

Spring 2016 PHYSICS 100 – The Physical World

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Office Hours: walk in and by appointment

Course Summary

Welcome to Physics 100! The aim of this general education course is to introduce you to the main concepts of Physics, a science endeavoring to understand the basic patterns of Nature. These concepts, some firmly established and some still evolving, are providing us with a picture which is remarkably beautiful and elegant, and yet amazingly successful at describing our universe, at helping us to understand natural phenomena, and at making predictions about novel situations and contraptions. Another goal of this course is to illustrate the scientific way of thinking about things which arouse our curiosity. By employing a few techniques of analysis and by recognizing the action of basic physical principles, you will gain new insights into many phenomena which surround you.

The course is designed to be non-technical, and you won't need to work with lengthy formulas or perform bulky calculations. While it's an incontestable (and curious) fact that Nature communicates most effectively in the language of mathematics, our aim will be not to converse, but to eavesdrop. Nevertheless, even a qualitative discussion must strive to be accurate and precise. In fact, one of the main purposes of the homework and exams will be to strengthen your awareness of what it means to give a careful and logical explanation and to avoid fuzziness; a skill whose importance extends far beyond science.

To avoid misunderstanding, though, you need to be aware that even a conceptual physics course cannot, should not, and will not avoid all math. Even when only eavesdropping on Nature, we have to use and manipulate numbers in order to hear anything. Therefore you will see and do quantitative problems involving elementary algebra: arithmetic manipulation, squares, square roots, Pythagorean theorem, solving a simple equation for an unknown quantity, etc. You can see the level of the math involved by thumbing through the textbook.

It's also fair to forewarn you not to expect an easy class. We will cover a lot of material over the next fifteen weeks, and absorbing and applying it requires practice, hence a fair amount of homework. So please don't be surprised if you end up spending a lot of time on this course: science is a beautiful part of our culture and civilization, but does not come about effortlessly.

Text and other Supplies and Resources

- o P. Hewitt, Conceptual *Physics* with Mastering Physics package for Homework.
- o Physics 100 Laboratory Manual. More information at the first laboratory meeting.
- o Notices, grades, and other information will be posted on the course's Blackboard course site.
- o For additional help, TAs are available in ACB 431, 10 am to 5 p.m., Monday-Friday. See the schedule at <http://dornsife.usc.edu/physics/teaching-assistant-resources/> .

Grading

Your grade will be determined by your work on:

- homework (20%)
- two in-class midterms (15% each)
- final exam (30%)
- lab (20%)

Lectures

Don't underestimate the value of questions during the lecture period. Some students are reluctant to pose questions, which they fear may appear silly. Don't worry: invariably, there are many others in the room who are bothered by the same thing but are afraid to ask. Questions are fun to discuss and help to identify points that have not been explained well. So my answering questions and getting everyone together on the issue is much more useful than simply continuing to lecture.

Laboratory

Physics is first and foremost an experimental science, and the laboratory is an essential part of our course. Besides, the university's General Education requirement mandates a laboratory component. So the bottom line is that you need to register for a Physics 100Lg laboratory section. Labs will be held in SGM 218.

The lab sections begin on the second week of classes and then take place every other week. Be sure to attend the first lab meeting so that your spot is not given away.

For all issues regarding the laboratory component of this course, you should contact (1) your TA and (2) the laboratory director, Joseph Vandiver. Additional information on lab policies and procedures is provided in the Laboratory Manual.

Examinations

The in-class midterms will cover material incrementally through the semester, and the final exam will cover the full semester's material. All the tests will be two hours long and closed-book; a cover sheet summarizing some essential information will be provided.

Students with special examination requirements as documented by the Office of Disability Services (see below) are asked to present their paperwork to me as soon as possible after the start of classes.

Students with Disabilities

Students who need to request accommodations based on a disability are required to register each semester with the Office of Disability Services and Programs (DSP). In addition, a letter of verification to the instructor from DSP is needed for the semester you are enrolled in this course. If you have any questions concerning this procedure, please contact DSP at 740-0776, http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html.

Important Dates

University holidays – January 18, February 15, March 14-20

Midterms – February 18, March 31 (subject to change)

Last day for class drop without a "W," or for a P/NP change (grade of P≥C-) – February 26

Last day for class drop with a "W" – April 8

Last day of classes – April 29

Final exam - Thursday May 5, 2-4 p.m.