

Physics 4B: Electricity and Magnetism

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Class Hours: M-F 1:30-2:20pm

Office: Zoom

Office Hours: Su 1:00-2:30pm

Class Room: MLC 103/Zoom on Fridays

Lab Room: S17

Lab Hours: M or W 2:30-5:20pm

Course Description

This course introduces classical electromagnetism and includes DC and AC circuits and elementary field theory.

Required Materials

- Textbook: Raymond A. Serway and John W. Jewett, *Physics for Scientists and Engineers* (any edition)

Prerequisites/Corequisites

Prerequisites: PHYS D004A; MATH D001C or MATH D01CH (may be taken concurrently)

Course Objectives

Successful students:

1. This is a **calculus-based** course in **Classical Electromagnetism**.
2. The student needs to **understand** these Electromagnetic concepts from a **theoretical and practical viewpoint**.
3. Complete all the **homework assignments**. **Make Kobe Bryant proud**.
4. Come to **office hours** if you need help.

5. Form **study groups**.
6. **Describe electromagnetic interaction for different systems.**

Grading Policy

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

- 17% Labs
- 17% Homeworks
- 28% Midterm
- 38% Final

Course Policies

During Class

I understand that the electronic recording of lectures will be important for class, so electronic devices will be allowed in class to record lectures. However, you are not permitted to use electronic devices during the exam during exams. Please refrain from using electronic devices for anything but activities related to the class. Also if you have a question do not ask your neighbor, unless we break into groups. Ask the instructor, and we can make it into a discussion.

Attendance Policy

Attendance is required for both lecture and lab. If you stop attending the class it is your responsibility to ensure being dropped or withdrawn from the course in order to avoid receiving an "F" in the course. Valid excuses for absence will be accepted before class. In extenuating circumstances, valid excuses with proof will be accepted after class.

Policies on Incomplete Grades and Late Assignments

If an extended deadline is not authorized by the instructor, an unfinished incomplete grade will automatically change to an F. Late assignments will be accepted if a valid excuse is communicated to the instructor before the deadline or in reasonable time.

Academic Integrity and Honesty

"The following types of misconduct for which students are subject to disciplinary sanctions apply at all times on campus as well as to any-off campus functions sponsored or supervised by the college: cheating, plagiarism or knowingly furnishing false information in the classroom or to a college officer." Violating the Academic Integrity Policy will result in a grade of "F" in the class and the incident will be reported to the college disciplinary office.

Accommodations for Disabilities

Reasonable accommodations will be made for students with verifiable disabilities.

Schedule and weekly learning goals

The schedule is tentative and subject to change. The learning goals below should be viewed as the key concepts you should grasp after each week, and also as a study guide before each exam. The midterm will test on the material that was taught up until week 5, and the final exam will emphasize the second portion of the class.

Week 01, 04/10 - 04/14: Review of Math

- HW 1/Lab 1

Week 02, 04/17 - 04/21: Electrostatics

- HW 2/Lab 2

Week 03, 04/24 - 04/28: The Electric Field

- HW 3/Lab 3

Week 04, 05/01 - 05/05: Gauss's Law

- HW 4/Lab 4

Week 05, 05/08 - 05/12: Circuits

- HW 5/Lab 5

Week 06, 05/15 - 05/19: Midterm

- Lab 6

Week 07, 05/22 - 05/26: Magnetostatics

- HW 6/Lab 7

Week 08, 05/29 - 06/02: The Magnetic Field

- HW 7/Lab 8

Week 09, 06/05 - 06/09: Induction

- HW 8/Lab 9

Week 10, 06/12 - 06/16: Alternating Current

- HW 9/Lab 10

Week 11, 06/19 - 06/23: Maxwell Equations/Electromagnetic Waves

- HW 10

Week 12, 06/26 - 06/30: Final Exam

Note: The homework is due the following Monday at 11:59pm on Canvas.

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.

Office Hours:

Zoom SU 1:00 PM 2:30 PM