

Physics 650 - Electrodynamics I

Fall 2016

Instructor: Pui Lam

Topics: Electrostatics and Magnetostatics

Physics 650, Electrodynamics I, will focus on electrostatics and magnetostatics.

Physics 651, Electrodynamics II, will focus on electrodynamics.

Student Learning Outcomes (SLOs)

- 1) Understand the conceptual framework of electrodynamics
- 2) Understand the mathematical formalism and general theorems
- 3) Able to apply specific mathematical techniques for specific examples
- 4) Develop physical intuition from mathematical solutions

Instructional Approach ("bottom-up and then top-down")

We start with a specific example (situation) and gather formalism and techniques to solve the problem (bottom-up). When the problem is solved, then we review and summarize in terms of a coherent conceptual frame work (top-down).

Weekly Course Organization

Day 1: Introduce example, brainstorm suggestions, plan of attack

Day 2: Students' presentation of solutions/attempts

Day 3: Instructor's solution, construct coherent summary.

Practice with homework problems. Meet with grader for homework evaluation.

Grading procedures

Homework (30%), Midterm (30%), Final (30%), class participation (10%)

Grade scale: A (86 -100%), B (66 - 85%), C (55 - 65%), D (40 - 54%), F (< 40%)

Exam consists of two parts, closed-book, in-class (short questions) and open-book, take-home (long questions)

Homework: Meet with grader (Steven Smith) weekly to present your homework solutions.

Textbook

"Classical Electricity and Magnetism", second edition by Wolfgang K. H. Panofsky and Melba Phillips (Dover Books) - required.

"Classical Electrodynamics" by J. D. Jackson - recommended reference.