
Location	Time	Instructor	Office	Office Hours
Broida 1610	MWF11:00-11:50	Francesc Roig roig@physics.ucsb.edu	Broida 6139	M 2:00 - 4:00 Th 3:00 - 4:00

PHYSICS 6C WEB PAGE: <http://www.physics.ucsb.edu/~phys6C/fall2009/>

Introduction

Though physics is difficult, in a real sense it is the simplest of the sciences: chemistry deals with molecules that contain many atoms, biology deals with complex living systems that contain many molecules. What does physics deal with? Idealized balls on springs, waves on strings, falling objects, single electron atoms, and other very simple systems.

Since physics deals with the simplest systems, it is not surprising that physicists can do a good job treating these systems. The method of physics--in particular, mathematically modeling phenomena using fundamental principles--is increasingly being used in other fields including biology and medicine. A real value of studying physics is learning this powerful method in the easiest way--on the simplest systems.

Text

The text for this course is **College Physics 8 th ed. by Young & Geller**

Homework

HOMEWORK WILL NOT BE COLLECTED FOR GRADING.

HOWEVER, so far as anyone knows, just about the only way to develop the ability to do physics problems is to work at doing them. You can only do this effectively if you work on them by yourself. This is not to say you should not study in a group, only that if you want to be able to do physics problems under the pressure of an exam setting, you need to learn how to do them for yourself. For this reason it is very important **not** to look at the solutions until you have worked the problems for yourself. It is also important to study the chapter very thoroughly **before** attempting to do the problems. Problems alone will not serve to give you a clear understanding of the basic principles needed to solve new problems.

The solutions to the HW sets will be posted in the Physics 6C web site:

<http://www.physics.ucsb.edu/~phys6C/fall2009/>

Learning Physics

Physics is really the art of applying basic principles to analyze different situations. The principles never change, only the situations do. You can't expect to learn much Physics by osmosis! A method of studying that you might find helpful is to study the chapter **very** carefully

up to the first example. Do not look at how they do the example. Just read the question part of the example and try to work it out for yourself, without looking at how the book does it. If you can't do it for yourself, then you really don't understand the material you just studied. Study it again, with the example question in mind, to pick up on what you missed the first time. Only after you understand the material well enough to do the first example on your own, should you proceed to the next section. Notice that what is being suggested here is very different from memorizing how to do each example! That would be basically useless. Similarly, knowing how to solve every homework problem isn't all that useful, when the exam asks you to apply the same principles to analyze a situation which seems totally different from any of the homework problems. The point is that you must use the examples and the homework to tell you what principles and techniques you have not mastered, and to reinforce those you have. When you finish a problem, don't just put it behind you with a sigh of relief! Instead, pat yourself on the back, run it through your mind a few times and focus on the principles you used to solve it. It is those principles you need to understand. Don't imagine that you should just be able to sit down, read a problem and then either be able to do it or not. Part of what you are trying to learn is to examine a situation you don't understand and gradually figure out what is going on. You should try hard to solve a problem for at least 30 minutes by yourself before you get help or look at the solutions. If you do have to look at the solutions try to just take a peek and then go back to doing the problem on your own.

Grading in Physics 6C

Your grade will be based on your two midterms and your final. Each midterm will count for 25%, and the final for 50%, when computing your average.

The total points for the two midterm exams and for the final exam will be added up at the end of the course, weighted by the percentages given above. From this the total point score (in % of the total number of points) will be calculated. Your letter grade for the midterm exam and the final exam will be determined using the following scale:

<i>Percentage of total points you obtain</i>	<i>Your course grade</i>
95% or greater	A+
85% or greater	A
80% or greater	A-
75% or greater	B+
70% or greater	B
65% or greater	B-
60% or greater	C+
55% or greater	C
50% or greater	C-
45% or greater	D+
40% or greater	D
less than 40%	F

If you miss a midterm, and you can provide a physician's note, you will be given a make up midterm. Otherwise, your midterm score will be zero.

