.	· Classes Agnatha, Chrondrichthyes · Rays and Skates · The Bony Fishes · The Biology of Fishes · Coloration · Locomotion · Feeding and Digestion · The Circulatory System · The Gills and Respiratory System · Osmoregulation and Osmosis · The Nervous System · Social Behavior · Migration · Reproduction	· Types of Fish Scales · The Shark

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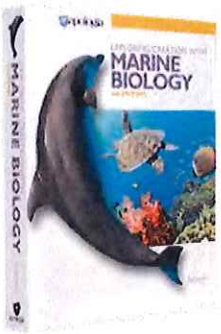

Scope & Sequence

Exploring Creation with Marine Biology, 2nd Edition

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 7 *Marine Vertebrates II*	Module 7 continues the study of marine vertebrates including reptiles, birds, and mammals.	· Classes Reptilia, Aves · Gulls and Similar Birds · Penguins · Shearwaters and Similar Birds · Pelicans and Similar Birds · Birds at the Shore · Class Mammalia · Orders Cetacea, Sirenia, Pinnipedia, Carnivora · Echolocation · Movement in the Water · Behavior · Mating and Reproduction	· Dolphin Echolocation · What Causes the Bends?
MODULE 8 *Marine Ecology*	Module 8 delves into the marine ecosystem and different types of relationships that exist in marine life.	· The Ecosystem · Population Growth · Predator and Prey Relationships · Symbiosis · Trophic Relationships · Primary Productivity · The Nitrogen and Carbon Cycles · Environmental Zones	· Exploring Carbon Fixation
MODULE 9 *The Intertidal Zone*	Module 9 introduces intertidal communities and breaks down these communities into different intertidal zones.	· Intertidal Communities · The Rocky Intertidal · Rocky Intertidal Abiotic Conditions · Intertidal Feeding and Reproduction · Wave Action · Surviving the Waves · Zonation of the Rocky Intertidal · The Intertidal Zones: Upper, Middle, Lower · The Sandy and Muddy Intertidal · Survival in the Mud	· Exploring Intertidal Sediments · The Movement of Water Through Sediment

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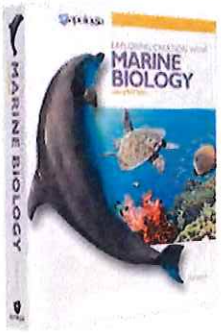

Scope & Sequence

Exploring Creation with Marine Biology, 2nd Edition

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 10 *Estuary Communities*	Module 10 provides and introduction to estuaries and an in-depth look at different aspects of estuaries.	· The Ice Age · Types of Estuaries · Abiotic Factors in Estuaries · Estuarine Communities · Estuarine Habitats · Wetland · Mudflats · Channels · Estuary Production	· Distribution of Mangroves in an Estuary
MODULE 11 *Coral Reefs*	Module 11 provides an introduction to coral reefs and the intricate details of their formations, growth, and relationships.	· Coral Reef Requirements and Locations · Reef Composition · Coral Reef Formation and Growth · Types of Reefs · Coral Reef Ecology · Reef Relationships · Symbiotic Relationships	· Examining Coral
MODULE 12 *Continental Shelf Communities*	Module 12 provides an overview of the continental shelf and the different communities that exist there.	· Physical Features of the Continental Shelf · Soft-Bottom Shelf Communities · Unvegetated Soft Bottom Environments · Vegetated Soft-Bottom Environments · Hard-Bottom Shelf Communities · Kelp Beds and Forests · Sea Urchins	· Meiofaunal Organisms

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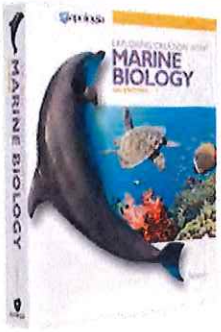

Scope & Sequence

Exploring Creation with Marine Biology, 2nd Edition

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 13 *The Epipelagic Zone*	Module 13 provides an introduction to the epipelagic zone and an in-depth look at life there.	· The Epipelagic Zone · Life in the Epipelagic · Epipelagic Phytoplankton, Zooplankton, Nekton · Staying Afloat in the Epipelagic · Living in the Epipelagic Zone · Vertical Migration · The Epipelagic Food Web · Primary Productivity · Nutrients and Productivity · El Niño—Southern Oscillation	· Observing Live Microplankton · Water Drag
MODULE 14 *The Deep Ocean*	Module 14 provides a study of the two zones under the epipelagic zone: the mesopelagic zone and the deep sea.	· The Mesopelagic · Food Webs · Body Design · The Deep Sea · The Deep Sea Floor · Hydrothermal Vents and Other Vent Communities · Deep Sea Photosynthesis	· Chemical "Bioluminescence" · The Bioluminescence of Plankton
MODULE 15 *Ocean Resources*	Module 15 provides a study of living and nonliving ocean resources.	· Food From the Sea · Food Species and Their Locations · Managing Populations · Mariculture · Other Living Resources · Nonliving Ocean Resources	· Mapping Ocean Resources

