Unit	Topic	Lesson	Lesson Objectives
Unit 1: Welcome to Biology			
	What is Biology		
		Biology and Biologists	
		Laboratory Safety	
			Demonstrate safe practices during a scientific investigation.
			Develop a plan to address specific safety concerns in the lab.
			Science Practice: Give examples of safety problems in the lab and describe how to report those problems.
		Lab: Measurement	
			Demonstrate how scientific tools can be used to gather accurate measurements.
			Determine how to measure volume, mass, and density of regular and irregular objects.
			Science Practice: Develop a relationship between SI units and standard units.
	Chemical and Physical Properties of Solutions		
		The Chemical Basis for Life	
		Water and Life	
		Acids Bases and Buffers	
	Biomolecules		
		Organic Molecules	
		Macromolecules	
		Lab: Identifying Nutrients	
			Describe nutrients found in common foods such as bread, meat, juice, oil, and milk.
			Identify carbohydrates, lipids, and proteins found in food samples by conducting chemical tests.
			Science Practice: Discuss how to apply safe practices during a lab and/or field investigation.
		Vocabulary Review	
Unit 2: Cell Structure and Function			
	Cellular Organization		
		Cells: The Basics	
		More About Cells	
		Lab: Using a Compound Microscope	
			Identify organelles in a cell using a microscope.
			Identify the parts of the microscope and their functions.
			Science Practice: Use appropriate scientific tools and techniques to gather data.

Unit	Topic	Lesson	Lesson Objectives
	Membranes and Transport		
		Cell Membranes	
		Virtual Lab - The Purification of Hemoglobin	
		Lab: Diffusion Across a Semi-permeable Membrane	
			Describe the process of diffusion.
			Identify materials that are able to pass across a semipermeable membrane by diffusion.
			Science Practice: Apply the scientific method to given scenarios.
		Vocabulary Review	
Unit 3: The Gene			
	DNA		
		DNA Discovery & Structure	
		DNA Replication	
	From DNA to Protein		
		The Transcription of DNA to RNA	
		Protein Synthesis	
		Lab: Building Proteins from RNA	
			Demonstrate how base pairing builds proteins from RNA.
			Describe the role of RNA in the creation of proteins.
			Science Practice: Conduct a laboratory experiment to answer a specific question.
		Interactive Exercise - Proteins from Genes	
	Types of Genomes		
		Eukaryotic Genomes	
		Viral & Bacterial Genomes	
		Exploration - Bacterial Gene Expression	
	Biotechnology		
		Applications of Biotechnology	
		Virtual Lab - Principles of Biotechnology	
		Vocabulary Review	

Unit	Topic	Lesson	Lesson Objectives
Unit 4: Principles of Heredity			
	The Reproduction of Cells		
		The Cell Cycle & Mitosis	
		Sexual Life Cycle & Meiosis	
		Interactive Exercise - Mitosis and Meiosis	
	Patterns of Inheritance		
		The Mendelian Model of Inheritance	
		Extensions of Mendel	
		Exploration - Pedigree Analysis	
	The Chromosomal Basis of Heredity		
		Genes & Chromosomes	
		Virtual Lab - Virtual Fly Lab	
		Lab: Mouse Genetics (One Trait)	
			Demonstrate how dominant and recessive alleles are passed from parents to offspring.
			Science Practice: Evaluate data to formulate a conclusion.
			Use the laws of inheritance to breed mice with desired genotypes for fur color.
		Lab: Mouse Genetics (Two Traits)	
			Demonstrate how alleles are passed independently of one another.
			Science Practice: Evaluate data to formulate a conclusion.
			Use the laws of inheritance to describe how two separate traits are inherited in an organism.
		Vocabulary Review	
Unit 5: Evolutionary Biology			
	The Theory of Evolution		
		Darwin in Historical Context	
		Mechanisms of Evolution	
		Lab: Natural Selection	
			Identify natural selection as a mechanism for the evolution of a population.
			Science Practice: Decide whether specific questions can be answered using scientific investigation.
		Virtual Lab - Population Genetics and Evolution	
	The Origin of Species		
		Speciation	
		Vocabulary Review	

