

Physics 181
Yale University
Summer 2025 June 30-August 1

Welcome to Physics 181

Instructor: Mehdi Ghiassi-Nejad
Email: mehdi.ghiassi-nejad@yale.edu

Lectures and Discussion Sessions

Lecture: Live Mondays, Tuesdays, Thursdays and Fridays **10-11:15 am**

Discussion Sessions **Tuesdays and Thursdays 11:30 am-12:30 pm**

Office Hours Mondays and Fridays **2:00-4:00 pm**

All lectures and discussion sessions are online and live

Textbook Required

Fundamentals of Physics Extended, 10th Ed. Halliday Resnick, Walker. Chapters: 21-36

You may use any General Physics Book as a Reference and Text Book. All practice and homework problems are from Halliday and Resnick.

Course prerequisites

Our class makes extensive use of both differential and integral calculus. Please refer to the [Online Course Information](#) site for specific details on class prerequisites.

Course description (Learning objectives)

Our class will discuss calculus-based classical electromagnetism at the introductory level with a brief exploration of modern physics. You will learn standard techniques to solve problems in electro-static, magneto-static, EM waves and quantum mechanics. Toward the end you will have a conceptual understanding and geometrical intuition for the electro-magnetic field, as well as an appreciation for the role of symmetries. More generally, our class offers you the opportunity to sharpen your critical thinking skills. You will learn a logical and consistent mathematical framework to describe electromagnetic fields. In the process, you will practice transferable skills such as problem-solving and quantitative reasoning. **This is a very fast pace course.**

Reading assignments and Course schedule

Reading assignments included in the Course Schedule are mandatory before the corresponding class. You may find it difficult to follow the in-class discussion if you do not prepare, especially since I assume familiarity with their content. These reading assignments are straight forward which will allow us to emphasize more complex aspects during class.

Quizzes

As we proceed in the lectures, I will publish a quiz on Canvas. You can discuss the quiz with your TF during the discussion session or in any other TF's office hours. These quizzes test your understanding of the previous lecture or the reading assignment; for the most part they consist of conceptual questions. Please work on the problem sets between lectures to prepare for the quizzes; you may find them challenging otherwise.

homework policy

Deadlines: Problem sets are posted on Canvas with a due date . To help you stay on track I will implement a strict deadline policy: Late homework will only be accepted under extreme circumstances, and I must grant permission before the day is due.

The purpose of this policy is to prevent you guys from falling behind

Exams

The three exams are:

- **First Exam:** Monday July 07, 2025 Chapters 21-23
- **Midterm:** Friday July 18, 2025 Chapters 21-27
- **Final Exam** Friday August 01, 2025 Chapters 21-36

Grades

Your course average and letter grade are determined according to:

- **Attendance in lectures and Discussions:** 10%
- **Homework:** 25%
- **First exam:** 15%
- **Midterm:** 25%
- **Final :** 25%

Withdrawing

I will work hard to help you succeed, and I will provide prompt feedback. We should be proactive and discuss early on if you are struggling with the material. Should you need to withdraw, you must do so by the deadline of the summer session to prevent any record of the class on your transcript. For detailed information and dates refer to the [summer session website](#).

Academic honesty

Academic dishonesty will not be tolerated in this class. Any work that you submit must be completely your own. If you used a resource to write your solution, you must cite the source. No copying, no cheating, and no other kinds of dishonest behavior will be tolerated. For more information please see [Yale's policy on academic honesty and related matters](#).

Words of advise

This class is very fast-paced because it condenses four months' worth of material into five weeks. Here are some tips that will help you stay on top of the course:

- The discussion sessions are mandatory, I strongly suggest you attend. In them, we will cover more difficult problems in more detail compared to what I am able to do during lecture.
- Come to class on time. Classes are short and dense, so missing a lecture will make it difficult for you to understand the subject.
- Attend the tutoring sessions
- If you find yourself falling behind, ask for additional help and immediately put additional time into studying. Falling behind by a few lectures can be very detrimental in a 5-week course.

- Ask questions! If something is unclear, you are only helping me and your peers when you ask to explain it again. I will be happy to clarify the material and go over anything that is unclear.

Please do not hesitate to ask me any questions.