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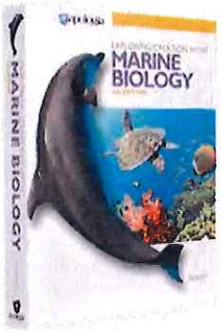
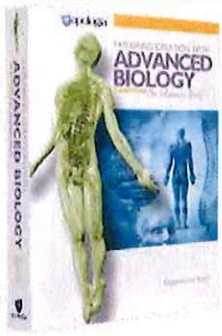


Scope & Sequence

Exploring Creation with Marine Biology, 2nd Edition

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 16 *Effects of Humans on the Sea*	Module 16 provides a closer look at how the human lifestyle effects all water sources.	· Ocean Habitat Damage · Effects on Coral Reefs · Pollution · Sewage, Fertilizers, Oil, Synthetic Pollutants, DDT · Other Toxic Chemicals · Metals and Other Toxic Materials · Trash and Other Debris · Our Responsibility	· Biomagnification

ADDITIONAL INFORMATION: This text has several complementary products that can be found at apologia.com. Additional resources and websites for further exploration of the topics in the text are provided at the Book Extras link for this title..



Scope & Sequence

Exploring Creation with Advanced Biology The Human Body

GRADE LEVEL: 11th or 12th with prerequisite of Biology and Chemistry

TEXT SUMMARY: In this course you will explore the fascinating creation we call the human body. As you make your way through the modules, you will begin to understand how every part of the body has a purpose, each part being necessary for the other parts to function. This study will introduce the organizational levels of the human body from the cell to the 11 major systems. You will learn the anatomy and physiology of the human body and the efficiency with which each system works. The seamless integration of one system with the others and the intricacy at the molecular level represents a feat of engineering and design that could only come from God. We are truly fearfully and wonderfully made!

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 1 *Introduction to Anatomy and Physiology*	Module 1 provides an introduction to the organizational levels of the human body from the major organ systems to cellular functions.	• Anatomy Terms • Organization of the Human Body • Homeostasis • Cell Structure and Function • Protein Synthesis • Cellular Mitosis • Plasma Membrane • Membrane Transport Processes	This module contains no experiments.
MODULE 2 *Histology: The Study of Tissues*	Module 2 provides an in-depth look at different tissues in the body including their structures and functions.	• Epithelial Tissues • Glandular Epithelium • Connective Tissues • Cartilage • Bone and Blood Tissues • Membranes • Tissue Repair	• Microscope: Epithelial Tissues • Microscope: Microscopic Anatomy of the Salivary Glands
MODULE 3 *The Integumentary and Skeletal Systems*	A study of the integumentary system more commonly known as the skin. A study of the gross anatomy of the skeletal system.	• Basic Structure of Skin • Epidermis • Hair and Nails • Skin Glands • Skeletal System • Gross Anatomy of Bone • Details of the Appendicular Skeleton • Details of the Axial Skeleton	• Microscope: A Closer Look at the Skin • Microscope: A Closer Look at Follicles

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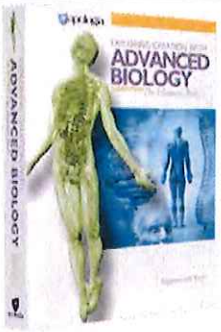

Scope & Sequence

Exploring Creation with Advanced Biology The Human Body

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 4 *Skeletal System Histology and Movement*	Module 4 provides a detailed look at the skeletal system: bone make-up and joint movement.	· Bone Histology Overview · Cancellous and Compact Bone Histology · Bone Growth and Remodeling · Bone Homeostasis · Nutrition for Bone Health · Three Major Types of Joints · Motion and Terms of Movement	· Calcium Salts in Bone · Microscope: Cancellous and Compact Bone Histology
MODULE 5 *The Muscular System Histology and Physiology*	Module 5 provides an introduction to muscle structures, functions, and how muscles perform those functions.	· Skeletal Muscle Structure · How a Muscle Fiber Contracts · Neuromuscular Junction · How a Muscle Fiber Relaxes · Motor Units · Muscle Tone · Energy in Skeletal Muscle Fibers · Warm-Up and Cool-Down	· Microscope: Skeletal Muscle Histology
MODULE 6 *The Skeletal Muscle System*	Module 6 provides an overview of how the individual muscles of the body come together to enable us to move and keep our shape.	· General Terms and Principles · Overview of the Skeletal · Muscle System · Major Muscles Groups Including the Head and Face; Anterior Chest and Abdominal Wall; Shoulder, Back and Arm; Forearm; Hand; Thigh; Leg; and Foot	This module contains no experiments.

