



Content Area: Science

Grade Level: 7

Course Name: Middle School Life Science

**Course Description:** Students explore middle school life science standards. The skills and concepts embedded into these units are tied to the New York State 8th Grade Science Assessment, however there is no state assessment at the end of grade 7. The descriptions of the units listed below are not exhaustive for each unit, but are meant to provide limited examples of student learning outcomes for each.

| Units Length of Time                                      | Description   |
|---|---|
| Engineering and Cross Cutting Concepts Training (4 weeks) | Students explore basic ideas about science and study features of the new standards in science. Throughout portions of this unit, students will: <ul style="list-style-type: none"> <li>- Challenge their thoughts on what a scientist is and does.</li> <li>- Compare and contrast scientific questions with non scientific questions.</li> <li>- Study the scientific method as it relates to experimental design.</li> <li>- Define and use models to represent scientific literacy and sense making.</li> <li>- Engage in activities that promote the understanding and practice of using the metric system, measuring tools, and graphing.</li> </ul> |
| Human Systems (10 weeks)                                  | Students explore seven main human body systems. Throughout portions of this unit, students will: <ul style="list-style-type: none"> <li>- Define life and how homeostasis maintains the balance of a lifeform.</li> </ul>   |

| Units Length of Time                                 | Description   |
|--|---|
|  | <ul style="list-style-type: none"> <li>- Engage in various activities to study each of our body systems and processes including skeletal, muscular, nutritional, circulatory, respiratory, excretory, nervous, endocrine and reproductive.</li> <li>- Engineer a prosthetic limb for an organism.</li> <li>- Relate pulse rate to various physical activities.</li> </ul>   |
| Cellular Structure and Function, Diversity (4 weeks) | <p>Students study cell theory and relate cells in humans to various systems found around the world. Throughout portions of this unit, students will:</p> <ul style="list-style-type: none"> <li>- Learn how and when to use various types of microscopes.</li> <li>- Identify the parts of a cell and compare how each part functions to keep the cell alive.</li> <li>- Compare different parts and functions of cells to models of our school and a city.</li> </ul>  |
| Energy is Life, Diversity (2 weeks)                  | <p>Students explore energy and resource cycles to study the relationship between living and nonliving things. Throughout portions of this unit, students will:</p> <ul style="list-style-type: none"> <li>- Model a sealed ecosystem to ask questions and design solutions regarding how life operates within the ecosystem.</li> <li>- Relate the Law of Conservation of Matter to the study of respiration and photosynthesis.</li> <li>- Revise an ecosystem model using new data.</li> <li>- Model how solar energy is used to power life.</li> </ul>   |
| Reproduction Behaviors, Diversity (4 weeks)          | <p>Students will compare and contrast sexual and asexual reproduction and study how plants and animals reproduce to perpetuate a species. Throughout portions of this unit, students will:</p> <ul style="list-style-type: none"> <li>- Model organisms using budding, sporulation, and fission to reproduce.</li> <li>- Use models to examine the structure and function of flower parts.</li> <li>- Evaluate data to study the relationship between colony density and growth and survival rates of Herring Gull chicks.</li> </ul>   |
| Heredity and Genetics (5 weeks)                      | <p>Students study how traits are inherited from parents to offspring. Throughout portions of this unit, students will:</p> <ul style="list-style-type: none"> <li>- Make observations of physical characteristics to help determine what traits are inherited or acquired.</li> <li>- Use craft supplies to model how both Mitosis and Meiosis work in a cell.</li> <li>- Learn about DNA and the impacts of DNA mutations on organisms and species.</li> <li>- Use models to explain how traits may be passed down from parents to offspring.</li> <li>- Study the characteristics of apples to design a genetically modified apple which exhibits specially desired characteristics.</li> </ul> |
| Evolution (4 weeks)                                  | <p>Students engage in activities that demonstrate the role of mutations in the evolution of different species. Throughout portions of this unit, students will:</p>   |

| Units Length of Time | Description  |
|----------------------|--|
|                      | <ul style="list-style-type: none"> <li>- Explore specific mutations and study how those mutations may lead to the evolution of a species.</li> <li>- Explain how Darwin used observed characteristics to explain how adaptations of organisms cannot impact survival.</li> <li>- Study evidence that various organisms may have evolved from a common ancestor.</li> </ul>   |
| Ecology (4 weeks)    | <p>Students study the relationships that organisms have with each other and their environment. Throughout portions of this unit, students will:</p> <ul style="list-style-type: none"> <li>- Manipulate a digital model to make reasonable conclusions about the carrying capacity of rabbits in a particular environment.</li> <li>- Draw conclusions from scientific data regarding population changes in a community.</li> <li>- Use models to represent energy flow within different living organisms in a particular habitat.</li> <li>- Design and build a presentation regarding a specific biome found on our planet.</li> <li>- Explore a real world problem related to water availability in Singapore and argue with evidence the best solution.</li> </ul> |

| NYS Standard | Links   |
|--------------|---|
|              | Click <a href="#">here</a> to learn more about the New York State Science Learning Standards! |