Syllabus for Physics 141: Fall 2012

Dr. Phil Segre
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Lecture: MWF 12:00 - 1:05
Lab: Mon. 2:30-5:30 or Tues. 1:40-5:40
Class #4735

Goals of the Course

Using the scientific method, we will learn and understand the basic concepts and principles of physics. To achieve this goal, we will use laboratory exercises, discuss real-world applications, and employ some algebra. We will be covering a lot of important concepts during this semester.

Important Information

Instructor Contact Information: You can reach me by emailing at phil.segre@emory.edu.

Blackboard: I will post all lab reports, homework assignments, and exam solutions on our **PHYS141 blackboard conference.**

Office Hours: My office is in the back room through Pierce 207. My set office hours each week are **Wed. 1-3** and **Thurs. 1-3**. I have an open door policy: if I am in the office and the door is open, feel free to come in. We can talk about physics and homework assignments, your student life, and anything else you would like to chat about. You can also email me to make individual appointments.

Tutor: Two Physics tutors, Vijay Putatunda and Matt Dorian, will be available throughout the semester. The day/time and location of help sessions will be announced in class.

Prerequisite: Math 111 or 110A.

Textbook: Serway and Vuille, College Physics, Ninth Edition.

Homework: There will be a homework assignment every week, typically due on Fridays, consisting of approximately 10 problems.

Daily reading: After each class, I will assign the reading that you are REQUIRED to do BEFORE coming to class the next time. By doing the reading before coming to class, you will be better prepared to follow the material covered in class.

Tests and Exams: There will be three tests and one final exam. The tests will be on the material covered up until that point (the second test will cover the material after the first test and, similarly, the third test will be on the material after the second test, see detailed schedule below). The final exam will be cumulative. There is no such thing as a make-up exam!

Attendance: I find attendance and class participation to be vital for this course. You will find the homework much easier to do if you come to class and you actively participate by asking questions. You are allowed 4 absences regardless of whether you have a valid reason for them or not. Therefore, I recommend that you save those for when you really

need them (eg. you get sick) instead of skipping class. If you exceed the 4 absences, I will deduct 2% off of your final grade for every additional absence. ATTENDANCE IS MANDATORY FOR LAB SESSIONS.

Tardiness and Cell Phones: Being late for a class, or having your cell phone ring in the middle of one, is distracting not only for you but also for me and for your classmates. Students who are late for class for more than 10 min will generally not be allowed to attend that days lecture and will be considered absent. Students whose cell phone rings during class will be asked to leave the classroom and will be considered absent. Additionally, NO use of laptop computers will be allowed during lectures. For the same reason, I will not allow food or drink during class, with the exception of a bottle of water.

Grading:

Grades are assigned on the plus-minus scale. The final grade will be determined based on the following weighting:

(1) Homework: 15%
(2) Exams: 15% each, and 10% for lowest exam, 40% total.
(3) Labs: 20%
(4) Final: 25%

Important dates:

Make sure you include these important dates in your planner/calendar.

DATE	*DESCRIPTION*
Monday, Sep. 24	Test #1
Mon/Tues, Oct. 29/30	Draft for first full lab report due in lab
Wednesday, Oct. 22	Test #2
Mon/Tues, Nov. 12/13	First full lab report due in lab
Monday, Nov. 19	Test #3
Mon/Tues, Dec. 3/4	Second full lab report or final project presentation during lab
Tuesday, Dec. 18, 9-12 am	Final Exam

Working with the Honor Code: The Oxford College Honor Code applies to this course as follows:

- Quizzes, tests, exams: The work presented in these assignments should be your own. No collaboration permitted. You are expected to follow the instructions

given by me and abide by the Honor Code. Sharing calculators, pencils, etc., is not allowed.

- Lab report, lab project: On these assignments you can only collaborate with your lab partner.
- Homework assignments: It's fine to work together on homework assignments but students are expected to solve and understand the problems themselves.
- Study groups: You are encouraged to form study groups and study concepts together and explain to each other things that you were not clear about from class or from your reading assignments.

Religious Holidays: You need to tell me immediately if any religious holidays will interfere with the course, especially the final exam and tests.

Requirements for the Lab portion of this course

As noted above, the lab portion of the course constitutes 20% of your grade. For the lab portion of the course the requirements are as follows:

(1) Bring your lab handout: You will be given a printout of the lab a week in advance (All labs are on Blackboard also). You are expected to have read the lab handout BEFORE coming to the lab and you will take a pre-lab quiz before each week, and a post-lab quiz the following week.
(2) Answer all the questions in the lab handout: Some of these questions will require that you spend time at home analyzing the data and drawing graphs. ALWAYS bring the answers to those questions in next weeks lab for me to check. Failure to present these answers will result in a failing grade on that weeks lab.
(3) Understand the lab: Experiments require repetition in order to ensure that your data is reproducible. Sometimes students regard this repetition as busy work. However, remember that at all times you need to be thinking about what your data means, if this is what you expected and why (or why not) and, also, what the reproducibility (or lack of) means. Essentially you are expected to be thinking about what conclusions you can draw from your data. There will be post-lab quizzes to ensure that you have understood the data and the purpose of the experiment.
(4) A full lab report (for due date, see the table above). For one lab experiment (I will announce which one) you will have to do one lab report. I have given you more detailed handouts on what a proper scientific lab report should look like. The lab report will be corrected and graded and detailed comments will be given. If you desire, you could resubmit the lab report (after addressing all the comments) and the lab report will be re-graded, erasing in this way the first grade. You can only resubmit the lab report once.
(5) Towards the end of the semester you will have a choice of a) either doing another full lab report (on an experiment of your choice, this time) or doing a small final project. For the final project you will have to pick a topic and, using the physics you have learned throughout the semester, you will have to explain how it works during a 15min oral presentation. As an example, a topic can be How do rockets

fly? Depending on your preference (how many people decide to do the project) we will have the last lab section of the semester devoted to the presentations. The final projects will be group projects.

Book chapter sections covered in Phys. 141

We will cover chapters 1-9, as well as chapters 13 and 14 in the textbook, Serway and Vuille, College Physics, Ninth Edition.

- Chapter 1: Introduction.
- Chapter 2: Motion in one dimension.
- Chapter 3: Vectors and two-dimensional motion.
- Chapter 4: The laws of Motion.
- Chapter 5: Energy.
- Chapter 6: Momentum and Collisions.
- Chapter 7: Rotational motion and the law of gravity.
- Chapter 8: Rotational Equilibrium and rotational dynamics.
- Chapter 9: Solids and Fluids.
- Chapter 10: Thermal Physics
- Chapter 13: Vibrations and Waves.
- Chapter 14: Sound.

Lab Schedule

The experiments we will be conducting this semester are on the following topics.

Lab 1: Logistics, Math Review, Introduction to Physics
Lab 2: Average vs. Instantaneous velocity
Lab 3: Free fall
Lab 4: Projectile motion
Lab 5: Resolution of forces
Lab 6: Newtons second law
Lab 7: Conservation of Mechanical Energy
Lab 8: Ballistic pendulum
Lab 9: Moment of Inertia
Lab 10: Torque
Lab 11: Archimedes Principle