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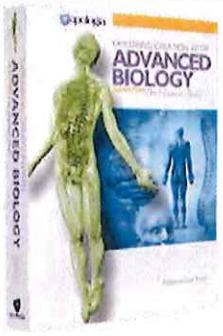

Scope & Sequence

Exploring Creation with Advanced Biology The Human Body

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 7 *The Nervous System*	Module 7 provides an overview of the central nervous system and the peripheral nervous system. Module 7 also provides an in-depth study of the nervous system at the cellular and molecular levels.	· Overview of the Entire Nervous System · The Nervous System at the Cellular Level · Neuroglia · Nerve Structure · Action Potentials · Synaptic Transmission · Neuron Arrangements	· Microscope: Neurons and Neuroglia
MODULE 8 *The Central Nervous System*	Module 8 provides an introduction to the complexity of the human brain and spinal cord.	· Brain Anatomy · Cerebrum in Detail · Important Brain Structures · Protection of the Brain · The Spinal Cord · The Reflex Arc · Ascending and Descending Pathways in the Spinal Cord	This module contains no experiments.
MODULE 9 *The Peripheral Nervous System*	Module 9 provides a detailed look at the peripheral nervous system and the general senses.	· Divisions of the Autonomic Nervous System (ANS) · Control of the ANS · Afferent Division of the Peripheral Nervous System · General Senses · Sense of Taste · Sense of Balance · Sense of Hearing · Sense of Vision: Eye Anatomy and Physiology	· Two-Point discrimination · Cow Eye Dissection

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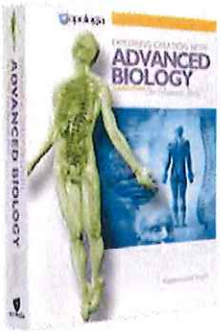

Scope & Sequence

Exploring Creation with Advanced Biology The Human Body

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 10 *The Endocrine System*	Module 10 provides an introduction to the endocrine system's make-up, chemical production, and function in the human body.	· Endocrine System as a Whole · Endocrine Glands and Hormones · Hormone Chemistry · Hormone Secretion Control · Hormone Receptors in the Body · Prostaglandins	This module contains no experiments.
MODULE 11 *The Cardiovascular System*	Module 11 provides an introduction to the blood, heart, and blood vessels that make up the cardiovascular system.	· Composition of Blood · Formed Elements in Blood · Blood as a Connective Tissue · Blood Types · Blood Circulation · Heart Anatomy · Cardiac Muscle and the Cardiac Cycle · Blood Vessels and the Entire Circulatory System	· Microscope: Examining a Blood Smear · Cow's Heart Dissection
MODULE 12 *The Lymphatic System*	Module 12 provides an introduction to the vast network of lymph vessels and lymph tissues in the human body and their functions.	· Lymph and Lymph Vessels · Functions of the Lymphatic System · Lymph Nodes · Spleen and Thymus Gland · Immunity · Innate Immunity · Innate Defense · Acquired Immunity: Humoral and Cell-Mediated · Types of Acquired Immunity and Autoimmunity	· Microscope: Histology of a Tonsil

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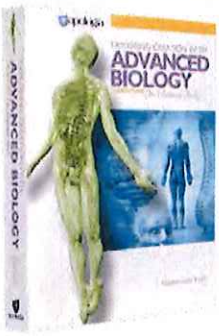

Scope & Sequence

Exploring Creation with Advanced Biology The Human Body

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 13 *The Digestive System*	Module 13 provides an introduction to the digestive system as a whole and a detailed look at the anatomy and function of each of its parts. Module 13 also provides an in-depth look at nutrition and what the body needs to stay healthy.	· Overview of the Digestive System · Mouth, Pharynx, and Esophagus · Stomach · Small Intestine · Large Intestine · Accessory Organs: Liver, Pancreas, Gallbladder · Nutrition · Micronutrients	· Microscope: Histology of the Stomach · Microscope: Histology of the Liver
MODULE 14 *The Respiratory System*	Module 14 provides an introduction to the anatomy of the respiratory system and the functions it performs at macro and micro levels.	· Anatomy and Functions of Respiratory System · Voice · Muscles and Mechanics of Ventilation · Factors that Aid Ventilation · External Respiration · Gas Exchange During External and Internal Respiration · Respiratory Control · Cellular Respiration: Glycolysis, Oxidation of Pyruvate, Citric Acid (Krebs) Cycle, Electron Transport Chain · Review of Cellular Respiration	· Microscope: Histology of the Lung

