PHYS1412 - University Physics II

Credits:	5 (3/2/0)
Description:	Meets MnTC Goal Area 3. This course is open to all students but is especially suited for engineering students. The course is a continuation of Physics 1411, University Physics I. However, it may be taken without having taken Physics 1411. Topics include thermodynamics, selected topics in electricity and magnetism, DC and AC circuit theory, optics, light and electromagnetic radiation, atomic physics, spectroscopy, lasers, photonics and nuclear physics. Lab equipment is used to illustrate these concepts. A mastery of college algebra as well as knowledge of calculus and trigonometry is essential for success in this course. Lab is required.
Prerequisites:	• MATH1134
Corequisites:	
Pre/Corequisites*:	
Competencies:	1. Demonstrate an understanding of scientific theories and the scientific method. 2. Demonstrate an understanding of the major topics described in the course description. 3. Demonstrate significant proficiency with the use of algebra and trigonometry to manipulate and analyze equations of physics. 4. Create a graph of a data set and apply appropriate mathematical treatment to compute results from a graph.. 5. Demonstrate the ability to express numerical uncertainty in a result and recognize sources of error in measurements. 6. Demonstrate the ability to use dimensional analysis for problem-solving. 7. Communicate effectively by writing detailed solutions to physics problems. 8. Analyze many different physics word problems, translate them to a mathematical form, solve them and communicate the result in writing. 9. Demonstrate an understanding of the hypothesis or physical principal that is measured or illustrated in a lab experiment. 10. Configure apparatus with minimal instruction and the use of given drawings. 11. Make informed decisions about alternative ways to acquire data. 12. Participate actively with the lab group. 13. Perform experiments and record measurements. 14. Report experimental results with their corresponding errors.
MnTC goal areas:	3. Natural Sciences

**Can be taking as a Prerequisite or Corequisite.*