If you miss the final, and you can provide a physician's note, you will receive a grade of Incomplete, and you will have to take the final the next time that Physics 6C is offered. I will then use the score on your final exam and your score in the midterm exams for this fall

quarter to update your Incomplete to a letter grade. If you miss the final and you cannot provide a physician's note you will fail the class.

Midterms

The midterms will be given during the regular class time in Broida 1610. The two midterms will consist exclusively of **multiple choice conceptual questions and problems.**

Midterms Schedule:

Midterm #1 Monday, **October 19** Covers Chapters 23, and 24

Midterm #2 Monday, **November 16** Covers Chapters 25, 26 , and 27

Final Exam:

Friday December 11. 12 noon to 3 p.m. Covers Chapters 23 through 30

The **Final Exam will be comprehensive. That is, it will include ALL the chapters** covered during the quarter and it will be **multiple choice** format.

What to Bring to the Midterm and the Final

Bring a **PINK SCANTRON form ParSCORE**, a number 2 pencil plus a photo ID to the midterms and the final exams. The midterms and the final are closed book, closed notes exam. **There will be problems on the exams which do not seem like the homework.** They can, however, be solved by applying the principles you have learned. One major goal of this course is to teach you how to analyze a new situation using basic principles.

PHYSICS 6CL: Labs Sections and Discussion Sections

Normally you should be concurrently enrolled in Physics 6C and Physics 6CL. While Physics 6C is a large lecture class, Physics 6CL is divided into a number of smaller sessions that meet once a week. The laboratory portion of Physics 6 is run as an independent course, completely separate from the lecture portion of the course. You will receive a separate grade in the lab, and you can stay enrolled in the lab even if you drop the lecture portion of the course. If you decide to change lab sections, and find one with space, you absolutely must enroll in the new section and drop the original one, or your grade will almost certainly be lost.

You will have a **two hour lab every other week,**

All labs are in Broida 2324, and last 2 hours.

When do you go to your first lab? If you are enrolled in lab section A, scheduled to meet in Broida 2324, then you will have your first lab during the week of September 28. If you are enrolled in lab section B, which is scheduled to meet in Broida 2324, then you should go to your first lab during the week of October 5. It is crucial to actually attend the lab section in which you are officially enrolled, otherwise your TA will most likely never receive the proper grade sheet on which to record your grade.

In case you do miss a lab for a good reason, **you can make up one lab during the week of November 30**. We can only accommodate so many students, so priority will be given to those with legitimate reasons. If you miss two or more labs without a valid reason, just retake the lab course. **Week of Monday Nov. 23 - 26 (Thanksgiving) - NO labs.**

Where to Get Help

1. **Physics Study Room (PSR), Broida 1019.** This is where all TAs hold office hours. The **PSR is open Monday to Friday, 8:00-4:30**, and TAs are on duty at most times. Note that ANY TA in the PSR is able to provide assistance with this course, not just the TAs for Physics 6a. To find when any TA has office hours, you can check the Schedule of TA office hours in the PSR.
2. **Your professor's office hours: T. 1:30 - 3:00 and Th. 1:30 - 3:00 Broida 6139**
3. **Campus Learning Assistance Services, CLAS (Student Resource Building, Room 3210. <http://www.clas.ucsb.edu/>)** offers drop-in hours and tutoring. **For more information contact Danson Kiplagat at the Center (893-2612).** Keep in mind that if you need a tutor, it's much better to get one early in the quarter than at the end. Be very careful though not to fall into the trap of letting your tutor lead you through the problems until you have memorized how to solve them. Use your tutor to help you recognize what principles are relevant to a given problem, and for in understanding the principles themselves.

