Physics 4C Syllabus
Spring 2022

Class Details:
>6 units
>Lecture Tues/Thurs 5:30pm-7:45pm, online
>Lab Tues 7:55pm-10:45pm (section 30Z) or Thurs 2:30pm-5:20pm (section 31Z), online

Instructor:
>Megan Ulbricht

Email:
>ulbrichtmegan@fhda.edu

Office Hours:
>Tues. 4:30pm-5:20pm, online
>Thurs. 1:30pm-2:20pm, online
>April 12 - June 21

Final Exam:
>**Tuesday June 21, 2022 6:15pm-8:15pm, online**

Text:
>Physics for Scientists and Engineers, 9th edition, volume 1 by Serway and Jewett
>**A physical copy of the text is not required** (a pdf is fine). The edition of the text is unimportant but when I reference the text, I will use the 9th edition.

Course Description:
>This course covers fluid mechanics (pressure, Archimedes's Principle, Bernoulli's equation), thermodynamics (temperature, the zeroth, first, and second laws of thermodynamics, thermal expansion, the ideal gas law, calorimetry, kinetic theory of gases, heat engines, entropy), mechanical and non mechanical waves (traveling waves, wave on a string, sound waves, wave interference, standing waves, doppler effect), and optics (geometric optics, reflection, refraction, image formation, single and double slit interference, polarization). This corresponds with chapters 14, 16-22, and 35-38 in the text.

Requisites:
>Passing grade in Physics 4B and at least concurrent enrollment in Math 1D or 1DH

System Requirements:
>Since this course is online, a reliable internet connection in crucial. There is no accommodation that I can make to get around this. You will need to turn your video on during exams so a video-enabled device (computer with webcam, tablet or phone) is required.

Important Dates:
>April 16, last day to add classes
>April 17, last day to drop without a "W"
>May 27, last day to drop with a "W"

Course Grade Distribution:

Homework	15%
Midterm I	20%
Midterm II	20%
Lab	15%
Final Exam	30%

Letter Grade Distribution:

Percent	Grade	Grade Points
>98%	A+	4.0
92% - 97.9%	A	4.0
90% - 91.9%	A-	3.7
88% - 89.9%	B+	3.3
82% - 87.9%	B	3.0
80% - 81.9%	B-	2.7
78% - 79.9%	C+	2.3
70% - 77.9%	C	2.0
68% - 69.9%	D+	1.3
62% - 67.9%	D	1.0
60% - 61.9%	D-	0.7
<60%	F	0.0

Exams:

There will be two midterms and one comprehensive final. The exams will include a multiple choice and a free response section. The grading on the multiple choice questions is all-or-nothing. Partial credit will be awarded where appropriate on the free response questions. You may use any calculator that you would like on the exams, with the exception of a cellphone calculator, as well as a 3" x 5" notecard containing any equations/notes that you find helpful.

There are no make up exams.

If your final exam score is higher than your lowest midterm score, I will average your final exam score and your lowest midterm score and replace your midterm score with that value. For example, if your lowest midterm score is a 60% and you get an 80% on the final exam, I will replace the 60% with $(60\% + 80\%)/2 = 70\%$.

Exams will be proctored via Zoom. You will be required to turn your camera on during the exams and position your camera so that I can see your workspace. This arrangement requires some maneuvering- I will share some tips in class prior to the first exam.

Homework:

Homework will be submitted online via Expert TA. There is a link on Canvas to get started with the program. Homework done on paper will not be accepted.
Late homework is accepted, with deductions. Each problem completed after the due date will be docked 5% per day. For example, if 8 out of 10 problems are completed by the due date, you will keep all points earned on those 8 problems, regardless of whether/when you complete the remaining 2 problems. If you finish the remaining problems 3 days after the due date, 3x5%=15% will be deducted from your score on those 2 problems only.

Lab:

Most of the labs will be done online using simulations. Others will involve videos of experiments with accompanying data to analyze or discussion style sessions where we focus on solving problems on paper.

Attendance is mandatory. You may be dropped from the class if you have more than one unexcused absence in lab. Absences will be excused only in the case of serious injury or illness or other serious events, at my discretion. Notification of a forthcoming absence should be given prior to the missed lab. You must attend the lab section in which you are enrolled. The lowest lab score will be dropped.

Academic Integrity:

Cheating will result in a score of 0 on the assignment or exam in question. Further disciplinary action may be taken on a case by case basis.

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.