Syllabus

People:

Prof. Raymond Frey  |  rayfrey@uoregon.edu (mailto:rayfrey@uoregon.edu)  |  web page (https://pages.uoregon.edu/rayfrey)  |  Wil 462

TA: Bruce Edelman | bedelman@uoregon.edu

Classes:

Tu, Th  12:00 - 1:50 pm, PSC 040

Office hours:

• Frey (Wil 462): Mondays 4-5:00, Wednesdays 3-4:00; let me know if you want to meet at a different time, or on Zoom.
• TA: Mondays 1-2:00, Wil 315.

Course Objectives:

We will investigate some of the important implications and applications of the full Maxwell equations. We will also study special relativity. This material corresponds to Chapters 8-12 of Griffiths. If time permits, we will include a brief overview of general relativity.

Main Topics:

• Review/overview of Maxwell’s equations
• Including E&M in conservation laws: energy, momentum, angular momentum
• Electromagnetic waves
• EM waves in linear media, conductors
• dispersion and wave guides
• EM potentials; gauge transformations; retarded potentials
• EM radiation
• Special relativity of spacetime
• Special relativity of EM fields
• (brief) General Relativity

Textbook:

Griffiths, Introduction to Electrodynamics, 4th Ed.

Course assignments:
• Homework: We will have (typically) weekly homework assignments. Unless announced otherwise, assignments are to be turned in at the start of class on the due date. Solutions will be provided.

• Exams: A midterm and a final exam. Exams will be closed book and no notes, but useful information will be provided with the exams.

**Grading:**

- Homework: 50%
- Midterm exam: 20%
- Final exam: 30%

You can monitor scores in the Canvas grade book.

**Late policy:** Unless excused in advance, late homework will be assessed a penalty of 10% for each late day.

**Exams:**

- Midterm Exam: TBD
- Final Exam: Tuesday, June 7, 08:00-10:00

**Accessibility:**

The University of Oregon is working to create inclusive learning environments. Please notify me if there are aspects of the instruction or design of this course that result in disability-related barriers to your participation. You are also encouraged to contact the Accessible Education Center at 541-346-1155 or uoaec@uoregon.edu.

**Expect and Respect Diversity:** All classes at the University of Oregon welcome and respect diverse experiences, perspectives, and What is not welcome are behaviors or contributions that undermine, demean, or marginalize others based on race, ethnicity, gender, sex, age, sexual orientation, religion, ability, or socioeconomic status. We will value differences and communicate disagreements with respect. We may establish more specific guidelines and protocols to ensure inclusion and equity for all members of our learning community.

**Academic Integrity:**

The University Student Conduct Code (https://dos.uoregon.edu/conduct) defines academic misconduct, which includes unauthorized help on assignments and examinations and the use of sources without acknowledgment. Academic misconduct is prohibited at UO. I will report misconduct to the Office of Student Conduct and Community Standards—consequences can include failure of this course. You are welcome to discuss the homework with your classmates, but the work you submit must be your own.