

DE ANZA COLLEGE – PHYSICS 4A – Spring 2017

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| Instructor: | Tom Marshburn |
| Email: | marshburnthomas@fhda.edu |
| Office Hours: | TBD |
| Lecture Hours: | M-F 1:30-2:20PM (Room S32) |
| Lab Hours: | M 2:30-5:20PM (Room S11) |
| Final Exam Date: | Tuesday, June 27 from 1:45PM – 3:45PM |
| Text: | Physics for Scientists and Engineers (Vol. 1), 9 th Edition, Serway/Jewett |
| Required: | Casio FX-300MS Scientific Calculator or similar |
| Prerequisites: | Physics 50 with a grade of C or better, or the equivalent (including high school physics); Completion of Math 1A with a C or higher and concurrent enrollment in Math 1B (or already completed). |

Note: Last day to drop a class with a “W” is Friday, June 2. Students who do not drop by this date will be given the appropriate grade for their achievement in the class at the end of the quarter.

OBJECTIVE

This is a calculus-based course in Classical (Newtonian) Mechanics. The main objective of the course is for the student to understand the laws/theories and principles of Classical Mechanics in order to be able to describe the motion of a system so that we can better understand the physical world around us. The foundation laws of Classical Mechanics are Newton's Laws of Motion. Thus, we can equivalently state that the main objective is for the student to learn and understand Newton's Laws of Motion from a conceptual and practical viewpoint. Classical Mechanics is often divided into two parts:

- a) Kinematics – The description of the motion of an object without regard to the forces causing the motion. We will describe the motion of an object (system) moving in 1-D and 2-D.

- . b) Dynamics – The description of the motion of an object with regard to the forces that cause the motion. We will use Newton's Laws of Motion to help us describe the motion of an object (system) with regard to the forces acting on an object.

In our study of kinematics we will learn how to analyze the motion of a particle in 1-D and 2-D. In dynamics we will learn to analyze the motion of a particle (system) by using Newton's Laws of Motion and other formulations of such laws (Work and Kinetic Energy Theorem, Conservation Energy, Linear and Angular Momentum). Law of gravity will also be discussed.

ATTENDANCE

You are expected to be in class at the beginning of each class for the rest of the quarter. An attendance sheet will be passed at the beginning of class. If you are late for class and arrive after the attendance sheet has been passed around, or after about ten minutes into the lecture if an attendance sheet is not passed around, you will need to come to the front of the class to the side bench and put your name on the Late List. A tardy counts as half an absence, and If you have any combination of tardiness or absences that add up to five or more, you may find yourself dropped from the class. However, it is your responsibility to ensure being dropped or withdrawn from the course in order to avoid an "F" in the course if you stop attending lecture or lab. If you know in advance that you will miss a class or will be late due to an unavoidable conflict or being ill, send me an email message and your absence or tardy may be excused.

LECTURE SUMMARY

After each lecture you will be responsible for generating a summary of the lecture, including the main topic area(s) covered, references to problems that were worked on during the lecture, and anything that struck you about the discussion or raised a question for you. Make sure your name appears on the sheet you turn in at the beginning of the following lecture. This summary will not be graded for content, but will be scanned to ensure it matches my recollection and checked off

to establish attendance. You should only spend 15-20 minutes on this after each lecture. No lecture summary will be due the day of a quiz or midterm, or the day after a test or test review. At the end of the quarter, a score will be assigned for the lecture summaries based on the percentage turned in.

HOMEWORK

Homework will be assigned on a regular basis but will not be collected. Although the homework is not collected, it is YOUR responsibility to have it completed by the following day after it is assigned. It is essential to your success in this course that you put a solid effort into the homework. This is how you will learn physics and succeed in the class. (The quizzes will generally be based on homework and lecture material). If you are having difficulties with the lecture/lab/homework, here are some things that I recommend to help you succeed in the class:

1. Ask for help during class and attend office hours
2. Work together and discuss problems with other students in the class
3. Get help at the Math & Science Tutorial Center (Room S43)

On the quizzes and exams you will need to show all your work in complete detail in order to receive full credit. Your solutions should show your step-by-step process and logic that was used to obtain the answer. No credit will be given if no work is shown even if you obtain the correct answer to the problem.

