PHYSICS 4A Spring 2020

Instructor: Stephanie Dickson

Email: dicksonstephanie@fhda.edu

Office hours: Mondays and Thursdays 12:30 pm to 1:20 pm via Zoom

Final exam date: Tuesday, June 23rd, 1:45 - 3:45 pm

Text: Physics for Scientists and Engineers, 9th edition, by Serway and Jewett or equivalent

Prerequisites: Concurrent enrollment in (or successful completion of) Math 1B.

The goal of this course is to cover the three conservation laws of classical mechanics: energy, momentum, and angular momentum, along with oscillations. This includes the necessary details to successfully manipulate those laws: kinematics, vectors, problem solving techniques, mathematical techniques, and various definitions including Newton's universal law of gravitation.

The class will meet Monday through Thursday at 1:30 pm via Zoom. Please have a web cam or cell phone camera on during lecture. You may use the chat window to ask questions, or raise your hand and un-mute yourself. The daily lectures will be recorded and available to review until the following Monday. The Friday class will be pre-recorded and available via the Zoom link anytime after 2:30 pm Friday through the following Monday at 11:30 am.

Quizzes come in two varieties: Lecture-based, short answer, quizzes and homework-based quizzes with longer, more involved solutions. Both varieties of quiz will be held at the end of every class. You may use your calculator, notes, and book. Quizzes will be available through Canvas at 2:15 pm each day and have a short time window for completion. The lecture-based quiz questions are worth one point each, and there will be approximately ten questions per week. Each homework-based quiz will be a single question, worth 10 points, requiring a detailed solution and will be monitored with Proctorio,. Your homework-based quiz solution must be scanned and submitted as a pdf into Canvas within the specified time window to receive credit.

The final exam will be held during the scheduled time, June 23rd from 1:45 to 3:45 pm. The final exam will consist of questions similar to the homework-based quizzes requiring your detailed solutions scanned as a pdf and submitted into Canvas within the specified time window. It also requires Chrome for the remote proctor program.

A student caught cheating will receive a zero score for the assignment in question. Subsequent incidents will be referred to the division dean.

Labs are also online, which is going to challenge all of us to make a hands-on activity successful without any hands on equipment! Here is how it will work:

- Each lab lecture will be pre-recorded and available to view for on Zoom starting Monday at 11:30 am of the lab week. The lab lecture is available for one week.
- A detailed write-up accompanies the lab and outlines what you are to do.
- There will be some raw data collection. Sometimes, this data collection will be done for you. Other times, you may be asked to do an activity to collect data. Alternatively, you may be asked to determine the raw data value from a photograph.
- Perform data analysis.
- Write up your lab report and submit it using Google.docs or the equivalent.
- Take the lab quiz.
- Submit your lab report and quiz no later than Thursday by 9:00 pm of the lab week to receive credit.
- The last week of lab is reserved for a final project. More on that later.

Your grade will be based on:

Lecture based quizzes: 100 points possible

Homework based quizzes: 100 points possible

Lab: 25 points possible

Lecture Final: 25 points possible

250 possible points

A: 92 % (minimum 230 points)
A-: 90 % (minimum 225 points)
B+: 88 % (minimum 229 points)
B: 82 % (minimum 205 points)
B-: 80 % (minimum 200 points)
C+: 78 % (minimum 195 points)
C: 70 % (minimum 175 points)
D: 60 % (minimum 150 points)
F: 50% (minimum 125 points)

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 mechanics.
*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.