

Syllabus for Electrodynamics I
Physics 5301 – Spring 2021

9:30am - 10:45am, Tuesdays and Thursdays in HuskyCT, Blackboard Collaborate Ultra.

Instructor: Philip Mannheim

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Office hours: Tuesdays and Thursdays 10:45am to 11:45am also in Blackboard, or by appointment.

The course grade will be based on regular homework assignments (40%) and midterm (30%) and final (30%) exams. The course final will also serve as the Electromagnetism Prelim exam.

Midterm: Thursday March 11, 2021 9:30am - 12:30pm over webex. Syllabus: everything covered up to end of week prior to the midterm.

Final exam: date and time to be set by the registrar. Syllabus: everything covered during the semester.

Required text: Jackson: Classical Electrodynamics – Third Edition

Recommended text: Landau and Lifshitz: The Classical Theory of Fields – Fourth Edition

Topics Covered:

Jackson Chapters 1-8

Introduction to Electrostatics

Boundary-Value Problems in Electrostatics: I

Boundary-Value Problems in Electrostatics: II

Multipoles, Electrostatics of Macroscopic Media, Dielectrics

Magnetostatics, Faraday's Law, Quasi-Static Fields

Maxwell Equations, Macroscopic Electromagnetism, Conservation Laws

Plane Electromagnetic Waves and Wave Propagation

Waveguides, Resonant Cavities and Optical Fibers