

Course Outline for: PHYS 1111 College Physics 2**A. Course Description:**

1. Number of credits: 4
2. Lecture hours per week: 3
Lab hours per week: 2
3. Prerequisites: PHYS 1110
4. Corequisites: None
5. MnTC Goals: Goal #3 Natural Science

This course is a continuation of Physics 1110. This course uses algebra and trigonometry. Topics include oscillations and waves, electricity, magnetism, electromagnetic waves and optics.

B. Date last reviewed/updated: October 2023**C. Outline of Major Content Areas:**

1. Oscillations and waves.
2. Electricity and magnetism.
3. Electromagnetic waves and optics.

D. Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. Demonstrate an understanding of scientific theories and principles by: (2abc, 3a)
 - a. Stating and applying the fundamental laws and concepts relating to the course topics.
 - b. Identifying which physical laws and principles are appropriate for the solution of physics problems relating to various applications.
 - c. Using the appropriate physical laws and principles and College Algebra concepts and techniques to develop the mathematical expressions required to solve physics problems; solving those mathematical expressions.
 - d. Using the terminology of physics correctly.
2. Formulate and test hypotheses by: (2abc, 3b)
 - a. Performing laboratory, simulation, or field experiments.
 - b. Collecting data and analyzing it statistically and graphically.
 - c. Identifying sources of error and uncertainty.
 - d. Estimating the magnitude of error and uncertainty in data.
 - e. Using appropriate software to perform experiments and analyze data.
3. Communicate experimental findings, analysis, and interpretations by: (2abc, 3c)
 - a. Presenting laboratory results orally.
 - b. Orally explaining analysis and interpretations of laboratory results and relating the results to physics concepts and theories.

- c. Presenting written reports that interpret laboratory results and relate them to physics concepts and theories.

E. Methods for Assessing Student Learning:

Methods for assessment may include, but are not limited to, the following:

1. Written and/or oral reports
2. Homework
3. Projects
4. Quizzes
5. Exams
6. Final Exam

F. Special Information:

This course is not recommended for pre-engineering or other physical science majors.