Unit	Topic	Lesson	Lesson Objectives
Unit 6: Biological Diversity			
	The Family Tree of Life		
		Systematics: Classifying Organisms	
		The History of Life on Earth	
		Lab: Using a Dichotomous Key	
			Distinguish various forms of observable traits of an organism.
			Science Practice: Evaluate data to draw a conclusion.
			Use a dichotomous key to identify unknown organisms.
	Single-Celled Organisms		
		Prokaryotes	
		Unicellular Eukaryotes	
	Still Life: Plants and Fungi		
		Plants and Their Relatives	
		The Fungi	
		Interactive Exercise - Lifestyles of the Plants and Fungi	
	The Diversity of Animals		
		An Introduction to the Animals	
		From Invertebrates to Vertebrates	
		Exploration - Comparative Anatomy	
		Vocabulary Review	
Unit 7: The Energetics of Life			
	Principles of Bioenergetics		
		Cellular Energy Currency	
		Enzymes and Metabolism	
		Virtual Lab: Enzyme Catalysis	
		Exploration Activity: Enzyme Regulation	
	Central Catabolic Pathways		
		An Overview of Metabolism	
		Glycolysis	
		The TCA Cycle	

Unit	Topic	Lesson	Lesson Objectives
	Electron Transport and Cellular Respiration		
		Electron Transport, ATP Synthesis, and Chemiosmosis	
		Interactive Exercise - Cellular Respiration in Seeds	
Unit 8: Animal Structure, Reproduction, and Development			
	Structural Organization of Animals		
		Animal Form and Function	
	Reproduction & Development in Animals		
		Animal Reproduction	
		Animal Development	
		Interactive Exercise - Human Reproductive Anatomy	
Unit 9: Circulation, Body's Defenses, Nutrition			
	Circulation and Gas Exchange		
		The Circulatory System	
		Lab: Blood Typing	
			Demonstrate how blood clots are formed.
			Identify blood types based on blood-clotting factors.
			Science Practice: Discuss how to apply safe practices during a lab and/or field investigation.
		The Respiratory System	
		Virtual Lab: Cardiovascular Health	
	The Body's Defenses		
		The Lymphatic System and the Blood	
		Nonspecific Immune Defenses	
		Specific Immune Defenses	
		Lab: Disease Spread	
			Demonstrate how diseases are spread by human contact.
			Science Practice: Use a model to simulate a real-world situation.
	Types of Genomes		
		Diet and Feeding Mechanisms	
		The Digestive System	
		Osmoregulation and Excretion	
		Vocabulary Review	

Unit	Topic	Lesson	Lesson Objectives
Unit 10: Nervous System and Internal Controls			
	Osmoregulation and Excretion		
		Nervous Systems and Sensation	
		How Nerves Work	
	Chemical Signals in Animals		
		Hormones	
		The Endocrine System	
	The Musculoskeletal System		
		Skeletons	
		Muscle Structure and Contraction	
		Vocabulary Review	
Unit 11: Plants: Form and Function			
	The Structure of Plants		
		Plant Nutrition	
		Exploration Activity: Plant Tissues and Organs	
		Virtual Lab - Transpiration in Plants	
		Vocabulary Review	
	Plant Energetics		
		Introduction to Photosynthesis	
		The Light Reactions	
		The Calvin-Benson Cycle	
	Plant Reproduction, Development, and Control		
		Plant Reproduction and Development	
		Control Systems in Plants	
Unit 12: Ecology			
	Populations and Ecosystems		
		The Natural Setting	
		Population Ecology	
		Community Ecology	
		Lab: Interdependence of Organisms	
			Describe the interdependent relationship between two organisms.
			Science Practice: Formulate explanations by using logic and evidence.

Unit	Topic	Lesson	Lesson Objectives
	Ecosystems		
		Energy Flow and the Water Cycle	
		Chemical Element Cycles	
		Conservation Biology	
		Interactive Exercise - Primary Productivity	
		Interactive Exercise - Dynamic Ecosystems	
	Behavioral Ecology		
		Basics of Behavior	
		Social Behavior	
		Virtual Lab - Animal Behavior	
		Vocabulary Review	