

# Science Department Competencies and Assessments

## Middle School - Life Science

### Course description:

This course is designed to provide students with a fundamental background in the study of living organisms. It includes a survey of the kingdoms of life and emphasizes their interdependence and relationships. Basic anatomy and physiology of organisms from the simplest cells to more complex life forms will be presented.

Course Power Standards	Assessment Tools (Common items are bold)
<p><b>I. Scientific Inquiry/Experimental Design: Students will demonstrate the ability to...</b></p> <ul style="list-style-type: none"> <li>a. formulate and test hypotheses                             <ul style="list-style-type: none"> <li>1. Identify controlled and tested variables</li> <li>2. Reduce error through controls</li> <li>3. Collect, organize, analyze and interpret data</li> <li>4. Communicate findings</li> </ul> </li> <li>b. use appropriate measurement devices, techniques and systems of measurement</li> <li>c. integrate technology graphing with excel, writing lab reports</li> <li>d. effectively apply safe practices in the laboratory and in the field</li> </ul>	<ul style="list-style-type: none"> <li>• Quizzes/Tests</li> <li>• Homework/Class Work</li> <li>• <b>M&amp;M Lab</b></li> <li>• <b>Product Testing Project</b></li> <li>• <b>Plant Growth Lab</b></li> <li>• <b>Life in a Drop of Water</b></li> <li>• <b>Bacteria Hunt</b></li> </ul>
<p><b>II. Cellular Basis of Living Things: Students will demonstrate the ability to</b></p> <ul style="list-style-type: none"> <li>a. distinguish between prokaryotic and eukaryotic cell types</li> <li>b. identify the role of organelles in the functioning of eukaryotic cells</li> <li>c. identify relationships between cells, tissues, organs and organ systems</li> <li>d. identify universal characteristics of all living things, and recognize the cell as the smallest unit capable of executing the processes of life</li> <li>e. describe mechanisms of cellular transport and relate these to the concept of homeostasis</li> <li>f. distinguish between the processes of photosynthesis and respiration and their significance in living organisms</li> <li>g. identify the critical chemicals for life</li> <li>h. identify the chemical activities that all living things perform for life</li> </ul>	<ul style="list-style-type: none"> <li>• Quizzes/Tests</li> <li>• Homework/Class Work</li> <li>• <b>Yeast Alive Lab</b></li> <li>• <b>Smelly Balloon</b></li> </ul>
<p><b>III. Structure and Function of Living Things: Students will demonstrate the ability to</b></p> <ul style="list-style-type: none"> <li>a. employ Mendelian concepts and simple punnett squares</li> <li>b. distinguish between asexual and sexual reproduction</li> <li>c. identify main organ systems in the body and their functions</li> <li>d. explain the interrelationships of organ systems: Skeletal, Muscular, Respiratory, Circulatory, Digestive, Urinary, Nervous, and Integumentary</li> </ul>	<ul style="list-style-type: none"> <li>• Quizzes/Test</li> <li>• Homework/ Class Work</li> <li>• <b>Egg Genetics</b></li> <li>• <b>Sponge Bob Genetics</b></li> <li>• <b>Heart Model</b></li> <li>• <b>Skin Model</b></li> <li>• <b>Skeletal Stations</b></li> <li>• <b>Owl Pellet</b></li> <li>• <b>Lung Model</b></li> </ul>

<p><b>IV. Unity and Diversity of Life.: Students will demonstrate the ability to</b></p> <ol style="list-style-type: none"> <li>a. recognize relationships as the basis of classification/taxonomy</li> <li>b. identify the defining characteristics of the 5 kingdoms of life</li> <li>c. classify organisms using dichotomous keys</li> <li>d. identify organisms using binomial nomenclature</li> <li>e. compare anatomy and physiology of major animal taxa</li> </ol>	<ul style="list-style-type: none"> <li>• Quizzes/Test</li> <li>• Homework/ Class Work</li> <li>• <b>Insect Project</b></li> <li>• <b>Various Dissections</b></li> <li>• <b>Live Protist Lab</b></li> <li>• <b>Bacteria Culture</b></li> <li>• <b>Microscope Work</b></li> <li>• <b>Plant Growth Lab</b></li> <li>• <b>Animal Webpage</b></li> </ul>
<p><b>V. Relationships of Living Things: Students will demonstrate the ability to</b></p> <ol style="list-style-type: none"> <li>a. distinguish between populations, communities and ecosystems</li> <li>b. identify the biotic and abiotic stimulus in an ecosystem</li> <li>c. identify the difference between food web and food chains</li> <li>d. identify adaptation traits for survival</li> <li>e. explain how producers, consumers and decomposers interact within an ecosystem</li> </ol>	<ul style="list-style-type: none"> <li>• Quizzes/ Test</li> <li>• Homework/ Class Work</li> <li>• <b>Nature area field activities</b></li> <li>• <b>Food web/ Food Chain Activities</b></li> </ul>