Content Area: Science
Grade: 6

Unit	Enduring Understandings	Essential Questions	Objectives	Skills
1: Biotech Systems World Wide Reviewing Systems	Students will understand that: • In multicellular organisms, the body is a system of multiple interacting subsystems composed of groups of cells. • Subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions • Describe transplant and donation options for the organs and tissues that they researched. • Learn that microscopes produce magnified or enlarged images, enabling us to see structures that cannot be seen with the unaided eye • Use an interactive simulation to gather evidence to answer the question, “Are tissues made of smaller parts?” • Discover that only things that are alive or were once alive are made up of cells • Discover that, in multicellular organisms, cells can be specialized to perform different functions, and tissues	1. How do human body systems work? 2. How can technology replace and enhance the functions of human organs? 3. What things are made of Cells?	• Understand that the body is a system of interacting subsystems • Obtain information from two videos to identify the parts and functions of the digestive and muscular systems • Use evidence to argue that the muscular system interacts with and relies on another system. • Identify the connections between stimulus and response in a reaction time game • Create a model of the nervous system, depicting a stimulus, a response, and the steps in between • Understand how memories are linked to the use of sensory information by the brain in future situations.	• Develop Models • Problem Solving • Group Discussion • Questioning • Researching • Evaluating • Defending Responses with Evidence and Reasoning • Record and interpret data

	are systems of interacting cells of the same type.			
2: Destination Everywhere	**Students will understand that:** ● Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns. And Because these patterns are so complex, weather can only be predicted probabilistically ● Scientific Knowledge Assumes an Order and Consistency in Natural Systems	1. What claims can be made about climate? 2. What is the effect of the Sun shining onto the Earth? 3. Can we design a house that uses the Sun's energy to keep people warm? 4. How can we predict the weather?	● Investigate and collect climate data from around the world ● Make a claim about how latitude affects climate. ● Research and explain the relationship between altitude and temperature ● Develop a claim related to the relationship between altitude and climate. ● Review climate data to discover patterns in precipitation around the world ● Make a claim about precipitation ● Reflect on the factors that impact climate. ● Find patterns in surface ocean currents ● Analyze ocean current and wind maps to determine similarities and differences. ● Evaluate locations using a map of the world, and select a location for their Destination Guides ● Research and organize climate data for their location, including average temperatures, annual precipitation, location, and altitude ● Describe the process of evaporation in the context of energy transfer in matter ● Model the process of condensation and make connections to the water cycle process of rain ● Summarize the process of energy transfer between evaporation, sunlight, and condensation. ● Make predictions and compare them to real climate data. ● Observe a live model of transpiration	• Develop Models • Problem Solving • Group Discussion • Questioning • Researching • Evaluating • Defending Responses with Evidence and Reasoning • Record and interpret data

			• Collect notes on water investigations develop an explanation on the processes of the water cycle • Create a model of the water cycle using observations and inferences from earlier investigations. • Plan and conduct an investigation around the heating and cooling of water and land • Identify that energy transfer in water occurs more slowly than it does in air. • Investigate the effects of air pressure and construct explanations of what they observed • Explain that temperature decreases at high elevation due to decrease in pressure • Explore the effects of landforms and oceans on the wind • Reflect on the effect of different types of winds on specific geographic locations. • Apply learning from demonstrations on water and density to explain what convection currents are and why they occur • Use textual evidence to support claims about the causes of ocean currents • View models to understand worldwide ocean currents. • Analyze data about the amount of energy from the Sun received at different latitudes • Create a model of the Earth and Sun to measure how sunlight is spread out • Communicate the relationship between the Earth's curvature, the Sun, and climate at different latitudinal locations. • Investigate air masses and how they impact climate and weather	

			• Describe the seven main types of air masses, where they develop and how they impact weather conditions • Reflect on how air masses connect to cloud cover, precipitation and temperature patterns in the United States. • Close read a text to understand how the unequal heating of the Earth, and the Earth's rotation, determine its climate zones • Describe how temperature differences and the rotation of the Earth contribute to patterns of wind and precipitation. • Apply knowledge of climate factors to outline climate for their chosen location on Earth • Gather information about the climate of their location • Use evidence and reasoning to support weather claims in each location • Communicate their understanding of climate. • Make a claim about the weather associated with areas of high and low pressure • Evaluate diagrams to find evidence that supports or rejects their claim • Create a claim, evidence, and reasoning chart to communicate their claim. • Define wind and the forces that affect wind speed and direction • Discuss how authors use diagrams and visuals to communicate with readers • Reflect on their developing understanding of how scientists predict weather. • Review air masses and their characteristics • Observe a demonstration that models the result of a warm air mass meeting a cold air mass • Create and share drawings of the model	

			● Discover the phenomena that moving air masses create warm or cold fronts and these fronts result in different types of weather.	
3: The Red List	● Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. ● Use arguments based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively. ● Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	1. How do animal behaviors and plant structures affect their survival and reproduction ? 2. How do species reproduce? 3. How do environmental and genetic factors influence the growth of an organism? 4. How do we protect endangered species?	● Research four endangered species as a team to answer some initial questions. ● Begin to work on the Performance Task by observing courtship and mating ritual behaviors ● Use evidence and reasoning to support claims about mating behaviors. ● Analyze a graph to find evidence about how tail length relates to widowbird reproduction. ● Collect relevant evidence about how animals help their offspring to survive from observing videos and analyzing data. ● Continue working on the Performance Task by developing claims about how parenting behaviors help offspring to survive. ● Gather information about specialized plant structures by observing videos. ● Continue to work on the Performance Task by developing claims about how plants attract pollinators. ● Determine patterns and formulate claims from scientific data of gene combinations and organism traits ● Connect the patterns they observe to the ideas of dominant and recessive genes.	• Develop Models • Problem Solving • Group Discussion • Questioning • Researching • Evaluating • Defending Responses with Evidence and Reasoning • Record and interpret data

	• Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. • Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.		• Observe and record data about genotypes, phenotypes, and alleles • Analyze phenotypes of model butterflies • Create model butterflies based on genetic traits. • Reinforce the concept of heredity as the passing of genetic information from parents to their offspring • Model the variations in offspring genotype and phenotype that result from sexual reproduction • Learn how to use Punnett squares. • Analyze data from a study of how temperature of water affects fish growth • Review their findings and determine that water temperature (an environmental factor) influenced the growth of the Atlantic salmon. • Interpret results of research using data from a graph • Review and revise a claim based on the evidence. • Investigate the different classifications of species threat levels, including endangered, threatened, vulnerable, critically endangered, and extinct • Gather and record evidence about how humans negatively impact the environment and endangered species	

4: Cities of the Future	• Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. • Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. • Influence of Engineering, Technology, and Science on Society and the Natural World	• How do humans impact the environment? • What does the evidence tell us about climate change? • How does climate change affect living things? • How can we design solutions to reduce our impact on the environment?	• Relate human activities to their impact on the environment by analyzing images • Collaborate with peers to research an environmental issue • Gather key information about the issue. • Discuss and analyze different ways that humans impact the Earth • Consider local environmental issues • Discuss the causes of water pollution • Learn how pollutant-sensitive invertebrates can be used to monitor pollution levels • Test for the presence of phosphates in prepared samples • Research phosphates. • Learn how to reduce their personal carbon footprint • Discuss the impact of deforestation	• Develop Models • Problem Solving • Group Discussion • Questioning • Researching • Evaluating • Defending Responses with Evidence and Reasoning • Record and interpret data