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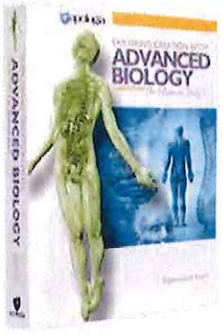
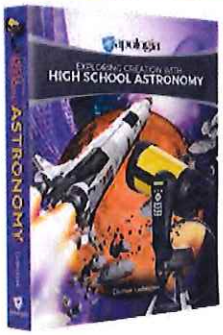


Scope & Sequence

Exploring Creation with Advanced Biology The Human Body

Module & Major Themes	Summary	Main Themes	Supporting Experiments
MODULE 15 *The Urinary System*	Module 15 provides an introduction to the anatomy of the urinary system and the processes that it performs to provide balance to the body while removing harmful toxins.	· Anatomy of Urinary System · Urine Formation: Overall Scheme, Glomerular Filtration, Secretion, Reabsorption of Water · Storage and Release of Urine · Blood Pressure Control by the Kidneys · Acid-Base Balance in the Body	· The Bicarbonate Buffer
MODULE 16 *The Reproductive System*	Module 16 provides an introduction to the anatomy of both the male and female reproductive systems and the part they play in the miraculous conception of human life.	· Anatomy of the Male Reproductive System · Meiosis · Spermatogenesis · Hormonal Control of Male Reproduction · Anatomy of the Female Reproductive System · Oogenesis · The Menstrual Cycle · Fertilization, Development, and Parturition	· Microscope: Spermatogenesis and Sperm · The Fetal Pig Dissection

ADDITIONAL INFORMATION: This text has several complementary products that can be found at apologia.com. Additional resources and websites for further exploration of the topics in the text are provided at the Book Extras link for this title.



Scope & Sequence

Exploring Creation with High School Astronomy

GRADE LEVEL: 9th–12th There are no prerequisites for this course. All of the math is worked out in the text so that the student can follow along.

TEXT SUMMARY: This text covers in-depth concepts of astronomy and uses math to support the content. Students will be awestruck at the vastness of God's creation and gain a greater appreciation for this complex and magnificent universe.

Module & Major Themes	Summary	Main Themes	Mathematical Concepts
MODULE 1 *Mysteries of the Universe*	Module 1 introduces the concept of the universe by defining space and explaining electromagnetic energy and high energy particles.	· Interstellar Space · The Universe · Matter and Antimatter · Cosmic Rays · Dark Matter and Dark Energy · Black Holes and Worm Holes · Temperature of the Universe	· Mathematical concepts are not introduced in this module.
MODULE 2 *The History of Astronomy*	Module 2 discusses the beginnings of astronomy, cultural influences, and the significance of progress.	· Ancient Stargazers · Renaissance Era of Stargazers · Telescope · Modern Astronomers · Spectroscopy	· Einstein's Theory of Special Relativity
MODULE 3 *Understanding the Basics*	Module 3 provides the mathematical framework for astronomy in order to understand terminology and define measurement.	· Measurement and Units · Astronomical Unit, Light Year, Parsec · Time · Speed and Velocity · Mass and Weight · Doppler Effect · Rotations and Revolutions · Potential and Kinetic	· Newton's Universal Law of Gravitation

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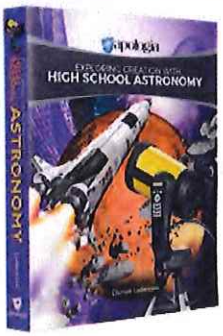

Scope & Sequence

Exploring Creation with High School Astronomy

Module & Major Themes	Summary	Main Themes	Mathematical Concepts
MODULE 4 *Our Solar System*	Module 4 explores the solar system, the history of developing a model and the role of mathematics and The Church.	· Models of the Solar System · Geocentric Model · Heliocentric Model · Ptolemy · Copernicus · Galileo · Bode Law	· Kepler's Third Law · The Bode Law
MODULE 5 *The Sun*	Module 5 delves into complexities of the Sun, how it works, and its relationship to other planets.	· Distance from the Sun · Distance between Planets · Size of the Sun · Experiment: Estimating the Diameter of the Sun · Parts of the Sun · How the Sun Works · Electromagnetic Energy · The Electromagnetic Spectrum	· Kepler's Third Law · Parallax · Geometric Relationship for Distance · Volume of a Sphere · Volume of a Segment of a Sphere · Kepler's Law of Planetary Motion · Einstein's Theory of Special Relativity · Speed of Light · Energy of a Photon
MODULE 6 *The Inner Planets*	Module 6 explores the inner planets of the solar system and uses applied math to determine measurable features.	· Mercury, Venus, Earth, Mars · Basic Orbital Mechanics · Size, Volume, and Mass · Layers and Surface Features · Atmosphere and Temperature · Rotation and Revolution · Moons · Missions	· Geometry of an Ellipse · Planet's Speed at the Perihelion Position · Planet's Speed in an Elliptical Orbit · Orbital Period of an Object Orbiting the Sun · Diameter of a Planet · Volume of a Planet