QUIZZES

There will be a quiz every Friday at the end of class. The quizzes will generally be based on homework problems and lecture material from Friday of previous week to Thursday of the current week. If you miss a quiz you will get a ZERO for that quiz. NO MAKE-UP QUIZZES! At the end of quarter the lowest quiz score will be dropped.

EXAMS

There will be three in-class exams and a comprehensive final. Exact dates for exams will be given at least four days prior to each exam. The exam format may be work-out problems, multiple-choice, conceptual, or a combination of the three. The key to the success on the exams is preparation; read the textbook and make sure you understand it, ask questions if you don't understand, DO THE HOMEWORK, and attend the lectures. There are no make-up exams. If you miss an exam you will get a ZERO for that exam. At end of quarter I will take the average of the three in-class exams scores and replace the lowest with the average. You must take all three exams in order to replace the lowest exam score by the average of the three scores!

Note: If there is a dispute in the grading of any quiz or exam, I will consider looking at them a second time only if it is handed back to me within 2 school days after I return them.

GRADING

Grades will be based on the following components with the weights shown:

Lecture Summaries 5%

Quizzes 15%

Lab 15%

Exam 1 15%

Exam 2 15%

Exam 3 15%

Final Exam 20%

Grades will be determined as follows:

88% ---> 100% = A

76 %----> 87% = B

65% ----> 75% = C

54% ----> 64% = D

0 ----> 53% = F

NOTICE:

Cheating on any exam is grounds for a zero score on that exam, which cannot be dropped. "Cheating" is defined (in this course) to be an effort by a student to obtain a grade by any means other than demonstration of that student's individual achievement in mastering the class material and/or fulfilling terms of a project.

Further grounds for expulsion from the class include any activity which interferes with others' ability to benefit from the class (such as chronic distracting behavior) or which degrades the classroom environment.

PHYSICS 4A Lab – Spring 2017

Instructor: Tom Marshburn

Email: marshburnthomas@fhda.edu

Lab Hours: M 2:30PM-5:20PM (Room S11)

Final Exam Date: Monday, June 19, during lab time

Required: Quad-Ruled Lab Notebook, Casio FX-300MS Scientific Calculator or similar

OBJECTIVE

1. To obtain a personal, hands-on experience with the experimental methods used in an introductory Classical Mechanics Laboratory course.
2. Reinforce the concepts and theories presented in the lecture.
3. Develop the knowledge and skills required to make accurate measurements and learn to analyze the errors and uncertainties associated with them.
4. Learn to analyze data using graphical, statistical, and computer based techniques.
5. To write a coherent comprehensive scientific lab report in the appropriate format.
6. Collaborate with lab partners during the experimental procedure to accomplish the objective.

ATTENDANCE

You are expected to be here at the beginning of each lab. Roll call will be taken when your name is called to pick-up your lab notebook. If you are not there to pick up your lab notebook you will be marked absent. If you are marked absent 2 or more times you will be dropped from the lab class which means you will also be dropped from lecture. However, if you stop attending lecture or lab it is your responsibility to ensure being dropped or withdrawn from the course in order to avoid an "F" in the course. Students can only attend the lab session that they are scheduled to attend.

LAB EXPERIMENTS

Lab experiments will be available on my HomePage at

<http://www.deanza.edu/faculty/marshburnthomas/phys-4a-lab.html>

A copy of the lab schedule for the quarter is also provided at this website. You will need to download and read the experiment for the corresponding week before you come to lab. Doing this will allow you to come to lab class prepared and be more efficient.

Lab experiments are to be done in a quad-ruled lab notebook and according to the Lab Report Format handout. You must start a new lab report at the top of a page. Write the names of your lab partners at the top right-hand corner of the lab report. The lab reports are due at the end of class. You will turn in the lab notebooks at the end of class, you do not take them home.

GRADING

1. Your lab report grades will be determined by the following scores:

Lab 1 : 20 pts

Lab 2: 20 pts

Lab 3: 20 pts

2. Lab reports will be worth 50 % of final lab grade

3. Lab final will be worth 50% of final lab grade. It will be a comprehensive final based on all the experiments that were performed during the quarter. You will be allowed to take the lab notebooks home to study for the lab final.

4. There are no make-up labs. **If you miss a lab you get a ZERO.**
You cannot attend another lab session to make-up a lab.