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

COURSE WEB PAGE:
http://scipp.ucsc.edu/~haber/ph214/

CLASS HOURS:
Lectures: Tuesdays and Thursdays, 12 noon–1:45 pm, ISB 231

REQUIRED TEXTBOOK:
Classical Electrodynamics, 3rd edition, by John David Jackson

RECOMMENDED OUTSIDE READINGS:
Classical Electromagnetism in a Nutshell, by Anupam Garg
Electromagnetic Fields and Relativistic Particles, by Emil J. Konopinski

OTHER SUGGESTED OUTSIDE READINGS:
Electrodynamics and Classical Theory of Fields and Particles, by A.O. Barut
Lectures on Electromagnetism, by Ashok Das
Electrodynamics, by Walter Greiner
The Classical Theory of Fields, by L.D. Landau and E.M. Lifshitz
Electrodynamics of Continuous Media, by L.D. Landau, E.M. Lifshitz and L.P. Pitaevskii
Classical Electricity and Magnetism, by W.K.H. Panofsky and M. Phillips
Classical Electrodynamics, by Julian Schwinger, Lester L. DeRaad, Jr., Kimball A. Milton and Wu-yang Tsai

Classical Electrodynamics, by Tung Tsang
Modern Electrodynamics, by Andrew Zangwill
COURSE OUTLINE

After a brief review, this course will cover a variety of topics in Jackson taken from chapters 8–16.

1. Review of Maxwell’s Equations and Electromagnetic Wave Propagation
2. Waveguides and Resonant Cavities
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 Accelerated Charges
8. Scattering of Electromagnetic Waves

If there is time, other possible topics include

9. Radiation Reaction
10. Wave Propagation in Plasmas
11. Charged Particle Collisions, Energy Loss and Bremsstrahlung

Course Grading and Requirements

45% Homework (5 problem sets)
20% Midterm Exam (one day take-home exam handed out in class on Thursday February 21)
35% Final Exam (Tuesday March 19, 2013, 8–11 am)

Homework assignments are not optional. Homework assignments are due on Thursdays (with two weeks allotted for each homework set). You are encouraged to discuss the class material and homework problems with your classmates and to work in groups, but all submitted problems should represent your own work and understanding.

The midterm exam will be a one day take-home exam, which will be handed out in class and will be due at the end of the following day. The final exam will be an open book/open notes in-class exam that will be held in the same classroom as the lectures. You will be permitted to consult Jackson, your class notes, and any class handout. The final exam will cover the entire course material. You must take the final exam to pass the course.