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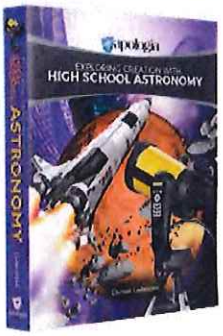

Scope & Sequence

Exploring Creation with High School Astronomy

Module & Major Themes	Summary	Main Themes	Mathematical Concepts
MODULE 7 *The Moon*	Module 7 explores the Moon and uses applied math to determine measurable features.	· Size and Volume · Layers and Surface Features · Atmosphere and Temperature · Phases · Gravity	· No new mathematical concepts are introduced in this module.
MODULE 8 *Telescopes*	Module 8 provides an in-depth look at telescopes including technical build, optics, and imaging.	· Optical Telescopes · Lenses · Focal Point · Images and Magnification · Optics of the Eye · Radio Telescopes · Infrared Telescopes · X-ray Telescopes	· Focal Point · Distance of an Image from the Center of a Lens · Magnification of a Lens · Magnification Factor (Telescope Power) · Light Gathering Power
MODULE 9 *The Outer Planets*	Module 9 explores the outer planets of the solar system and uses applied math to determine measurable features.	· Jupitar, Saturn, Uranus, Neptune · Basic Orbital Mechanics · Size, Volume, and Mass · Layers and Surface Features · Atmosphere and Temperature · Rotation and Revolution · Moons · Missions	· Distance and Velocity Relationship
MODULE 10 *Dwarf Planets & The Asteroid Belt*	Module 10 provides a detailed analysis of the dwarf planets and discusses the asteroid belt.	· Dwarf Planets · Pluto and Pluto's Moons · Ceres, Eris, Makemake, and Haumea · The Asteroid Belt · Classifying Asteroids	· No new mathematical concepts are introduced in this module.

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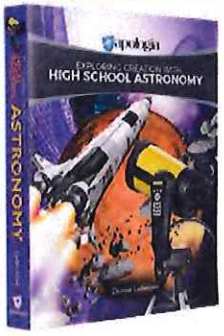

Scope & Sequence

Exploring Creation with High School Astronomy

Module & Major Themes	Summary	Main Themes	Mathematical Concepts
MODULE 11 *The Universe*	Module 11 explains techniques that scientists use to study the universe. This module also includes information on constellations and other visible objects in the universe.	· Studying the Universe · Electromagnetic Energy · Cosmic Rays · The Visible Universe · Constellations · Discovering Planets of Distant Stars · Interstellar Medium · Black Holes	· No new mathematical concepts are introduced in this module.
MODULE 12 *The Stars*	Module 12 investigates the stars, provides a solid background for how they are studied, and explains their classifications.	· Nuclear Fusion and Binding Energy · Star Temperatures · Spectroscopy · Brightness of a Star · Determining a Star's Radius and Distance · Classification of Stars · Star Explosions	· Temperature of a Distant Star · The Brightness of a Star · Luminosity of a Distant Star · Comparing Star Brightness · Radius of a Star · Converting Fahrenheit to Kelvin · Calculating the Distance to a Star
MODULE 13 *Galaxies*	Module 13 reveals the order of the universe. It describes different types of galaxies and how they are clustered together.	· Different Galaxy Shapes · Quasars · The Milky Way Galaxy · Galaxies Close to the Milky Way	· No new supporting equations are introduced in this module.
MODULE 14 *Celestial Navigation*	Module 14 demonstrates different methods of navigation and ways to determine one's current position.	· Navigation · Dead Reckoning · Celestial Navigation · Angle Measurements · Longitude and Latitude · The Sextant and the Nautical Almanac	· Estimating the Angle between Earth and Polaris

ADDITIONAL INFORMATION: Additional resources and websites for further exploration of the topics in the text are provided at the Book Extras link for this title.

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Correlation of *Introduction to Health Science* ©2016 to the Mississippi 2014 Health Sciences (Core) Frameworks for Health Sciences Core I – Course Code 995102

Course Description: The Health Sciences Core A course introduces students to the theory and practical applications of tasks related to employment in the field of health science. Students will cover topics such as safety in the workplace, infection control, and health care systems. The course offers insight into careers in health care as well as the educational requirements, and the professional, legal, and ethical responsibilities involved.