HOMEWORK ASSIGNMENTS FOR PHYSICS 6C

**ALL PROBLEMS IN ALL THE ASSIGNMENTS WILL BE FROM THE BOOK
(Young & Geller 8 th Edition)**

Homework Set #1 (9/25 - 10/3)

Chapter 23: Problems 3, 4, 8, 10, 19, 26, 29, 40, 43, 49, 54, 57, 61, 64, 72, 89, and 91

PHYSICS 6C APPROXIMATE SCHEDULE OF LECTURES

Week of F 9/25	Ch. 23 1 lecture	Electromagnetic Waves
Week of M 9/28	Ch. 23 1 lecture	Electromagnetic Waves
W	Ch. 23 1 lecture	Electromagnetic Waves
F	Ch. 23 1 lecture	Electromagnetic Waves
Week of M 10/5	Ch. 24 1 lecture	Geometrical Optics
W	Ch. 24 1 lecture	Geometrical Optics
F	Ch. 24 1 lecture	Geometrical Optics
Week of M 10/12	Ch. 24 1 lecture	Geometrical Optics
W	Ch. 24 1 lecture	Geometrical Optics
F	Ch. 24 1/2 lecture Ch. 25 1/2 lecture	Geometrical Optics Optical Instruments
Week of M 10/19	Monday October 19 EXAM I <i>Covers Chapters 23, and 24</i>	
W	Ch. 25 1 lecture	Optical Instruments
F	Ch. 25 1 lecture	Optical Instruments
Week of M 10/26	Ch. 26 1 lecture	Interference and Diffraction
W	Ch. 26 1 lecture	Interference and Diffraction
F	Ch. 26 1 lecture	Interference and Diffraction
Week of M 11/2	Ch. 26 1 lecture	Interference and Diffraction
W	Ch. 27 1 lecture	Relativity
F	Ch. 27 1 lecture	Relativity
Week of M 11/9	Ch. 27 1 lecture	Relativity
W 11/11	HOLIDAY (Veteran's Day)	
F	Ch. 28 1 lecture	Photons, Electrons, and Atoms <i>(continues next page)</i>

Week of M 11/16	Monday November 16 EXAM II <i>Covers Chapters 25, 26, and 27</i>	
W	Ch. 28 1 lecture	Photons, Electrons, and Atoms
F	Ch 28 1 lecture	Photons, Electrons, and Atoms
Week of M 11/23	Ch. 29 1 lecture	Atoms and Molecules
W	Ch. 30 1 lecture	Atoms and Molecules
F 11/27	THANKSGIVING HOLIDAY	
Week of M 11/30	Ch. 30 1 lecture	Nuclear Physics
W	Ch. 30 1 lecture	Nuclear Physics
F 12/4	Finish Ch. 30	Nuclear Physics
F 12/11	Friday December 11 FINAL EXAM Noon to 3:00 <i>Covers Chs. 23, 24, 25, 26, 27, 28, 29, and 30</i>	

Be sure you have completed your reading of the chapter before each lecture as this will ensure that you get maximum benefit from the lectures.

PHYSICS 6A LAB SCHEDULE

ROOM 2324 FALL 2009

OPTICS I (Reflection & Refraction)	SEPT. 28-OCT. 1(A) OCT. 5-8(B)
OPTICS II (Lenses & Optical Devices)	OCT. 12-15(A) OCT. 19-22(B)
WAVE OPTICS	OCT. 26-29(A) NOV. 2-5(B)
NUCLEAR SCIENCE	NOV. 9-12(A) NOV. 16-19(B)
NO LABS OR DISCUSSIONS	NOV. 23-26
MAKE-UP LABS	NOV. 30-DEC. 4

Happy Thanksgiving.

Physics Department Lab Policies

To receive a passing grade, ALL labs must be completed.

One week is reserved to allow an opportunity to make up missed labs. Making up more than one missed lab requires an excused absence AND permission from the instructor.

Careful and neat documentation is an important part of carrying out and reporting lab work and it will affect the scores on lab reports.