Physics 120 Winter 2025
Electromagnetism

Course Syllabus

Lecturer: Prof. Jason Hogan – hogan@stanford.edu
Office: Varian 236
Office hours: Wednesday 5:00 pm – 6:00 pm

Course Website: http://canvas.stanford.edu

Meeting Times: Monday, Wednesday, Friday 1:30 pm - 2:50 pm in 320-109.

Teaching Assistants:
Joseph Curti jcurti@stanford.edu – Office hours: TBA
Michelle Wu mwu2019@stanford.edu – Office hours: TBA
Chloe Taylor ctaylor9@stanford.edu – Office hours: TBA

Prerequisites: Physics 81; Math 52 and Math 53
Corequisites: Physics 111 or Math 131P or Math 173 or Math 220

Textbook: "Introduction to Electrodynamics" 5th Edition, David Griffiths. ISBN-13: 978-1009397759
Recommended: The Cambridge University Press 5th edition (released in 2023) has new problems and sections.
Not recommended: International edition. Has differences in chapter, equation, exercise and page #'s.

Students with Documented Disabilities:
Stanford is committed to providing equal educational opportunities for disabled students. Disabled students are a valued and essential part of the Stanford community. We welcome you to our class. If you experience disability, please register with the Office of Accessible Education (OAE). Professional staff will evaluate your needs, support appropriate and reasonable accommodations, and prepare an Academic Accommodation Letter for faculty. To get started, or to re-initiate services, please visit http://oae.stanford.edu. If you already have an Academic Accommodation Letter, please send them to us. Letters are preferred by the end of week 2, and at least two weeks in advance of any exam, so we may partner with you and OAE to identify any barriers to access and inclusion that might be encountered in your experience of this course. New accommodation letters, or revised letters, are welcome throughout the quarter; please note that there may be constraints in fulfilling last-minute requests.

Lecture topics:
Chapter 1: Vector and Tensor Analysis (3 lectures)
Chapter 2: Electrostatics, Stress Tensor (6 lectures)
Chapter 3: Potentials, Laplace's equation (4 lectures)
Chapter 4: Electric Fields in Matter (4 lectures)
Chapter 5: Magnetostatics (4 lectures)
Chapter 6: Magnetic Fields in Matter (3 lectures)
Chapter 7: Electrodynamics (3 lectures)

Problem Sets: Weekly problem sets are generally due **Thursday 10:00 pm** and must be uploaded to Gradescope (https://www.gradescope.com/). Late problem sets will not be accepted. Problem set assignments will be posted weekly on Canvas along with the weekly calendar. Instructions on how to upload your problem set solutions electronically using Gradescope are available on Canvas under the Files > Admin folder.
Video instructions are available here: https://www.youtube.com/watch?v=nksyA0s-Geo

Problem Set Revisions: You will have the opportunity to recover some lost points by identifying and discussing any misconceptions or mistakes on your problem sets. See revision instructions on Canvas under the Files > Admin folder. Revisions are due by **Friday 10:00 pm** on the week following the original assignment and must be uploaded to Gradescope.

Homework Collaboration Policy: The weekly homework assignments are an important part of the course. To do well on the exam, you need to spend at least 4-5 hours/week on the problem set, so start it early! You are encouraged to form study groups to work on the problem sets, as this is an efficient way to learn, but we also **strongly recommend** trying the problems first yourself before meeting with your group (you won't have access to your study group in the exams).

Reading Quizzes: There will be short weekly quizzes on the reading from *Griffiths*, usually due by **Monday at noon**. These will be announced and administered through the Canvas page. Quizzes are open book and have no time limit. Scores will count towards the final course grade. The sections of the textbook covered by the quiz will appear on the weekly calendar. It is recommended that you do the reading before taking the quiz.

Active Learning: Each class meeting will consist of mini-lectures (~5 to 10 minutes) interspersed with active learning facilitated by members of the teaching team – i.e., activities in which you will immediately build on or apply a new concept or formalism, to build physical intuition and facility with the equations. You will be responsible for any material covered in class. We very strongly recommend that you attend every class.

Daily Worksheets: Each class will be structured around a worksheet that contains activities and problems. You will work together with a small group of students on these worksheets, and the teaching team will circle around the room to answer questions and provide guidance. Every 5 to 10 minutes we will come back together as a class to discuss the answers and transition to the next topic. Although you will work in groups, every student is responsible for their own worksheet. Worksheets will be posted to Canvas each day before class.

Honor Code: The Honor Code articulates University expectations of students and faculty in establishing and maintaining the highest standards in academic work. Examples of conduct that have been regarded as being in violation of the Honor Code (and are most relevant for this course) include copying from another's examination paper or allowing another to copy from one's own paper; unpermitted collaboration; plagiarism; revising and resubmitting a quiz or exam for re-grading, without the instructor's knowledge and consent; representing as one's own work the work of another; and giving or receiving aid on an academic assignment under circumstances in which a reasonable person should have known that such aid was not permitted. **It is also against the Honor Code to look up solutions to homework problems online**, even if you are stuck**.**

Exam Dates: Exams must be taken on the day, and at the time specified. No exceptions. If you have special accommodations for exams please talk to the instructor and the TA **as soon as possible** before the exam is scheduled, so that we can know what you need. Exams will be closed book. You are allowed to make a single, *handwritten* sheet of letter-size paper as a cheat sheet for each exam. You may bring your midterm cheat sheet to the final in addition to your final exam cheat sheet.

Midterm: Monday, February 10, during usual class time (1:30 pm - 2:50 pm). Room 320-109.
Final: Wednesday, March 19, 3:30 - 6:30 pm. Room TBD.

Grade Breakdown: Homework 30%, Quizzes 5%, Midterm 30%, Final 35%.