	COMPETENCY / SUGGESTED OBJECTIVE	CORRELATING PAGES
Unit 1 – Course Orientation and Professional Organizations		
1	Describe the purpose of the course and related professional organizations. a. Identify student and course expectations. b. Explore health science professional organizations (HOSA). c. Explore leadership skills and parliamentary procedures with professional organizations.	4, 40, 62-63, 65 (#18), 67 (#28), 70, 116, 146, 212-213, 217 (#33), 220, 262, 332, 373, 377 (#33), 416, 420, 481, 518-519, 523 (#30), 558, 590, 628, 639-640, 656-658, 660-661, 665 (#31 and 38), 668, 696
Unit 2 – Safety and Infection Control		
1	Describe personal and environmental safety practices. a. Apply principles of body mechanics. b. Apply safety techniques (personal and patient) in the health care setting in order to prevent accidents and injuries.	193-199, 277-283, 287 (#31), 425-433, 490-498, 503, 574-582, 587 (#26 and 32), 642-644, 711-714, 718 (#29)
2	Identify common safety hazards. a. Comply with safety signs, symbols, and labels. b. Recognize Safety Data Sheets (SDS) and discuss safety implications of handling hazardous materials (checking labels, and checking solutions).	197, 203, 240, 246, 250, 277, 280, 333 (The Diagnostic Worker), 422, 506-507, 560, 636, 642, 665 (#29), 711, 712, 713, 714

3	Utilize emergency procedures and protocols. a. Practice fire safety in a health care setting. b. Recognize principles of basic emergency response in natural disasters and other emergencies	85, 360-367, 377 (#28), 575-578, 582-583, 714
4	Describe the principles of infection control. a. Explain the classes of microorganisms and diseases caused by each one. Include the following: Aerobic Anaerobic Bacteria Fungi Helminths Nonpathogens Pathogens Protozoa Rickettsiae Viruses b. Identify the types of infections. Include the following: **Bacterical:** boils botulism cholera diphtheria gonorrhea meningitis methicillin-resistant staphylococcus pertussis pneumonia rheumatic fever strep throat syphilis tetanus	12, 102, 126, 193, 194-196, 296, 299, 300, 337, 421-422, 425-430, 430, 431, 432, 436 (#24), 453-454, 454, 455, 457, 461, 463, 490, 491, 494, 495, 497, 509, 598, 605, 708, 712, 715, 734

	toxic shock tuberculosis typhoid urinary tract infections wound infections **Protozoa:** African sleeping sickness amebic dysentery malaria trichomonas **Fungal:** athlete's foot ring worm histoplasmosis thrush yeast vaginitis **Rickettsiae:** Rocky Mountain spotted fever typhus fever **Viruses:** chicken pox common cold ebola H5N1 (bird flu) hepatitis B hepatitis C human immunodeficiency virus (HIV) influenza Marburg measles monkey pox mumps polio severe acute respiratory herpes syndrome (SARS) warts West Nile Virus (WNV) **Helminths:** hook worms or flukes ascariasis	

	enterobiasis taenia solium trichinella spiralis c. Describe the chain of infection and describe the types of infections (endogenous, exogenous, nosocomial (hospital acquired or health care associated), and opportunistic). d. Identify the levels of aseptic control. e. Demonstrate the proper procedure for aseptic hand washing.	
5	Explain standard precaution based on Occupational Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations. a. Describe OSHA's blood-borne pathogen standards. b. Explore employer requirements according to the Needle Stick Safety and Prevention Act. c. Identify the basic rules of standard precaution.	193-194, 421-422, 429 (Figure 12.13), 431, 437 (#28), 711
6	Describe the principles of sterile technique. a. Demonstrate skills related to sterile technique for example, donning sterile gloves, sterile dressing, and sterilizing instruments.	198, 361, 430, 490, 491, 642, 648-649
7	Explain the importance of maintaining transmission-based isolation precautions. a. Identify the precautions needed to prevent the spread of communicable diseases. b. Demonstrate the proper procedure for applying personal	197, 198, 431-433

