Physics 4B Winter 2018

Section PHYS-D004B-01 CRN: 01794

Lecture Instructor Lana Sheridan

Email sheridanlana@fhda.edu
Office S13

Labs Prof Newton, Thursdays, 10:30am-1:20pm, S11

Lecture Hours M-F, 9:30-10:20am
Lecture Room S35

Office Hours Wed 11:30am-12:30pm; Fri 10:30-11:30am

Textbook Physics for Scientists and Engineers, 9th Edition, Serway & Jewett
Prerequisites Physics 4A and Math 1B with a grade of C or better and at least concurrent enrollment in Math 1C

Final Exam Date Tuesday, Mar 27, 9:15-11:15am

1 Topics

This course covers electricity and magnetism. Students should leave this course with an understanding of how to use the principles of electromagnetism in order to predict the behavior of systems, and gain an intuition for how various technologies that make use of electromagnetism work. We will cover electric charge, charge interactions, electric fields, Gauss's law, electrical potential, capacitance, DC circuits, magnetism and magnetic fields, the relationship between electric and magnetic fields, Amp`ere's law, Faraday's law, induction, and the Amp`ere-Maxwell's law. By the end of the course students should know Maxwell's equations in integral form and the form of the Lorentz force and when and how to apply these expressions. This will be chapters 23–34 of the textbook.

2 Attendance

You must attend class. A student may miss a few classes for medical or personal reasons, however, unexplained absence of more than 2 consecutive days or frequent absence may 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.

3 Homework

There are two types of homework for this course.

• Uncollected homework - this will be set from problems at the end of each chapter in the textbook on a nightly basis.

• Collected homework - these will be worksheets with more challenging questions which you will have at least 5 days to work on; they count toward your grade.

3.1 Uncollected Homework

This homework will not count towards your grade, however, 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. I will try to set almost exclusively problems that have answers in the back of the textbook. If you have difficulty with the homework you can come to office hours, ask me just before or after a lecture, work together with other students, or go to the Math and Science Tutorial Center (Student Success Center). Doing these problems will help you prepare for the tests.

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.

3.2 Collected Homework (Assignments)

Collected homework problems may contain more challenging problems. You will have a number of days to do them, so be sure not to leave them until the last minute. You will also be marked on the clarity of your logical reasoning, so be sure to use as much paper as you need to present your answer fully. 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.

If you are absent on the day homework is due, you must scan and email the homework to me by no later than 2 hours after the class. You must then bring a hard copy of your homework the next day. 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 2 days

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.

4 Quizzes

There will be approximately 5 to 7 short quizzes set in class time. The quiz questions will be based on the uncollected homework problems. There will be no make-up quizzes, however, each student's lowest quiz score will be dropped.

5 Tests

There will be three midterm tests set in class time, spaced at roughly three week intervals. All three will count toward your final score, and there will be no make-up tests. In order to do well on the tests, read the textbook, and do the homework problems.

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.

6 Cheating

In the case that a student is found to be cheating on a piece of work or test, the grade for that will be zero. Cell phones must be silenced and not worn on your person during a test or quiz. Plagiarism, which includes copying answers found on the internet, is cheating. You are encouraged to use resources you find online, but you must write up answers on your own, in your own style, and you must understand what you are writing.

7 Evaluation

4 collected Hws 16% in total

quizzes 8% in total
3 tests 26% in total

final 30%
labs 20%

Projected Grading Scheme:

95% → 100% =A+ 88%→94% =A 85%→87% =A− 82%→84% =B+ 73%→81% =B 70%→72% =B− 67%→69% =C+ 58%→66% =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 electricity and magnetism.
*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.