Instructor:	Howard Haber
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Office Hours:	Mondays 2–4 pm

COURSE WEB PAGE:

`https://scipp-legacy.pbsci.ucsc.edu/~haber/ph214/`

CLASS HOURS:

Lectures: Tuesdays and Thursdays, 11:40 am–1:15 pm, in ISB room 231

REQUIRED TEXTBOOK:

Classical Electrodynamics, 3rd edition, by John David Jackson

RECOMMENDED OUTSIDE READINGS:

Classical Electromagnetism in a Nutshell, by Anupam Garg
A Modern Introduction to Classical Electrodynamics, by Michele Maggiore
Modern Electrodynamics, by Andrew Zangwill

OTHER SUGGESTED OUTSIDE READINGS:

Electrodynamics and Classical Theory of Fields and Particles, by A.O. Barut
Modern Problems in Classical Electrodynamics, by Charles A. Brau
Electrodynamics–An Intensive Course, by Masud Chaichian, et al.
Electrodynamics, by Dietmar Petrascheck and Franz Schwabl
Electromagnetic Radiation, by Richard Freeman, James King, and Gregory Lafyatis
Classical Electrodynamics, by Walter Greiner
Classical Theory of Electric and Magnetic Fields, by R.H. Good, Jr. and T.J. Nelson
Classical Electromagnetic Radiation, 3rd edition, by Mark A. Heald and Jerry B. Marion
Electromagnetic Fields and Relativistic Particles, by Emil J. Konopinski
The Classical Theory of Fields, by L.D. Landau and E.M. Lifshitz
Classical Electrodynamics—A Modern Perspective, by Kurt Lechner
Classical Electricity and Magnetism, by W.K.H. Panofsky and M. Phillips
Advanced Classical Electromagnetism, by Robert M. Wald
Macroscopic Electrodynamics: An Introductory Graduate Treatment, 2nd edition, by Walter Wilcox and Chris Thron

COURSE OUTLINE

1. Review of Maxwell's Equations and Electromagnetic Wave Propagation
2. Wave Propagation in a Dispersive Medium
3. Special Theory of Relativity
4. Simple Radiating Systems and Antennae
5. Multipole Fields
6. Dynamics of Relativistic Particles and Electromagnetic Fields
7. Radiation by Moving Charges
8. Scattering of Electromagnetic Waves

Course Grading and Requirements

40% Homework (5 problem sets)
20% Midterm Exam (take-home exam)
40% Final Exam (Wednesday March 18, 2026, 4–7 pm in ISB 231)

The coursework will consist of five homework problem sets, a take-home midterm exam and an in-class final exam. Homework assignments are *not* optional. Homework assignments are due on Tuesdays (with two weeks allotted for each homework set). You are encouraged to discuss the class material and homework problems with your classmates (and ChatGPT) and to work in groups, but all submitted problems should represent your own work and understanding.

The midterm exam will be a take-home exam that will be handed out in class on Tuesday February 17 and must be returned in class on Thursday February 19. The final exam will be an open book/open notes in-class exam that will be held in ISB 231 on Wednesday March 18 from 4–7 pm. During the final exam, you will be permitted to consult any textbook of your choosing, your class notes, and any class handout (including solutions to the problem sets). The final exam will cover the entire course material. You must take the final exam to pass the course.