

**7<sup>th</sup> Grade Enhanced Science Unit Synopsis (SAMPLE)**

UNIT TITLE	BASE STANDARD(s) COVERED	EXTENSION	ACTIVITIES
<p align="center">“I Have a Mouthful of WHAT?!?!” Classification of Planktonic Organisms</p>	<ul style="list-style-type: none"> <li>*Classification</li> <li>*Ecosystems               <ul style="list-style-type: none"> <li>*Interactions</li> <li>*Adaptations</li> <li>*Dynamics</li> <li>*Human Impact</li> </ul> </li> </ul>	<p>*Expanding skills/knowledge in classifying/identifying major Kingdoms (Animalia, Protista) and the major phyla contained within them.</p> <p>*Expanding upon the knowledge and understanding of the interrelationships we have with these organisms...the major roles they play not in just our lives, but the World’s food web...the adaptations that have allowed them to survive, in some cases for billions of years...and how these critters are included in the major societal discussions of our time, like climate change.</p>	<ul style="list-style-type: none"> <li>*Microscopy of prepared slides and living organisms.</li> <li>*Research reading.</li> <li>*Compare/Contrast observations with computer researched, live observations.</li> </ul>

<p>One Health: An Investigation into Human, Veterinary, and Environmental Health</p>	<ul style="list-style-type: none"> <li>*Classification</li> <li>*Ecology</li> <li>*Scientific Method</li> </ul>	<ul style="list-style-type: none"> <li>*Students can expand their knowledge in comparative anatomy, physiology, and health among humans and animals. There is a connection between human, veterinary, and environmental medicine, which is called One Health.</li> <li>*Students can identify similarities and differences between the overall health of humans, animals, and the environment.</li> <li>*Students can investigate activities in epidemiology, which is a STEM discipline as it incorporates science, technology, and math.</li> <li>*Parents can learn more about One Health by visiting: <a href="https://www.cdc.gov/onehealth/index.html">https://www.cdc.gov/onehealth/index.html</a></li> </ul>	<ul style="list-style-type: none"> <li>*Epidemic Simulation (Carolina) <ul style="list-style-type: none"> <li>*Safety: mild acid/mild base reaction, pH indicator; Goggles, Gloves</li> </ul> </li> <li>*Glo-germ Handwashing Activity <ul style="list-style-type: none"> <li>*Safety: Do not rub eyes with hands, eye-wash if necessary</li> </ul> </li> <li>*Calculating Pulse, Heart Rate, and Respiratory Rate <ul style="list-style-type: none"> <li>*Safety: Hearing precautions, caution with alcohol wipes</li> </ul> </li> <li>*Secret Message Bacteria Inoculation <ul style="list-style-type: none"> <li>*BSL-1 Bacteria (<i>Vibrio fischeri</i>)</li> <li>*Safety: Goggles, Gloves, Aprons</li> <li>*Decontamination for disposal</li> </ul> </li> <li>*Mouse Open-Space Behavior Activity <ul style="list-style-type: none"> <li>*Safety: Caution with live animals</li> <li>*Ethics: Ms. Melvin's pets, used with permission</li> </ul> </li> </ul>
<p>Biomimicry in Engineering</p>	<ul style="list-style-type: none"> <li>*Populations <ul style="list-style-type: none"> <li>*Symbiotic Relationships</li> <li>*Niches</li> </ul> </li> <li>*Ecosystems <ul style="list-style-type: none"> <li>*Interactions</li> <li>*Adaptations</li> <li>*Human Impact</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>*Expanding skills/knowledge of how organisms adapt to biotic and abiotic factors in an ecosystem.</li> <li>*Using models and/or simulations to construct and illustrate models of products inspired by nature.</li> <li>*Review and Analysis of products which leads to redesign of prototypes to improve function of the product.</li> </ul>	<ul style="list-style-type: none"> <li>*Research of how ideas from different organisms are used in solving human challenges.</li> <li>*Microscopy of organisms and their influence of nature inspired products.</li> <li>* Using the engineering process to construct nature inspired products to solve a variety of human challenges.</li> </ul>

<p>Entomology and the Beetle Olympics</p>	<ul style="list-style-type: none"> <li>* Classification</li> <li>* The Scientific Method</li> <li>* Ecosystems <ul style="list-style-type: none"> <li>* Interactions</li> <li>* Adaptations</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>* Students will expand their knowledge of the Scientific Method by designing two experiments to learn about how insects interact with their environment</li> <li>* Students will expand their knowledge of the levels of classification through an in-depth study of various insect orders</li> <li>* Students will gain knowledge of comparative anatomy by studying characteristics of various insect orders. Comparisons will be made between mouthparts, wings, and legs.</li> <li>* Students will be introduced to the field and potential career path of forensic entomologist. Students will learn how entomology as a science can help to solve modern-day crimes. This relates directly to topics being covered by 8th grade enhanced units.</li> </ul>	<ul style="list-style-type: none"> <li>* Basic research of insect anatomy</li> <li>* Classification of insects using dichotomous keys.</li> <li>* Examination of preserved insect specimens, using a dissecting microscope, to study comparative anatomy</li> <li>* Designing experiments to determine Bess beetles' light/dark preferences as well as relative strength.</li> <li>* Investigation of a mock forensic crime scene in which insect presence and life cycles must be analyzed to determine approximate time of death.</li> </ul>
<p>“This “Ancestry” Thing Says We’re Related?!” Comparative Anatomy</p>	<ul style="list-style-type: none"> <li>*Evolution</li> <li>*Biological Organization</li> </ul>	<ul style="list-style-type: none"> <li>*Expanding on the phylogeny of living things by comparing their morphology.</li> <li>*Expanding upon the relationship between Evolution via Natural Selection and the Environment.</li> <li>*Gain a greater understanding of why organisms would evolve from simple to complex...tissues/organs evolving into highly specialized organs/organ systems.</li> </ul>	<ul style="list-style-type: none"> <li>*Dissection <ul style="list-style-type: none"> <li>-Phylum Cnidaria – Anemone</li> <li>-Phylum Mollusca – Squid</li> <li>-Phylum Echinodermata – Sea Star</li> <li>-Phylum Chordata...Class Osteichthyes – Fish</li> <li>-Phylum Chordata...Class Mammalia – Rat</li> </ul> </li> </ul>