

Contact Information

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Course Information

Lecture: 10:20 am, MWF
Room: 173 Peter Engel Science Center
Textbook: *College Physics, 10th Edition* by Serway and Vuille
Web Sites: <http://www.physics.csbsju.edu/~jcrumley/106/>
<https://csbsju.instructure.com/courses/4173>

Introduction

Welcome to Physics 106. This course is designed to give you the background in physics in order to better understand processes that you study in your field. Toward this end, we try to incorporate examples and lab activities which show you how the physics being studied can be applied in the “real” world. This course will move more quickly than Physics 105 since there is more material to cover.

Class Goals

In this course I have two overall goals for what I would like you to learn. Students in this class will gain:

1. a working knowledge of basic physical concepts and
2. the skills needed to solve physics problems using those concepts.

Though I have separated concepts and problem solving out as distinct goals, in practice they are intertwined. You cannot solve problems unless you understand the concepts, and you do not really understand the concepts if you cannot apply them to problems.

In this course, the concepts and topics that we will be studying are the bedrock of physics — concerns sound, electricity, magnetism, circuits, light, and modern physics.

Class Time

In class, we will be using a variety of activities. I will start most classes with 5-10 minutes or so for questions from the homework.

Next, we will cover new material. I will spend much of this time lecturing and solving problems at the chalkboard. Other activities that will be mixed in include demonstrations, group problems, and quick quizzes. For each quick quiz I will give a short problem and about five minutes to work it out on a small sheet of paper. I will collect these and grade them typically only based on whether or not you attempted the problem.

Listed below is a tentative schedule. Use the schedule as a rough guideline of what will happen in class on a given day, but be aware that we will almost certainly fall behind schedule at times, and we may even get ahead of it once or twice. You are responsible for attending class, or if you miss class finding out from your classmates what you missed. If any changes are needed in the test schedule, I will give advanced notice.

Laboratory

Labs are an important part of learning physics and you should come to labs prepared. You must read the appropriate sections from the lab manual and do whatever pre-lab work the manual describes before you come to lab. Proper preparation will help you understand the experiments that you are doing and complete the lab activities in the allotted time. More details regarding the labs are in the lab manual.

Homework Problems

There will be a homework assignment online using WebAssign (<http://www.webassign.net/login.html>) for each chapter and will be due the class day after we finish that chapter. There will also be one written problem for each chapter, which are listed in the schedule below.

Finally, there will be extra, suggested problems assigned for each chapter through WebAssign. These problems will be worth extra-credit. Completing all of the extra problems correctly would be worth 2% extra for your grade. These points will be added after the grade scale for the course has been set.

Group Problems

In order to give you practice on working on more complicated problems, you will be working in groups of three or four on some problems in class. You will get a chance to work on practice group problems in class, and then as part of each test you will also have a group problem to work on. After each test I will assign new groups.

Tests

The tests will have two parts: an individual portion and a group portion. The individual portion of the tests will consist of multiple choice questions and problems. The group portion of the tests will consist of a more difficult problem that you will solve as a group and hand in one solution. Before each group test, there will be at least one practice group test so that the groups have a chance to learn to work together. The group test will take place on the class period before the regular test. The final test will be solely an individual effort. All of the tests will be closed book and closed notes. You will be given a sheet with all of the equations and constants that you need for the test, though you will have to remember how to apply them.

Final exam

You will have the option of taking the Final during the times set aside for any of my two sections of this course.

Grading

The grades in this class will be based on 7 scores: lab grades, homework grades, 3 test grades, the final exam grade and a participation grade. Each of the 3 tests will be worth 13% of the overall grade, homework and labs will be worth 15% each, while the final exam will be worth 21% and quizzes will be worth 10%. The quiz grade will be based on participation in the practice group tests and other exercises in class.

Grades for this class will be set based on a grade scale that I make at the end of the course. The overall grade scale will be no more strict than the standard 92% and up =A, 88-92 = B, etc. You will be given a rough scale after each test, so that you know how your performance on that test compared to the test's difficulty. Those scales are for informational purposes; it is only the final grade scale which really matters.

Plagiarism

Plagiarism will not be tolerated in any part of this course — on tests, on homework, or on lab work. Cases of plagiarism will be dealt with following the schools' plagiarism policy.

Special accommodations

If you need special accommodations for class, please let me know in advance.

Date	Sections	Topics	Tests	Labs	Written HW
1/11	14.1–14.5	Sound and Energy		Resonance	14.64
1/13	14.6–14.11	Sound Interference			
1/15	14.12–14.13	Quality of Sound & Ear	Practice Group		
1/18	15.1–15.5	Electric Charges		Electronic Instruments	15.54
1/20	15.6–15.9	Gauss's Law			
1/22	16.1–16.5	Electric Potential			16.60
1/25	16.6–16.9	Capacitors		Sound Waves	
1/27	16.10–17.3	Current			17.52
1/29	17.4–17.7	Resistance			
2/01	17.8	Electrical Heart	Practice Group	Equipotentials	
2/03	18.1–18.4	Resistance			18.48
2/05	18.5–18.8	DC Circuits			
2/08	14–18	Sound and Electricity	Group Test 1	DC Circuits	
2/10	14–18	Sound and Electricity	Test 1		
2/12	19.1–19.4	Magnets			19.66
2/15	19.5–19.8	Magnetic Fields		No Lab	
2/17	19.9–20.2	Faraday's Law			20.62
2/19		Free day			
2/22	20.3–20.6	Inductance		Magnetic Fields	
2/24	20.7	Energy in B fields	Practice Group		
2/26	21.1–21.5	AC Circuits			21.70
2/29	21.6–22.11	EM Waves		No Lab	
3/02	21.12–22.2	Reflection			22.48
3/04	22.3 – 22.6	Refraction			
3/07	22.7	Internal Reflection	Practice Group	AC Circuits	
3/09	23.1–23.3	Mirrors			23.52
3/11	23.4–23.7	Lenses			
3/14	19–23	Mag., Circuits, Light	Group Test 2	Thin Lenses	
3/16	19–23	Mag., Circuits, Light	Test 2		
3/18	24.1–24.4	Interference			24.66
Spring Break					
3/30	24.5–24.9	Diffraction		No Lab	
4/01	25.1–25.6	Optical Instruments			25.59
4/04	25.7	Interferometer	Practice Group	Diffraction	
4/06	26.1–26.5	Special Relativity			26.44
4/08	26.6–27.2	X-Rays			27.48
4/11	27.3–6	Compton Effect		No Lab	
4/13	27.7	Wave Function	Practice Group		
4/15	27.8–28.3	Bohr Model			28.40
4/18	28.4–28.7	Atomic Physics		Photoelectric Effect	
4/20	24–28	Optics, Relativity, QM	Group Test 3		
4/22	24–28	Optics, Relativity, QM	Test 3		
4/25	29.1–29.4	The Atomic Nucleus		Nuclear Radation	29.48
4/27	29.5–30.2	Radioactivity			
4/29	14–29	Review			
5/03	14–29	1:00–3:00pm		Final Exam	