

Physics 408b: Electricity and Magnetism

Syllabus

1 Class and Instructor Information

Clifford V. Johnson

Room SSC 201

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class webpage: <http://physics.usc.edu/~johnson1/phys408b/>

office hours: SSC201, MW 10:00am–11:00am

Class location: KAP 137 MWF 9:00pm–9:50pm

2 Textbooks

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

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

A well-known more advanced source of material is:

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

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:

Homeworks and Classroom Quizzes and Interaction: 40%

Midterms: 40%

Final Examination: 20%

5 Important Note:

Students who need to request accommodations based on a disability are required to register each semester with the Office of Disability Services and Programs (DSP). In addition a letter of verification to the instructor from DSP is needed for the semester you are enrolled in this course. If you have any questions concerning this procedure, please contact the instructor and DSP at STU 301, 740-0776.