

Syllabus for Physics 2514

Physics for Engineers

Instructor: P. Gutierrez Office: NH 339
Phone: 325-3961 ext. 36339 e-mail: pgutierrez@ou.edu
Lecture: 11:30 to 12:20 MWF in NH A270 Office Hours: 2:00 to 3:00 MF & 1:30 to 3:30 Tu
Web Page: http://www.nhn.ou.edu/~gut/Phys_2514/p2514.html

Texts:

 ◇ Physics for Scientist & Engineers *R.D. Knight*

Optional Texts:

 ◇ Student Workbook *R.D. Knight*

Other required materials

 ◇ H-ITT remote control (*Clicker*)
 ◇ Mastering Physics Student Access Kit

Suggested readings

 ◇ Feynman Lectures v. 1 *R. Feynman*

Grading:

◇ Clicker	5%.	◇ A: 100% to 85%.
◇ Disc. Sec.	10%.	◇ B: 84% to 70%.
◇ Homework	12%.	◇ C: 69% to 50%.
◇ Three Exams	14% (<i>each exam</i>).	◇ D: 49% to 30%.
◇ Final Exam	31%.	◇ F: 29% to 0%.

◇ Scores will be calculated to three significant figures and will then be rounded off to two significant figures (*for example* $84.5 = 85$, $84.4 = 84$)

◇ The current university regulations concerning incomplete (I) grades and dropping of courses will be followed.

◇ Cheating on exams will be treated according to current university regulations and will result in an automatic F for the course.

◇ Given the large number of students in this class, even a small number of people making noise can cause a great deal of disturbance making it almost impossible to listen to the lecture or for that matter to concentrate on the material. Therefore, I am asking that you refrain from talking in class, reading newspapers, or any other activity that causes noise. If the noise level during a lecture starts getting out of hand, I will impose grade penalties at my discretion. *In addition, please shutoff cellphones.*

Clicker:

◇ During the course of each lecture, a number of questions will be asked in order to ensure that you understand the concepts that are being discussed. The questions will be answered using the H-ITT system clicker. You will receive 2 points for a correct answer and 1 point for an incorrect answer. If your clicker is not working, if you forget to bring it to class, or if you have lost it, you will not receive any points.

- ◇ The final clicker score will be calculated using 2/3 of the maximum number of points possible. This is to make up for missed classes, broken clicker, etc. The maximum clicker score that you can receive will be 100%.
 - ◇ Register your clicker at <http://www.nhn.ou.edu/devid/> You will receive 10 free points if you register by 5:00 PM Friday January 27, 2006.
- Discussion section:
- ◇ During the discussion sections, you will have an opportunity to ask questions on any topic covered in the course. In addition, to help build up your problem solving skills, you will work through a problem in a group environment with help from your TA.
 - ◇ The problem worked in discussion section will be graded, the two lowest scores will be dropped.
- Homework:
- ◇ The goal of the homework is to expand on the material covered in lecture and to serve as a self test to ensure that you understand the material. Feel free to work on the homework with your fellow classmates, but remember that you will only get out as much from the homework as you put in. Homework will be accepted after the due date at a greatly reduced number of points.
 - ◇ The homework is done using the online system Mastering Physics. You will need to register at the Mastering Physics website. The instructions are in your access kit along with your identification code. Additional details are given on the course web page and at learn.ou.edu.
- Exams:
- ◇ Each in class exam will cover all material (*assigned or discussed in class*) that has not appeared on a previous exam and has either been assigned or discussed in class up to the Friday before the scheduled exam date.
 - ◇ The final exam will be comprehensive. Anything that has been discussed in class, or assigned can be on the final exam.
- Exam Schedule (*Tentative*):
- | | | |
|--------------|--------------|-------------------|
| ◇ Exam I | Fri. Feb. 17 | 11:30 to 12:25 pm |
| ◇ Exam II | Fri. Mar. 24 | 11:30 to 12:25 pm |
| ◇ Exam III | Fri. Apr. 21 | 11:30 to 12:25 pm |
| ◇ Final Exam | Tues. May 9 | 1:30 to 3:30 pm |
- Requisites:
- ◇ Prerequisite: Math 1823 Calculus and Analytic Geometry I
 - ◇ Corequisite: Math 2423 Calculus and Analytic Geometry II
 - ◇ The following topics are assumed to be known:
 - Algebra:
 - ▷ Solving equations for one or multiple variables;
 - ▷ Know the Pythagorean theorem;
 - ▷ Conic sections—know what the mathematical definitions of a parabola, ellipse, circle, hyperbola.
 - Geometry:
 - ▷ Know how to relate angles to each other through the various theorem.

- Trigonometry:
 - ▷ Know what the basic trig functions are: $\sin \theta$, $\cos \theta$, $\tan \theta$, ...
 - ▷ Know the basic trig relations such as: $\sin^2 \theta + \cos^2 \theta = 1$,
 $\sin(\theta + \phi) = \cos \theta \sin \phi + \cos \phi \sin \theta$, ...
- Calculus
 - ▷ Understand the concept of a limit;
 - ▷ Know how to take a derivative and understand what it means.

□ Tentative Course Outline

- ◇ The goal for this semester is to develop an understanding of mechanics. We will start with kinematics (the science of motion) and then move on to dynamics (the cause of motion), and finish with some applications.
 - Introduction to motion;
 - Kinematics;
 - Introduction to forces and Newton's laws of motion;
 - Dynamics;
 - Work & energy;
 - Momentum & impulse;
 - Conservation laws of energy & momentum;
 - Newton's theory of gravity;
 - Rotational motion of rigid bodies;
 - Oscillations;
 - Fluids and elasticity

□ Special Notice

- ◇ *Any student in this course who has a disability that may prevent him or her from fully demonstrating her or his abilities should contact me as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.*