Physics 4C Spring 2018

Section	PHYS-D004C-01 CRN: 44304
Instructor	Lana Sheridan
Email	sheridanlana@fhda.edu
Office Hours	Tu & F, 10:30am-11:20am
Lecture Hours	M-F, 9:30-10:30am
Labs	Wednesday, 10:30am-1:20pm
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	Wednesday, April 22
Final Exam Date	Tuesday, June 23, 9:15-11:15 a.m. (TBC!)

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.

All students must attend one short (2-5 minute) Zoom meeting with me once every three weeks. These meetings are a compulsory component of this course. If you do not attend these meetings (times will be flexible), this is grounds for being dropped from the course.

Homework

There are two types of homework for this course.

- WebAssign homework sets - these will be available through Canvas and WebAssign, and based on end-of-chapter textbook problems. They are autograded online.
- Full-solution homework - these will be problems that I set, where you need to submit a pdf of your fully worked solution.

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 30 hours 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.

If you have difficulty with the homework you can attend my office hours, work together with other students, or use tutoring available through the Math and Science Tutorial Center (Student Success Center), which has moved online and is holding Zoom sessions. You can also use the NetTutor link in Canvas to more online tutoring support.

WebAssign Homework

This homework \emph{will} count towards your grade and 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. In WebAssign, the values you are given for the problems are randomized, so your answers will differ from other students, however, the same concepts apply. Discussing the problems in study groups may be beneficial to you. Doing these problems will help you prepare for the quizzes and tests. In each problem set, you may submit answers to each question part separately. You have multiple chances to attempt a submission, but eventually, you will incur a penalty deduction on each subsequent attempt.

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.*

Full-Solution Homework

Full-solution homework problems may sometimes contain more challenging problems. You will be marked correctness and on the clarity of your logical reasoning, so be sure to use as much paper as you need to present your answer fully. If there are a few problems, 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.

Quizzes

There will be approximately 3 to 5 short quizzes, some set in class time. These could be a short problem, or consist of some conceptual questions.

There will be informal questions asked during 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 approximately 6 short tests set in class time. The first will be on Wednesday, April 22. All 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, do all the homework problems, and make sure you understand the concepts involved.

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. You may not use an electronic device in an unauthorized way during a test or quiz. **Plagiarism is submitting someone else's work or ideas as your own. It includes copying answers from the internet. Plagiarism is cheating.** For full-solution homework you are encouraged to use resources you find online and the tutorial center, but you must write up answers on your own, in your own style, and you must understand what you are writing. For tests and quizzes, you may not use resources from the internet or accept help from anyone else.

Evaluation

WebAssign HWs	20% in total
Full-solution HW	18% in total
quizzes	8% in total
short tests	24% in total
final	20%
labs	20%

Projected Grading Scheme:

95% → 100%	A+
88% → 94%	A
85% → 87%	A-
82% → 84%	B+
74% → 81%	B
71% → 73%	B-
68% → 70%	C+
60% → 67%	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.