PHYS 221, Introductory Physics II
Spring 2013
MTWF 1:25-2:15 PM
ROSS 0060

Instructor: Wendy Adams
Office: Office 0232C Ross Hall
Hours: MTWF 12:00 – 1:00 and by appointment
Office Phone: 351-2419 Physics Department: 351-2961 Home Phone : 539-6154
Email: wendy.adams@unco.edu
Course Website: http://www.unco.edu/nhs/physics/faculty/adams/Phys221home.htm Check it often!!
MasteringPhysics: www.masteringphysics.com Course ID: MPADAMSS13

If one is to go on to advanced learning of science and careers in science and related fields, it is a necessary skill to be able to learn, think and take responsibility. It is necessary to be able to solve problems different from any other problem encountered before. Few professionals are hired to grind mindlessly through steps that a computer can execute.
-Richard Steinberg

Objectives:

In pursuit of the why!

This course will emphasize *conceptual understanding* along with problem solving skills. Making sense of evidence collected about the world we live in. This will be done in the context of physics specifically in the areas of waves: Sound, Optics, Electricity and Magnetism. We will also engage in a brief inquiry of modern physics.

This course provides content necessary to enable teacher licensure students to address Colorado P-12 Academic Standards in Science.

Prerequisites:

Physics 220, college algebra and basic trigonometry. This course involves intensive problem solving so a working knowledge of algebra is required.

Required Materials:

1. College Physics: A Strategic Approach Technology Update with MasteringPhysics, 2/E by Randall Knight, Brian Jones and Stuart Field.
2. Student Workbook for College Physics: A Strategic Approach Volume 1 (Chs. 1-16) and Volume 2 (Chs. 17-30), 2/E
3. Scientific calculator – must have scientific notation and trig functions
4. Pencil and a BIG eraser

Class time:

You are expected to read the assigned material *before* class each day. Class time will be used to answer your questions and to practice difficult concepts and problems. It will not but used to "cover the material." During class you are not expected to take notes. All class materials will be posted on the course calendar. Rather than playing the role of a scribe during class you'll be using your mind and working with other students to make sense out of and practice physics.

Recitation:

The three hours that you signed up for on either Tuesday or Wednesday as "lab" will actually be two different things. The first hour and a half will be devoted to activities that are designed to enhance your understanding of key ideas dealt with in class. You'll work through worksheets in small groups at your own pace.

It's important for you to understand the material. You must take responsibility for your own learning! If you find yourself ahead of your partners, try to explain some physics to them. (Explainers always learn more than listeners.)

Lab:

The three hours that you signed up for on either Tuesday or Wednesday as "lab" will actually be two different things. The first hour and a half will be Recitation as described above. The second hour and a half will be a short hands-on lab experiment related to the concepts that were addressed in the recitation.

Homework:

Homework sets will be assigned weekly and will generally be due each Tuesday *before* class begins. Late assignments will receive half credit if received before class begins on the following class day. No credit will be given for assignments after that.

Homework assignments will be a combination of MasteringPhysics (MP) and problems that are done long hand, using the numbers out of your text (not MP) and turned in. Long hand problems will be graded on work shown.

This course encourages collaborative teamwork on homeworks and recitation worksheets, a skill that is an essential feature of science, and valued by most employers**.**

Quizzes:

There will be two types of weekly quizzes. 1. Online pre-reading quizzes posted on MP and 2. In class quizzes over the week's homework. One of each type of quiz will be dropped – no exceptions.

Online quizzes will be posted at least a day in advance of the deadline. It is advised that you complete the quiz with time to spare, as technical difficulties may arise and prevent you from completing the quiz on time.

You are responsible for verifying that you are getting credit for online work. It will not be possible to correct several missing items that were discovered at the end of the semester. Only one of each type of quiz will be dropped.

Exams:

Exams will consist of an in class and take home portion. The in class portion of each exam will be a combination of multiple choice questions and long-hand type problems and graded on the work shown. For this reason, I strongly recommend that you carefully work out each MasteringPhysics problem set on paper as if you were going to turn in your work. This work can be used as future reference and is necessary practice for the quizzes and exams. Equations will be given on each exam.

The take home portion of each exam will contain mainly conceptual questions which require short essay answers. This gives you an opportunity to practice expressing scientific information in a written format. Something rarely asked for as a science major but required of every science related job. You are encouraged to work together on the take home portion of exams but you must turn in your own work.

Imaging Project:

The project includes both an individual and group portion. Individually each person will completed a research paper on their assigned imaging method and 4-5 power point slides on the topic. As a large (~10 – 15) group you will create one 15 minute presentation that will be presented the next class day after lab. Individually students will be responsible for constructive comments about the other class presentations.

Final Exam:

The final exam is cumulative and scheduled for Thursday, May 9, 2013 from 1:30 PM to 4:00 PM. Students will be expected to take the exam at this time and should **NOT** make plans that conflict.

Grading:

Method of Assessment	Approximate weight
Home Work	10%
Quizzes/In Class Activities	10%
Exams	30%
Imaging Project	10%
Final exam	20%
Recitation	10%
Lab	10%

Grading will be on the +/- scale.

Minimum Final Exam Scores: You must receive a minimum of 60% on the final exam to receive a C or higher regardless of your overall course percentage. You must receive a minimum of 50% on the final to receive a D regardless of your overall course percentage.
You must ***show all your work*** for credit on homework, quizzes and exams.

Student Expectations:

- Students are expected to work an average of 2-3 hours outside of class for each hour spent in class.
- Students are expected to read assignments in text and related literature.
- Students are expected to turn in assignments on announced due dates.
- Students are expected to take tests and quizzes on the days they are given
- Students are expected to be responsible for their own work and be thoughtful of others.
- Students are expected to follow UNCs Honor Code and Student Code of Conduct http://www.unco.edu/dos/communityStandards/index.html

How to succeed in this course: Being "good" at physics comes with practice. Homework problems often involve two steps: deciding which *principles* of physics apply, then determining the answer (which may involve calculations.) Recitation, in class group activities and take home portions of exams concentrate even more on principles and concepts, and your ability to explain what you're doing. You are encouraged to talk about physics with your friends. The thing to talk about is not which number to put where (the calculation is the easy part), but the reasoning that helps you decide what to do with the numbers. Please, get help *early* if you are struggling with any aspect of the course (from Dr. Adams/your lab instructor/study group/tutor...) We're here to help!

Disabilities:

Students with disabilities who believe they may need accommodations in this class are encouraged to contact Disability Support Services (970) 351-2289 as soon as possible to better ensure that accommodations are implemented in a timely fashion. Students with accommodations must provide the disability access form at least 3 days before accommodations are needed.

There will be no make-up exams or quizzes! If you are going to miss class, arrangements must be made in advance.

Everything on this syllabus is subject to revision throughout the semester; however, adequate notice will be given.