PHYS1105 - Fundamental Concepts in Physics

Credits:	3 (3/0/0)
Description:	Meets MnTC Goal Area 3. This is a demonstration-based course that provides an introduction to selected topics in classical and modern physics. Topics will include measurement and significant digits, graphing, dimensional analysis, mechanics of motion, vibrations, waves, sound, electricity and magnetism, light and optics, atomic physics and atomic spectra, lasers and optical fibers, nuclear physics and radiation. The course uses active learning techniques with lab-like experiences. It uses many demonstrations and instructor-guided small group problem-solving activities. Simple algebra is used to ensure that students grasp the course concepts. This course is intended for all students but is especially designed for non-science majors who want an appreciation of and a limited working knowledge in some major areas of physics.
Prerequisites:	• MATH0095
Corequisites:	
Pre/Corequisites*:	
Competencies:	1. Demonstrate an understanding of scientific theories and the scientific method. 2. Demonstrate an understanding of the fundamental concepts behind motion, vibrations, waves, sound, electricity and magnetism, light and optics, atomic physics, lasers, optical fibers, nuclear physics and radiation. 3. Demonstrate basic skill in the mathematical treatment of scientific data including the use of algebra to manipulate simple equations of physics. 4. Create a graph of a data set. 5. Compute experimental results using graphs. 6. Acquire a working knowledge of numerical uncertainty. 7. Recognize sources of error in measurements. 8. Demonstrate an ability to use dimensional analysis for problem-solving. 9. Write a detailed solution to a physics problem in the form of a report. 10. Analyze many different physics word problems. 11. Translate word problems into a mathematical form and solve them. 12. Summarize results of simulations performed as small group activities.
MnTC goal areas:	3. Natural Sciences

Can be taking as a Prerequisite or Corequisite.