

Science 7 Course Overview

Unit	Major Concepts	Skills	Summative Assessments
Populations & Ecosystems	<p>Organism life cycles Identify and differentiate populations, communities, and ecosystems. Ecosystems:</p> <ul style="list-style-type: none"> ● How energy transfers through trophic levels. ● Reproductive potential. ● Adaptations allow populations to change overtime. ● Genes are the basic unit of hereditary and code for the features and traits of an individual. ● Selective pressure. ● Natural selection. 	<ul style="list-style-type: none"> ● Build and maintain a habitat suitable for milkweed bugs ● Classify organisms based on feeding relationships ● Construct an accurate food web to explain feeding relationships in an ecosystem ● Research an ecosystem ● Create a presentation explaining the ecosystem ● Articulate effects of human interactions on an ecosystem ● Predict the long term viability of the ecosystem ● Use Punnett squares to predict offspring genotype/phenotype 	<p>Several types of mid-summative assessments - Projects, presentations, labs, etc. 1 written final</p>
Electronics	<ul style="list-style-type: none"> ● How to create complete circuits ● The function of resistors, transistors, capacitors and diodes/LED's ● How resistors influence the performance of lamps in electrical circuits. ● How Voltage can be influenced by components in a circuit. ● The rules for predicting the total resistance imposed by multiple resistors placed in series and/or parallel. ● Understand the concept of electric current and use that understanding to solve circuit problems. ● Become familiar with and acquire vocabulary concerning these concepts: circuit, Ohm's law, component, multimeter, energy potential, current, resistance and voltage. 	<ul style="list-style-type: none"> ● Identify series, parallel, and short circuits. ● Predict lamp intensity based on circuit type and current flow. ● Read schematics and construct the circuits they represent. ● Develop a model that explains what resistance is and how it might affect the flow of current in a circuit. ● Measure current, resistance and voltage with a multimeter. ● Construct electrical circuits that will perform a specific task. ● Calculate circuit problems using percent resistance and percent voltage. ● Calculate circuit problems using ohm's law and the three great truths of series circuits. ● Undertake a design project to construct and implement a solution that meets specific design criteria and constraints. 	<p>Several types of mid-summative assessments - Projects, presentations, labs, etc. Final Notebook Assessment</p>

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<p>Engineering Design: Creative Building and Coding</p>	<ul style="list-style-type: none"> ● The engineering design process and how to utilize it in the creation of a device to perform a given task. ● How to use block coding to logically create programs that perform a predetermined task. ● That design constraints affect the scope of an engineering project ● how to evaluate engineering design ● That "different" isn't always "better" 	<ul style="list-style-type: none"> ● Create a series of increasingly complex electronic devices to perform stated tasks. ● Assemble complex circuits in the appropriate order and schematic ● Program their devices to perform autonomously ● identify design constraints for each project ● Present their devices to the class for review ● Evaluate their own and other's devices based on the stated design criterion 	<p>Final device project Portfolio website creation</p>
<p>Weather & Water</p>	<ul style="list-style-type: none"> ● The processes that produce weather, including energy transfer, atmospheric pressure, and the water cycle. ● Principles that govern temperature, wind, humidity, precipitation, and severe weather. ● Fresh water as a vital resource. ● Heat, radiation, conduction, convection, density, pressure, condensation, water cycle, drainage, and climate. 	<ul style="list-style-type: none"> ● Collect and analyze local and global weather data using instruments and reports from various media. ● Acquire vocabulary concerning these concepts: heat, radiation, conduction, convection, density, pressure, condensation, water cycle, drainage, and climate. ● Classify materials by their density. ● Make predictions based on density. ● Compare earth materials based on heat capacity. ● Read an air pressure / weather map 	<p>Several types of mid-summative assessments - Projects, presentations, labs, Movies, etc.</p>