	protective equipment (PPE). c. Explain the need for protective or reverse isolation.	
Unit 3 – Health Care Systems, Legal and Ethical Practices		
1	Explain the role of the health care professional in a department, organization, and the overall health care environment. a. Explain the health care delivery system (public, private, government, and non-profit facilities/agencies). b. Explain the factors influencing health care delivery systems. c. Describe the responsibilities of consumers within the health care system.	34 (#17), 118-121, 192, 263, 264, 271, 388, 389, 418-419, 482, 483, 484, 555 (#36), 558, 560, 592, 628 (The Biotechnology Research and Development Worker), 631
2	Identify how health care systems affect the services that are performed and the quality of care. a. Explain the impact of emerging issues such as technology, epidemiology, bioethics, and socioeconomics on health care delivery systems. b. Discuss common methods of payment for health care.	17-20, 57-59, 89-95, 118-121, 122-127, 143 (#24 and 31), 230-238, 393-398, 455, 537-539, 637, 676-681, 704-710
3	Describe the legal implications associated with health care. a. Analyze legal responsibilities of health care systems. b. Apply procedures for accurate documentation and record keeping.	81-82, 112 (#18), 128-130, 230-234, 265, 266-268, 282, 419-421, 651-652
4	Describe and demonstrate legal practices associated with health care. a. Identify the standards of Health Insurance Portability and Accountability Act (HIPAA). b. Describe advance directives.	128, 130, 133-134, 143 (#30), 230, 268, 269, 270-273, 287 (#28), 370, 566-568, 570-571, 677

	c. Summarize the Patient's Bill of Rights (for acute care) and the Resident's Bill of Rights (for long-term care). d. Recognize informed consent. e. Explain criminal laws governing harassment, labor, and scope of practice. f. Explain civil laws including torts.	
5	Recognize and discuss ethical boundaries within the health care environment. a. Differentiate between ethical and legal issues impacting health care. b. Recognize ethical issues and their implications related to health care.	127-135, 143 (#29), 266-276, 419-425, 565-574, 704-710
6	Discuss the accepted ethical practices within the health care environment. a. Define procedures for reporting activities and behaviors that affect the health, safety, and the welfare of others.	130-135, 222-223, 265, 273-275, 286 (#24), 287 (#32), 370-371, 384-385, 424-425
7	Identify cultural, social, and ethnic diversity within the health care environment. a. Compare religious, spiritual, and cultural values as they impact health care. b. Demonstrate respectful and empathetic treatment of all patients/clients.	48, 127, 132, 178, 216 (#18), 224, 228-229, 271, 276, 371, 387, 388 (Figure 11.10), 389, 390 (Figure 11.12), 572, 573
Unit 4 – Communication and Teamwork		
1	Describe the concepts of effective communication. a. Interpret verbal and nonverbal communication. b. Recognize barriers to communication. c. Differentiate subjective and objective information.	71-73, 75-76, 111 (#16), 112 (#17), 113 (#31), 127, 221-222, 224, 225-229, 381

	d. Recognize the elements of communication using a sender-receiver model. e. Demonstrate speaking and active listening skills.	
2	Compare the roles and responsibilities of individual members as part of the health care team. a. Describe roles and responsibilities of team members. b. Recognize characteristics of effective teams.	48, 49, 216 (#22), 264, 346
3	Explain the principles of interacting effectively and sensitively with all members of the health care team. a. Recognize methods for building positive team relationships. b. Analyze attributes and attitudes of an effective leader. c. Apply effective techniques for managing team conflict.	48-49, 346, 488-489, 639-641
4	Introduce appropriate medical terminology and abbreviations. a. Use roots, prefixes, and suffixes to communicate information. b. Use medical abbreviations to communicate information. c. Describe elements of written and electronic communication (spelling, grammar, and formatting).	74, 82, 93, 148-153, 170 (#18), 249, 385, 532
Unit 5 – Body Organization, Covering, Support, and Movement		
1	Describe the organization of the body. a. Apply and relate appropriate anatomical terms to the body in anatomical position. • Relationship of body parts • Major cavities and essential organs b. Explain how specific mechanisms	154-157, 159-162, 164-165, 591, 605-606, 623 (#24), 724, 757, 764 (#18)

	(e.g., feedback, transport, pH, or temperature regulation) maintain homeostasis. c. Categorize the relationship of the cell and its functions to the more complex levels of organization within the body. • Four major categories of tissues and their respective locations, structures, and functions.	
2	Discuss the structures and functions of the integumentary system. a. Identify the parts comprising the integumentary system and their respective functions. b. Discuss the concept of pigmentation.	293, 294-300
3	Explain diseases and disorders of the integumentary system and related signs and symptoms and treatment methods. a. Identify diseases and disorders that affect the integumentary system. Include the following: • acne vulgaris • athlete's foot • basal cell carcinoma • dermatitis • eczema • impetigo • melanoma • psoriasis • ringworm • squamous cell carcinoma • verrucae b. Identify signs, symptoms, and treatment methods associated with diseases and disorders of the integumentary system. c. Describe various skin eruptions. Include: macules, papules, vesicles, pustules, crusts, wheals,	296, 299-303, 426, 455

