

Course Title & Number: PHY110: Introductory Physics

Competency Area: **SCIENTIFIC KNOWLEDGE / UNDERSTANDING** (Goal: Students will gain a broad base of scientific knowledge and methodologies in the natural sciences. This will enable them to develop scientific literacy, the knowledge and understanding of scientific concepts and processes essential for personal decision making and understanding scientific issues.)

Faculty submitting the Learning Outcomes: Pete Benzi

Date: 3/12/2013

[Instructions: Please match the Learning Outcomes in the left hand column to those of the course you are submitting for Gen Ed approval. List the corresponding course outcomes in the right hand column to indicate a match.]

BOR TAP's Learning Outcomes	Corresponding Outcomes for Course Named Above
1. Communicate using appropriate scientific terminology.	<ul style="list-style-type: none">• Distinguish between position, velocity and acceleration and employ those concepts to solve one-dimensional motion problems.• Recognize the differences between one-dimensional motion and two-dimensional motion and apply those results• Describe Newton's Laws of Motion and apply them to solving motion problems.• Classify types of energy and use Conservation of Energy to solve motion problems.• List Kepler's Laws of Planetary Motion and show how they are consistent with Newton's Law of Gravitation• Discuss the three basic phases of matter and how to define and measure their properties.
2. Use representations and models to communicate scientific knowledge and solve scientific problems.	<ul style="list-style-type: none">• Distinguish between position, velocity and acceleration and employ those concepts to solve one-dimensional motion problems.• Describe Newton's Laws of Motion and apply them to solving motion problems.• Classify types of energy and use Conservation of Energy to solve motion problems.• Employ Conservation of Momentum to solve collision problems.• Apply the laws of thermodynamics to solve problems.• Apply the basic laws that describe electric phenomena to solve problems.• Identify the basic behavior of magnetic phenomena and relate these to electric phenomena.

3. Plan and implement data collection strategies appropriate to a particular scientific question.	<ul style="list-style-type: none"> • Construct data tables, graphs and charts from data collected in a laboratory. • Evaluate the rigor of conclusions from laboratory experiments by comparing different data sets.
4. Articulate the reasons that scientific explanations and theories are refined or replaced.	<ul style="list-style-type: none"> • List Kepler's Laws of Planetary Motion and show how they are consistent with Newton's Law of Gravitation. • Discuss how the concept of energy and momentum conservation is preserved through various scientific theories.
5. Evaluate the quality of scientific information on the basis of its source and the methods used to generate it.	<ul style="list-style-type: none"> • Evaluate the rigor of conclusions from laboratory experiments by comparing different data sets. • Present data and conclusions in a coherent lab report. • Compare Kepler's Laws of Planetary Motion to Newton's Law of Gravitation and explain how they are consistent.
	<i>Additional Outcomes</i>