

Physics 408b (50508R): Electricity and Magnetism

Syllabus

1 Class and Instructor Information

1.1 Lecturer/Professor

Clifford V. Johnson

Room: SSC 201

tel: 213 821 1772

e-mail: johnson1@usc.edu

class webpage: See USC's blackboard system

office hours: SSC201, MW 9:00am–10:00am

class location & time: GFS 108, MW 10:00am–11:50am

1.2 Teaching Assistant

Benjamin Niehoff

e-mail: bniehoff@usc.edu

office hours: SGM 409, Tuesday 11:00am–12:00pm

2 Textbooks

The primary source of our material will be the course recommended text:

—*Introduction to Electrodynamics*, David J. Griffiths, Prentice Hall, (third or fourth edition).

A well-known more advanced source of material is:

—*Classical Electrodynamics*, John D. Jackson, Wiley & Sons, (third edition).

A more recent source is:

—*Classical Electromagnetism in a Nutshell*, Anupam Garg, Princeton University Press.

3 Topics

We will continue from where the Physics 408a class left off. We'll start at Chapter 7 of the book.

Topics will include (but not be limited to):

Electrodynamics: Electromotive Force, Electromagnetic Induction, Maxwell's Equations.

Conservation Laws: Energy, Charge, Momentum.

Electromagnetic Waves: Waves in 1D, Electromagnetic Waves in Vacuum. Electromagnetic Waves in Matter, Absorption and Dispersion, Guided Waves.

Potentials and Fields: The Potential Formulation, Continuous Distributions, Point Charges.

Radiation: Dipole Radiation, Point Charges.

Electrodynamics and Special Relativity: Special Relativity, Relativistic Mechanics, Relativistic Electrodynamics.

4 Assessment

There will be homeworks assigned every week, to be handed in the following week. These will be graded and returned the week following that one. There will be two midterms and a final. Participation during class is important. You will be expected to read material before class and prepare to take part in discussion based on that material, also asking and answering questions verbally, written quizzes, and in-class problem-solving. Quizzes will not be to a fixed schedule, and will sometimes be taken away to be graded.

The breakdown of the various parts is as follows:

Homework: 32%

Classwork and Interaction: 8%

Midterms: 40%

Final Examination: 20%

5 Exam Dates

Midterm I will be on Wednesday 27th February, 10:00am–11:50am

Midterm II will be on Wednesday 3rd April, 10:00am–11:50am

The Final exam will be on Monday May 13th, 8:00am–10:00am (according to the official final exam schedule - check!)

They are all located in our classroom, GFS 108, unless a change is announced.

6 Important Note:

Any student requesting academic accommodations based on a disability is required to register with Disability services and programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure a letter is delivered to the instructor as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.