	and ulcers.	
4	Compare the structures and functions of the skeletal system with its relationship to movement. a. Identify the bones of the body, noting differences between males and females. b. Identify the structures that comprise bones. c. Explain the functions of the skeletal system. d. Identify the types of joints and their related movements.	304-306, 308-309, 310-315
5	Discuss diseases and disorders of the skeletal system and related signs, symptoms, and treatment methods. a. Identify diseases and disorders that affect the skeletal system. Include the following: • bursitis • colles fracture • comminuted fracture • compound or open fracture • depressed fracture • dislocation • green stick fracture • impacted fracture • osteoarthritis • osteomyelitis • osteoporosis • ruptured disk • simple of close fracture • spinal curvatures • spiral fracture • sprain b. Identify signs, symptoms, and treatment methods associated with skeletal diseases, disorders, and injury.	279, 304, 306-307, 311-312, 313-315, 326 (#18), 703
6	Compare the structures and functions of the muscular system with its relationship to movement. a. Identify the three types of	315, 316-318, 319, 322

	muscles. b. Identify the major components and functions of skeletal muscle fiber. c. Identify the major skeletal muscles. d. Explain the function of the muscles. e. Describe the process of muscle contraction. f. Introduce active/passive range of motion: adduction, abduction, flexion, extension, rotation, and circumduction.	
7	Discuss diseases, disorders, and injury of the muscular system and related signs, symptoms, and treatment methods. a. Identify diseases and disorders that affect the muscular system. Include the following: • fibromyalgia • muscle spasms • muscular dystrophy • strain • myasthenia gravis b. Identify signs, symptoms, and treatment methods associated with muscular diseases and disorders. c. Research and evaluate the impact of medical technology on muscle physiology and disease.	234, 319-320, 316

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GW textbook *Introduction to Medical Terminology*

Student Expectations	Textbook Page(s)
(1) The student demonstrates professional standards/employability skill as required by business and industry. The student is expected to:	
(1)(A) express ideas in a clear, concise, and effective manner	2, 55 (#2)
(1)(B) exhibit the ability to cooperate, contribute, and collaborate as a member of a team	25, 79, 183, 269
(2) The student recognizes the terminology related to the health science industry. The student is expected to:	
(2)(A) identify abbreviations, acronyms, and symbols related to the health science industry	22–23, 29, 51, 55, 81, 85, 268, 302
(2)(B) identify the basic structures of medical words	2–3, 28, 54, 66
(2)(C) practice word-building skills	3, 28, 54, 57
(2)(D) research the origins of eponyms	272 (#1), 315
(2)(E) recall directional terms and anatomical planes related to body structure	7–14, 26, 27, 28–29, 58, 92
(2)(F) define and accurately spell occupationally specific terms such as those relating to the body systems, surgical and diagnostic procedures, diseases, and treatment	4, 19–22, 28, 47-48, 55, 76, 154–159, 161–163, 170
(2)(G) use prior knowledge and experiences to understand the meaning of terms as they relate to the health science industry	24, 70, 110, 249, 261, 288, 382, 388
(3) The student demonstrates communication skills using the terminology applicable to the health science industry. The student is expected to:	
(3)(A) demonstrate appropriate verbal and written strategies such as correct pronunciation of medical terms and spelling in a variety of health science scenarios	2, 3, 4, 28, 55, 56, 57, 85

Student Expectations	Textbook Page(s)
(3)(B) employ increasingly precise language to communicate	7, 27 (#6), 170 (#2), 415
(3)(C) translate technical material related to the health science industry	2, 29, 302
(4) The student examines available resources. The student is expected to:	
(4)(A) examine medical and dental dictionaries and multimedia resources	7, 170, 261, 303 (#2)
(4)(B) integrate resources to interpret technical materials	7, 55, 109, 201
(4)(C) investigate electronic media with appropriate supervision	7, 55, 170, 201
(5) The student interprets medical abbreviations. The student is expected to:	
(5)(A) distinguish medical abbreviations used throughout the health science industry	22–23, 51, 55, 56, 85
(5)(B) translate medical abbreviations in simulated technical material such as physician progress notes, radiological reports, and laboratory reports	2, 56, 86
(6) The student appropriately translates health science industry terms. The student is expected to:	
(6)(A) interpret, transcribe, and communicate vocabulary related to the health science industry	2, 3, 7–11, 19–22, 26, 28–29, 76, 108, 109, 111
(6)(B) translate medical terms to conversational language to facilitate communication	2, 56, 305
(6)(C) distinguish medical terminology associated with medical specialists such as geneticists, pathologists, and oncologists	19, 76, 161, 394
(6)(D) summarize observations using medical terminology	2, 76, 170 (#2), 384 (#2)
(6)(E) interpret contents of medical scenarios correctly	3, 28-29, 109, 202