Physics 4C Syllabus
Spring 2020

Class Details:
>6 units
>Lecture Tues/Thurs 5:30pm-7:45pm, online
>Lab Thurs 2:30pm-5:20pm, online

Instructor:
>Megan Ulbricht

Email:
>ulbrichtmegan@fhda.edu

Office Hours:
>Tues. 4:30pm-5:20pm, online
>Fri. 11:00am-11:50am, online
>April 17 - June 23

Final Exam:
>**Tuesday June 23, 2020 6:15pm-8:15pm, online**

Text:
>Physics for Scientists and Engineers, 9th edition, volume 1 by Serway and Jewett
>You will have the option of purchasing the eText with the WebAssign online homework
>submission program. **A physical copy of the text is not required.**

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.
>Most of the content in this class can be delivered via a smartphone or tablet but some require a
computer and webcam. **If you do not have access to a computer with a webcam, let me know as soon
as possible so that accommodations can be made.** Additionally, Adobe Flash is required to access lab
simulations, and Google Chrome is required for testing purposes (the proctoring software only works with
this web browser).

Important Dates:
>April 26, Last day to drop a class
>May 25, Memorial Day Holiday, no classes

June 5, 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 you do better on the final exam than one or both of your midterms, 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%.

The exams will be administered online using Proctorio proctoring software (embedded in Canvas).

Homework:

Homework will be submitted online via WebAssign. There is a link on Canvas to get started with the program. Homework done on paper will not be accepted.

Any homework problem done more than 24 hours before the due date will be awarded 5% extra credit. You do not need to *finish* the assignment 24 hour before the due date, the extra credit will be applied to individual problems. This will be the only extra credit opportunity, take advantage!

Late homework will be accepted up to 1 week past the original due date. Send homework extension requests by email or Canvas messenger. **I do not check messages and extension requests on WebAssign.**

Participation:

At some point during each lecture I will give an interactive poll or brief quiz. These will not be graded, they are merely to a) take attendance, and b) check for understanding. I will use the quiz responses to determine how quickly to move through the material.

Lab:

Most of the labs will be done online using PhET simulations created at the University of Colorado at Boulder. Others will involve videos of experiments with accompanying data to analyze. Either way, work will be submitted via Canvas at the end of the each lab session.

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.

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.

Extra Credit:

As mentioned above, the **only** extra credit offered in this course is the 5% extra credit on homework problems submitted more than 24 hours before the original due date. If you are unhappy with your grade at the end of the course and contact me requesting extra credit I will direct you to this part of the syllabus.

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.