

EASTERN NAZARENE COLLEGE

PY 301 Modern Physics Spring 2008

Instructor: John U. Free john.u.free@end.edu, X 3540
Homework Grader: Joe Cox
Laboratory Assistant: Joe, Paul, someone off the street, or me

SYLLABUS and COURSE DESCRIPTION

Course Overview: Modern Physics deals with those areas of physics that have been developed since the turn of the century. In particular Modern Physics is generally equated with Relativity and Quantum Physics. Both of these areas of physics revolutionized our view of the world to such an extent that every educated person needs to be familiar with them to understand our modern society.

Unlike much of "classical" physics--mechanics and electromagnetism--the concepts of Modern Physics can be easily developed in their historical context. This allows us to watch the development of the ideas as they grew from a simple discontent with the ability of a current theory to explain all the facts to a full theory shedding a vast amount of light on a variety of physical phenomenon.

In this course you will have the opportunity to become familiar with these theories and learn how to solve simple problems relating these theories to the "real world". I hope that you will find the material exciting and be challenged to learn it because it is simply very interesting.

Course Text: Modern Physics by Serway, Moses, and Moyer, 3rd edition, Thomson/Brookscole Publishing. This is one of the best texts available on Modern Physics. Another text we have used in the past that is just as good is Modern Physics by Tipler. There is a copy in the Student lounge area. Do not take the book from this area. It is there for all to use.

Class Time: Class is Monday/Wednesday/Friday from 11:30 to 12:25.

Grade: Your grade will be determined as follows:

Class grade

Exams: 40% Homework: 25% Oral Report: 20% Final Exam: 15%

Course Web Page

There is a course web page linked to my home page located at enc.edu/~john.u.free or you can go directly to the course web page at http://www.enc.edu/~john.u.free/PY%20301%202007-8/ModernPhysics_Frameset.htm. Here you will find all the material needed for the course. I will also place the Power Point lectures and some homework solutions on the course web page.

Homework: The homework problems are in bold in the Study Modules. Homework for each module is due the class following the end of a module.

Oral Report: You will be required to give a 20 minute talk with PowerPoint slides during lab time on Monday, April 28. You should plan to spend about 10 hours reading and preparing for the talk. The topics will be applications of quantum theory and include topics like spintronics, nanotechnology, and quantum computing. A list of topics will be posted on the course web page the second week of class. **You must choose a topic and get my approval by Wednesday, February 20.**

Exams: There will be three (3) exams during the term. See the daily class schedule for the exam dates.

Final Exam: The final exam will be cumulative, and multiple choice in the format of the GREs which some of you may take some day. The final exam is scheduled for Wednesday, May 14 at 8:00am in S-11.

Modern Physics for Honors: Anyone wishing to take Modern Physics for honors should contact me the first week of the semester and sign a contract. Physics majors should take Modern Physics for honors to cover Nuclear Physics and Elementary Particles which we will not have time to cover in the semester.

Disability: Any student with a documented disability needing academic adjustments or accommodations is required to notify me during the first two weeks of the course. All discussions will remain confidential.

Honor Code: You are required to submit work that is only yours unless you indicate otherwise, and permission from the instructor is granted. It is perfectly acceptable to work in groups on homework, but you must *not* simply copy work from someone else. If you copy work, or submit work that is not your own, you will automatically fail the course.