Syllabus

Physics 106 - Spring 2015

Syllabus

Professor

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Office Hours

My regularly sheduled office hours are Monday 11:00 -11:50, Tuesday 1:30 - 2:30, Wednesday 2:00 - 2:50 and Thursday 3:00 - 4:00 or by appointment. My current teaching schedule will be posted on my office door.

Text

- *College Physics* (Tenth Edition) by R. A. Serway and C. Vuille
- *RealTime Physics Module 3* by D. R. Sokoloff, R. K. Thornton, and P. W. Laws
- *RealTime Physics Module 4 by D. R. Sokoloff*

Course Description

This course is the second in a two-semester introduction to physics. Methods of the calculus will not be used, and much of the requisite algebraic and trigonometric foundation will be reviewed as needed.

The objective this semester is to introduce concepts and problem solving techniques in electricity, magnetism, optics, special relativity, and atomic and physics. We shall consider illustrations and applications from a wide range of physical phenomena in the real world, and wherever possible we shall seek biological examples.

Attendance and Participation

Attendance in class is required. Collaborative class exercises are scheduled for many lecture meetings. I will not call the roll daily, but class participation will be taken into account in computing the final grade. Inadequate participation can result in the deduction of up to three points in the final course grade.

In this course we will be building upon previous experience in the Department of Physics in implementing a method of learning in which you will be an active participant. My own experience, bolstered by extensive published research by others in the field of science education, has convinced me that you will learn less if you passively listen as I either repeat or only slightly repackage arguments from your text. I want to encourage you to become critical thinkers. You will not have learned physics if you are only able to plug numbers into equations. Research has shown the ability to analyze unfamiliar situations is significantly improved through a process called peer instruction. After reviewing a physical concept, I will pose a related question (frequently accompanied by a demonstration). I will give you a couple of minutes to formulate an answer on your own. Then I will give you a few minutes to convince your neighbors. We will tally the results and collectively draw appropriate conclusions. I think you will find this an enjoyable, sometimes frustrating, but ultimately rewarding process. (And along the way will all get to know each other a little better.) Needless to say, in order for this to work, you will need to be well-prepared (by having read the relevant sections in your text) and you must seriously engage in these discussions.

You will not benefit from our class meetings unless you prepare by carefully doing the assigned readings. If anything in the readings is unclear, you should be prepared to ask questions in the course of our classroom activities. In any case, we will not discuss in class every topic covered in the readings. The peer instruction technique is designed to synthesize and solidify understanding which you have already gained in your readings. Although I will summarize some important points, my discussion should by no means be understood as an introduction.

Participation depends upon being actively engaged, and is demonstrated also in part by asking questions in lecture and lab when they come up.

Written Assignments

Problems and conceptual questions are assigned daily. They are located in the Schedule page of the Moodle website for the course.Your homework should be kept in a loose leaf notebook. I will be collecting the relevant pages (without prior notice) to monitor your progress in the

course. You are encouraged to work with your classmates on these assignments. Solutions will be available on Moodle, with a link from the Schedule page. I will make them available immediately following the lecture period on which they are due. Highlighted links to simulations and other resources used in class will appear on the same Schedule page in the Topics column.

I will follow the same procedure as last semester and assign a grade to collected homework on a "check" scale

1. √+: perfect or near perfect work
2. √: good work with one or two small conceptual/numerical errors
3. √-: dedicate more time to studying the topic, and come and see me!

Reading Assignments and Quizzes

Daily reading assignments are to be completed **before** the class meeting on which they are assigned.

Every Friday there will be a 15 minute in-class quiz. The quizzes will be on the week's lecture topics, and will include both a conceptual and a problem solving component.

There will be three hourly exams and a comprehensive final examination. The in-class tests are scheduled for the following **Fridays**: **2/27, 4/3, and 5/1**. Fifteen minute quizzes will be administered on all remaining Fridays.

Laboratory

The laboratory portion of this course will consist of weekly experiments from the *RealTime Physics* module. Before each lab you must complete the Pre-Lab Preparation, which will be collected at the beginning of the lab. Labs will be conducted in small groups of at most four people, and not less than two. The post-lab homework will be due at the beginning of the *next* lab period, along with the following Pre-Lab Preparation.

In-class Examinations

These examinations take place during the regular class times in *lieu* of the quiz and lecture. These exams will test you on material covered since the last exam. The exams, like the quizzes, will include some multiple choice questions and some long-answered questions. For the first two exams only, test corrections will be possible for 1/2 of your missed points. I will describe exactly what is expected for these corrections.

Examination

The cumulative final examination will be given during the final exam week from 12:00 to 2:00 on **Tuesday, May 12**.

Make-Up Policy

There are no make-ups for missed assignments, labs, or tests. For Austin College events, such as sports team travel or class field trips, I will require a week's notice prior to your absence, and you are expected to come to see me; if you will be missing a quiz, exam, or lab, then we will organize an early date for you to take it. Personal emergencies will be dealt with on a case-by-case basis and may require written proof of absence.

Grading

The final grade will be computed as follows:

Homework	7
Participation	3
Quizzes	10
In-class Examinations	45
Final Examination	15
Laboratory	20

Time Commitment and Work Habits

Learning the practice of physics can be an exciting but often demanding endeavor. To be successful you need to commit time and effort on a continuing basis; sporadic, intensive catch-up efforts will not usually yield satisfying results. Daily reading and study will be far more productive than other approaches. How much time is needed? The answer is probably different for each individual, but introductory physics students at small liberal arts colleges spend an average of 6-8 hours a week outside of class.

Please feel free to ask me for help when you encounter difficulty. I consider the help I give students outside of class to be an important dimension of teaching effectiveness and I strongly recommend that you take advantage of this offer. Difficulties are best resolved when they arise; do not postpone action on them.

Academic Integrity

You are expected to abide by the college academic integrity policy which is outlined in the *Environment*, the student handbook.The following activities constitute a not necessarily exhaustive list of offenses which are in violation of the college's Academic Integrity Policy:

Turning in work done by someone else.
Working on an assignment with others when the instructor asked for individual work.
Receiving unpermitted help on an assignment.
Writing or providing a paper for another student.
Getting Q/A from someone who has taken test.
In a course requiring computer work, copying a friend's program rather than doing your own.
Helping someone else cheat on a test.
Falsifying lab or research data.
Fabricating or falsifying a bibliography.
Copying from another student during a test or examination without his or her knowing it.
Copying from another student during a test with his or her knowledge.
Copying a few sentences of material from a written source without footnoting them in a paper.
Turning in a paper either purchased or plagiarized, in large part, from a term paper "mill" or website.
Copying a few sentences of material from an Internet source without footnoting them in a paper.
Using unpermitted crib notes (cheat sheets) during a test.
Copying material almost work for word from any written source and turning it in as your own work.
Altering graded test and submitting it for additional credit.
Turning in a paper copied from another student.
Using a false excuse to obtain extension on due date.
Hiding or damaging library/course material.
Giving aid to anyone who has not yet taken the daily online reading quiz
Receiving aid on an online reading quiz
Cheating on a test in any other way
Cheating on a written assignment in any other way.

These general policies apply unless explicit written instructions to the contrary are distributed by the instructor. You must become familiar with the requirements set out in this syllabus. If there is ever a question about the appropriateness of an action, ask the instructor for clarification.