SMU Spring 2011
Physics 1304 : Electromagnetism
Syllabus

Instructor : Will McElgin
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Office Hours : Tuesday, Thursday – 2-5pm

Text : Serway and Jewett, "Physics for Scientists and Engineers : Vol 2"
Course Website : www.physics.smu.edu/mcelgin/P1304_spring2011/P1304.html
Lecture Times : Tuesday and Thursday – 11:00am-12:20pm
Lecture Location : Fondren 123

Description of the Course

This course is intended as a calculus-based introduction to electromagnetism and related topics. Initially, the concepts of electric charge, field, and potential will be introduced. Following this, there will be a treatment of electric current, magnetism, and electromagnetic induction. To complete the foundations of electromagnetism, the last of Maxwell's equations will then be introduced. This permits a description of light as electromagnetic radiation. Various topics in the physics light will be covered, including refraction, interference and diffraction. Finally, a treatment of special relativity will be given. There will be an emphasis on in-class problem solving using similar ideas and techniques as required on homework and exams.

Evaluation

There will be two exams (25% each), and a semi-cumulative final (25%). Homework (25% total) will be collected approximately every two weeks. Attendance in class is strongly expected and, unless expressly told otherwise, students are responsible for all aspects of the class discussion.

Instructor Formulated Student Learning Outcomes

It is expected that students should be able to incorporate physical concepts with mathematical techniques to solve problems in Electromagnetism and related topics.

General Education Student Learning Outcomes

Students demonstrate the ability to understand, critique, and draw conclusions from numerical arguments and data. Students demonstrate basic facility with the methods and approaches of scientific inquiry and problem-solving.

Schedule

2/15 : Electric Potential. Chapter 25.

2/17 : Electric Potential. Chapter 25.

2/22 : Review for Exam 1.

2/24 : Exam 1.
Collection of homework 2. Assignment of homework 3.

3/1 : Current and Magnetic Force and Fields. Chapters 27 and 29.

3/3 : Magnetic Force and Sources. Chapters 29 and 30.

3/8 : Magnetic Field Sources. Chapter 30.

3/10 : Magnetic Field Sources. Chapter 30.
Assignment of homework 4.

3/22 : Faradays Law and Electromagnetic Induction. Chapters 31 and 32.
Collection of homework 3.

3/24 : Faradays Law and Electromagnetic Induction. Chapters 31 and 32.

3/29 : Faradays Law and Electromagnetic Induction. Chapters 31 and 32.

3/31 : Review for Exam 2.

4/5 : Exam 2.
Collection of homework 4. Assignment of homework 5.

4/7 : Maxwell's Equations and Electromagnetic Waves. Chapter 34.

4/12 : Maxwell's Equations and Electromagnetic Waves. Chapter 34.

4/14 : Maxwell's Equations and Electromagnetic Waves. Chapter 34.

4/19 : Relativity. Chapter 39.
Collection of homework 5. Assignment of homework 6.

4/21 : Relativity. Chapter 39.

4/26 : Relativity. Chapter 39.

4/28 : Review for Final. Collection of homework 6.

5/4 : Final Exam. Exam Time – 11:30am-2:30pm.