

Physics 4C Spring 2018

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| Section | PHYS-D004C-02 CRN: 44389 |
| Lecture Instructor | Lana Sheridan |
| Email | sheridanlana@fhda.edu |
| Office | S13 |
| Office Hours | T & Th, 10:30am-11:20am |
| Lecture Hours | M-F, 9:30-10:30am |
| Labs | Wednesday, 10:30am-1:20pm, Sheridan, S17 |
| Textbook | Physics for Scientists and Engineers, 9th Edition, Serway and Jewett |
| Prerequisites | Passing Physics 4B and at least concurrent enrollment in Math 1D |
| First Test Date | (TBC) Tuesday, April 17 |
| Final Exam Date | Tuesday, June 26, 9:15-11:15 a.m. (confirm on De Anza's website) |

Topics

This course covers introductory fluid mechanics, thermodynamics, waves, light, and optics. Students should leave this course with an understanding of pressure in fluids, lift, how gases behave, what temperature is, how changing temperatures can effect materials, heat exchange, how engines work, wave reflection and interference, how sounds of particular pitches are produced in musical instruments, bow waves and shock waves, prisms, ray optics, lenses, how optical fibers work, interference patterns, diffraction patterns, and polarization of light. Along the way we will cover Archimedes' principle, Bernoulli's equation, internal energy, latent heat, Newton's law of cooling, the laws of thermodynamics, kinetic theory, Carnot's theorem, the linear wave equation, the Doppler effect, dispersion, Huygens principle, image formation, Young's double slit experiment, and the Michelson interferometer. This will be chapters 14–22 and 35–38 of the textbook.

In this course you will learn the fundamental concepts involved in these topics and how to apply them to solve problems.

Attendance

In order to comply with federal guidelines De Anza College requires students to attend class and class attendance records to be kept. A student may miss a few classes for medical or personal reasons, however, unexplained absence of more than 2 consecutive classes or frequent absence will result in a student being dropped from the course. Late arrivals count as absences at my discretion.

All labs must be attended unless there is a strong medical reason for absence. Missing more than 2 labs can result in being dropped from the course.

Homework

There are two types of homework for this course.

- Uncollected homework - this will be set from problems at the end of each chapter in the textbook each class.
- Collected homework - these will be worksheets with more challenging questions which you will have at least 5 days to work on; they count toward your grade.

Uncollected Homework

This homework will not count towards your grade, however, it is very important to do this homework as part of your study! This will make concrete the ideas discussed in the lectures by allowing you to apply them immediately. I will try to set almost exclusively problems that have answers in the back of the textbook. If you have difficulty with the homework you can come to office hours, ask me just before or after a lecture, work together with other students, or go to the Math and Science Tutorial Center (Student Success Center). Doing these problems will help you prepare for the quizzes and tests.

The set problems should not be viewed as the only problems you can do: you are strongly encouraged to look through all of the problems at the end of each chapter and consider how each should be approached. *You should read the textbook.*

Collected Homework (Assignments)

Collected homework problems may contain more challenging problems. You will have a number of days to do them, so be sure not to leave them until the last minute. You will also be marked on the clarity of your logical reasoning, so be sure to use as much paper as you need to present your answer fully. You may wish to present each question on a separate piece of paper. You are encouraged to work with other students on these problems, however, you must write up your solution yourself. Identical solutions are not acceptable. Further, since you are allowed to work together, simply writing down the answer is not sufficient. You must make it clear that you understand the reasoning that got you to the answer.

If you are absent on the day homework is due, you must scan and email the homework to me by no later than 2 hours after the class. You must then bring a hard copy of your homework the next day. If you have an issue that prevents you from finishing the homework on time, you must talk to me or email me about it at as soon as you realize it and least 2 days prior to the due date. I will consider each request on a case-by-case basis. Late homework will be accepted only at my discretion and if accepted the final score will be penalized if there was no prior approval.

Quizzes

There will be approximately 5 to 7 short quizzes set in class time. The quiz questions will be based on the uncollected homework problems. There will be no make-up quizzes, however, each student's lowest quiz score will be dropped.

There will be informal questions in class to test your understanding. These will not count towards your grade (unless it becomes clear that students are not putting in effort).

Tests

There will be three tests set in class time. The first will be on Tuesday, April 17. All three will count toward your final score, and there will be no make-up tests. (If you must miss a test, you must get clearance with me ahead of time.) In order to do well on the tests, read the textbook, and do all the homework problems.

Note: If there is any dispute about marking, I will consider it only within two school days of the paper being returned to you. Grades for the final exam are final and not subject to dispute.

Cheating

In the case that a student is found to be cheating on a piece of work, quiz, or test, the grade for that will be zero. Cell phones must be silenced and not worn on your person during a test or quiz. Plagiarism, which includes copying answers found on the internet, is cheating. You are encouraged to use resources you find online, but you must write up answers on your own, in your own style, and you must understand what you are writing.

Evaluation

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| 4 collected HWs | 16% in total |
| quizzes | 8% in total |
| 3 tests | 26% in total |
| final | 30% |
| labs | 20% |

Projected Grading Scheme:

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|------------|----|
| 95% → 100% | A+ |
| 88% → 94% | A |
| 85% → 87% | A- |
| 82% → 84% | B+ |
| 73% → 81% | B |
| 70% → 72% | B- |
| 67% → 69% | C+ |
| 58% → 66% | C |
| 46% → 57% | D |
| 0% → 45% | F |

Student Learning Outcome(s):

*Critically examine new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of waves, fluids, optics, and thermodynamics.

*Gain confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.