

## Course Description:

MS Environmental Science (1 of 2) focuses on life science concepts from biology, ecology, and environmental science. MS Environmental Science (1 of 2) also explores the nature of science and has engineering and technology practices threaded throughout the course. This course begins with an introduction to scientific processes. Then, the course explores cells, heredity, evolution, ecology, and genetic technology.

## Course Objectives:

- Apply scientific processes to conduct investigations.
- Use logical thinking to identify relationships and draw conclusions.
- Examine how investigations and research in the life sciences are important to gaining historical perspective and understanding the societal value of scientific advances.
- Evaluate topics in the life sciences to better understand scientific processes, cells, heredity, evolution, ecology, and genetic technology.

## Required Materials:

In course.

## Schedule of Work:

Unit 1: Scientific Processes	Unit 2: Cells	Unit 3: Heredity	Unit 4: Evolution	Unit 5: Ecology	Unit 6: Connections and Review
<ul style="list-style-type: none"> <li>• Observation vs. Inference</li> <li>• Assumptions, Point of View, and Bias</li> <li>• Theory vs. Law</li> <li>• Hypothesis Writing</li> <li>• Claims, Evidence, and Reasoning</li> <li>• Ethics</li> <li>• Graphing</li> <li>• Models</li> <li>• Science Reading Strategies</li> <li>• Communication in Science</li> <li>• Atoms and Molecules</li> <li>• Modeling Molecules</li> </ul>	<ul style="list-style-type: none"> <li>• The Cell Theory</li> <li>• The Scientists behind Cell Theory</li> <li>• Cell Structure and Function</li> <li>• Types of Cells</li> <li>• Levels of Organization</li> <li>• Photosynthesis</li> <li>• Energy's Role in the Cell</li> <li>• Cellular Respiration</li> <li>• The Scientists behind DNA</li> <li>• DNA and Chromosomes</li> <li>• Reproduction</li> <li>• Cell Division</li> </ul>	<ul style="list-style-type: none"> <li>• DNA, Chromosomes, and Genes</li> <li>• The Role of Genes</li> <li>• Probability and Predictions</li> <li>• Mendel's Experiments</li> <li>• Using the Punnett Square</li> <li>• Pedigrees</li> <li>• Explaining Mendel</li> <li>• Heredity in Humans</li> </ul>	<ul style="list-style-type: none"> <li>• The Fossil Record</li> <li>• Geologic Time Scale</li> <li>• Darwin's Voyage</li> <li>• Interpretation of Darwin's Observations</li> <li>• Natural Selection</li> <li>• Sexual and Artificial Selection</li> <li>• Common Ancestry</li> <li>• Anatomical Similarities and Differences</li> <li>• Embryology</li> <li>• Mutations</li> <li>• Mutations and Evolution</li> </ul>	<ul style="list-style-type: none"> <li>• Learned and Innate Behavior</li> <li>• Behavioral Cycles</li> <li>• Animal Physical Adaptations</li> <li>• Plant Physical Adaptations</li> <li>• Competition vs. Cooperation</li> <li>• Symbiotic Relationships</li> <li>• Homeostasis in Plants</li> <li>• Homeostasis in Animals</li> <li>• Humans vs. Animals</li> <li>• Human Impacts on the Environment</li> </ul>	<ul style="list-style-type: none"> <li>• Genetically Modified Organisms</li> <li>• Genetic Screening</li> <li>• Gene Therapy and Personalized Medicine</li> <li>• Cloning and Stem Cells</li> <li>• De-extinction</li> </ul>