

## Student Learning Outcome (SLO) #2a – Apply scientific and quantitative reasoning to solve problems and increase knowledge.

### Scientific Inquiry

**Definition:** The attempt to describe and understand the physical and natural world by observing phenomena, organizing these observations, constructing a model to explain the observed event(s), and using this model to predict new phenomena to evaluate the quality of the model.

**This SLO is met in the following General Education categories: C.1 – Understanding Science and Technology** – Courses in this category describe and understand the physical and natural world by employing or understanding scientific method in analyzing situations, problems, or discoveries. Additionally, it may use procedural skills, and reason abstractly and quantitatively. Courses explore technology in ways to understand these concepts.

	Performance Levels			
	4	3	2	1
<b>Student output and quality of work</b>	<ul style="list-style-type: none"> <li>• Demonstrates a full understanding of fundamental scientific paradigms</li> <li>• Fully evaluates a model or models that explains an event occurring in the physical and natural world and selects the model that best fits an event occurring in the physical and natural world</li> <li>• Fully evaluates possible methodologies for gathering evidence regarding how well the model fits the events</li> <li>• Organizes data efficiently and communicates findings effectively</li> <li>• Interpretation of findings relates observations to conceptual model(s) and includes what the evidence suggests about possible interpretations of the observations</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates a basic understanding of fundamental scientific paradigms</li> <li>• Evaluates a model or models that explains an event occurring in the physical and natural world and selects the model that marginally fits an event occurring in the physical and natural world</li> <li>• Evaluates possible methodologies for gathering evidence regarding how well the model fits the events</li> <li>• Organizes data somewhat efficiently and communicates findings somewhat effectively</li> <li>• Interpretation of findings partially relates observations to conceptual model(s) and partially includes what the evidence suggests about possible interpretations of the observations</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates a partial understanding of fundamental scientific paradigms</li> <li>• Partially evaluates a model or models that explains an event occurring in the physical and natural world and selects the model that is a weak fit with an event occurring in the physical and natural world</li> <li>• Partially evaluates possible methodologies for gathering evidence regarding how well the model fits the events</li> <li>• Organizes data inefficiently and communicates findings ineffectively</li> <li>• Interpretation of findings minimally relates observations to conceptual model(s) and minimally includes what the evidence suggests about possible interpretations of the observations</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates minimal understanding of fundamental scientific paradigms</li> <li>• Minimally evaluates a model or models that explains an event occurring in the physical and natural world and selects the model that inappropriately fits an event occurring in the physical and natural world</li> <li>• Minimally evaluates possible methodologies for gathering evidence regarding how well the model fits the events</li> <li>• Fails to organize data and communicate findings</li> <li>• Interpretation of findings fails to relate observations to conceptual model(s)</li> </ul>