

Principles of Physics II

PHYS 2401-H01 Fall 2011

Course: Phys 2401-H01 (CRN 22775)

Meeting Time: 09:30-10:50 TR

Classroom: SC 112

Instructor: Roger L Lichti

Office: SC 101A

Hrs: 10-12 TWF

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Textbook: *Physics for Scientists and Engineers*, D.Giancoli, 4th Ed. This was bundled with Mastering Physics for online homework, which we will *not* be using! A used book may be suitable.

Topic Coverage: This is the second semester of the calculus based introductory physics sequence. We expect to cover most of the material in Chapters 21 – 35 of the above textbook. The course will be structured with short, mini-lectures introducing a topic, followed by discussion or activities that focus on examples that directly use the same material.

Course Goals: This course is intended to acquaint students with the basic laws of physics, to help develop a better understanding of the physical sciences, and to prepare for upper level science and/or engineering courses. The course will emphasize a combination of conceptual understanding and mathematical modeling of idealized problems, with a focus on developing problem solving skills.

Core Competency Statement: Students graduating from TTU should be able to explain some of the major concepts in the Natural Sciences and to demonstrate an understanding of scientific approaches to problem solving, including scientific ethics.

Expected Learning Outcomes: Upon completion of this course students should be able to:

- Describe the basis of scientific reasoning and distinguish scientific theory from speculation.
- Explain at a qualitative level the ideas of charge, electrostatic forces, and electric fields.
- Apply simple concepts and mathematical models to problems in electricity and magnetism.
- Analyze of simple electrical circuits and explain the function of various circuit elements.
- Use ray tracing and graphical methods to solve problems in optical image formation.

Assessment Methods: The expected learning outcomes are assessed through non-graded pre- and post-tests, classroom discussions, regular homework and lab exercises, and four exams.

Grading Policy: The course grade will be calculated based on

- 60% from 3 of 4 Exams,
- 20% from Homework and Discussion,
- 20% from Labs.

In general, work turned in late will be given a reduced maximum score and will not be accepted after graded work is handed back. Prior arrangements should be made if a due date or an exam will be missed due to other commitments, or illness, etc. Contact the instructor as soon as possible when the circumstances do not allow such prior arrangements.

Exams: All exams will contain both conceptual questions and problems for which you will be expected to show all work and in some cases explain your reasoning in some detail. Where possible, partial credit will be given for pursuing an appropriate approach even if final answers are not correct. The lowest of four exams will be dropped; however, it is always to your advantage to do your best on each exam. Never count on doing well on a later exam. Expect Exam I to cover Chpt 21- 24; Exam II covers Chpt 25-28; Exam III covers Chpt 29-31, Exam IV covers Chpt 32-35.

Homework will be assigned from each chapter (7-10 problems) with due dates roughly one week after coverage of that chapter. I will grade all of the assigned homework to get feedback as to what is or is not understood. Homework scores will be normalized to 90% of total available points, and that portion of the grade will include 10% for participation in discussions and activities.

The lab part of the course is administered separately and grades are submitted to instructors by the TAs. There is also a “recitation” component which is intended to help with homework and develop your problem solving skills. Since this lecture section is for Honors Students and Physics Majors, I expect you to take the labs beyond the standard manual exercises with some additional quantitative measurements of your own design as part of each week’s investigations

Strategies for Success:

- Always be prepared! Come to class having already read the material to be covered and with questions on what is not understood. This makes in-class discussions much more useful.
- Start homework early! Homework takes some time and thought. Just finding a solution somewhere does not contribute to learning. Write a *short* statement of the principle you are applying and why, along with the equations.
- After working through a problem with your notes or using the text, set it aside and then redo it a day or so later with no notes. Better still, try a similar but different problem with no notes.
- Make every effort to keep up! This course is fast and like trying to drink from a fire hose.
- Ask questions and seek help when you need it! See me when you get stuck – make a real effort on your own *before* going to anyone for help. Take advantage of all resources.
- Form or join a study group. Groups should include students at various performance levels. Often helping someone else with a problem will strengthen your own understanding.

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make the necessary arrangements. Students must provide appropriate verification from Student Disability Services (335 West Hall; 806-742-2405). Instructors are not allowed to provide accommodations until this official verification is provided.

The TTU faculty is strongly committed to upholding standards of academic integrity. As a minimum, this includes the requirement that a student *never* present work of others as their own.