Physics 1404 - 2

Spring 2008

9:30 - 10:50AM, TT

Professor:	Richard Quade
Telephone:	Office, 742-3781; Home, 799-4194; 7 ring answering machines.
Office:	Physics 14.
Office Hours:	MWF, 10:00 - noon, 5:00 - 5:30PM; TT, 11:00 - noon.
Nature of Course:	Trig and algebra based survey course in Physics.
Text:	D. C. Giancoli, PHYSICS, 5th or 6th edition.
Course Coverage:	Chapters 16 - 33. Some material omitted.
Styl of Course:	Primarily lecture note with parallel reading from the text. Problems assigned from the text but collected.
Exams:	Four, 55 minute exams. Jan 31, Feb 26, March 27, April 22. Closed book, no formula cards, no formulas, etc. in calculators.
Final Exam:	Comprehensive. All sections of 1404 take the same exam on the departmental exam day at the same time. Place to be announced.

Point Distribution: Six grades -

Hour exams, 4 grades
Final Exam, twice

Drop one part or the lowest 20%.

Grades: If you make the following, I can guarantee you

Lecture only		
	85%	A
	72%	B
	55%	C
	40%	D

Any one of the following things will lower your grade one letter: Below 80% in Lab; more than one absence in Lab; more than three recorded absences in lecture. Excused absences count first against the 'free' ones.

There are no make-up exams!!! For excused absences, it is possible to substitute the Final Exam grade for the missed exam. See the professor after the exams are returned in his office during office hours.

When you drop the lecture, you will automatically drop the lab. It is up to the next professor to what extent a lab grade will carry over upon repeating the course. See the current professor before dropping.

This classroom is food, drink, and tobacco free.

Students with satisfactory lab grades to carry over must sign in after the first lecture.

Students with handicaps and/or disabilities that require special attention from me should contact me as soon as possible during my office hours.

The learning outcomes for the students who successfully complete Physics 1404 are to gain a mastery of introductory level concepts in physics and to apply these concepts to 'real' problems with numerical solutions. The students will learn how to solve problems that are not exactly the same as those seen before but are parallel in the applications of the concepts.

The learning outcomes are evaluated by putting several different style problems/questions on the exams that require different basic approaches for analysis and solution. By grading the exams himself, the professor is able to ascertain how each student is doing with regards to the stated learning outcomes.

Course Topics

The topics with which the students will gain introductory mastery are: Electrostatics - Coulomb's law, fields, potentials, die-electrics, and capacitors; current, resistance, and Ohm's law - linear and loop circuits; resistor and capacitor networks; AC voltages, current, and power; magnetic fields and magnetic forces of/on point charges and currents; electric motors; Faraday's law of induction - changing field and moving wires; generators and alternators; mutual and self inductance and transformers; L - C circuits; the four basic principles of electromagnetic theory as developed by Maxwell; Reflection and refraction of light - spherical mirrors and lenses; interference and diffraction of light including thin films and air wedges; optical instruments; limit of resolution; special theory of relativity - concepts of space and time, applications of $E = mc^2$, momentum, and inertia; topics in 20th century physics including the structure of matter, interaction of radiation with matter, and the quantum theories of atomic physics; properties of the atomic nucleus including nuclear reactions and nuclear energy; fundamental particle physics including quarks, leptons, and gauge bosons; a smattering of astrophysics and cosmology - general relativity, Hubble expansion, cosmic microwave background, and critical density.

Needed Functions of a Non-Programable Calculator

sinx, cosx, tanx, the inverse trig functions; $1/x$ or x^{-1}; x^2 and $\sqrt{x}$; pi; y^x; exponential or scientific notation; and I find it helpful to have a memory or so.

These calculators cost anywhere from $8.00 to $15.00. I find the TI calculators to be best. You do not want one that has 'BA' in its name.

Test Packet

The test packet is at Copy Tech in SUB, middle door, up stairs, on right. There is a copy of each of the last 10 tests that I have given. And there are a few samples of final exams. It costs $2.15. You must remember that the final exam is comprehensive and not taken from your 4 hour exams. I make up all exams without looking at the previous exams. In my mind there is essentially a very big pool of problems and questions from which the exams and final exam can be taken. And every semester I come up with a few new problems and questions.