

PHYS 1351, Intermediate Electricity and Magnetism

Fall 2014

Tuesday and Thursday, 9:30 am – 10:45 pm

Prof. X.L. Wu (xlwu@pitt.edu)

Course Description:

Welcome to PHYS 1351. In this course, we will build upon your previous knowledge on the subject, i.e. Phys175, to address more advanced topics of electricity and magnetism. We will use the third edition of “Electricity and Magnetism” by Edward M. Purcell and David J. Morin for this class. Unlike in Phys175, vector calculus will be routinely used to describe a wide range of electromagnetic phenomena. These include electrostatics, electric current, Lorentz force, magnetic fields resulting from current distributions (Biot-Savart Law), electromagnetic induction, and electric and magnetic fields in materials. Our ultimate goal is to derive a set of equations, known as the Maxwell equations, that is applicable to all E&M phenomena.

Grading and Exam:

Homework will be assigned on Tuesday each week and is to be handed in for grading on Tuesday the week after. Unless there is a legitimate reason, no late homework will be accepted. Problems and exercises will be assigned directly from the textbook. Altogether there will be three exams, two midterms plus one cumulative final. A more detailed schedule of these exams will be posted later. Here is the break-down of various contributions to your final grade: 30% from HW, 20% each from 1st and 2nd midterms, and 30% from final. Homework is a significant component of this course; it accounts 30% of the grade total and is equivalent to the final.

The following is a tentative schedule and materials to be covered in this course:

Week 1, 8/25,	Chapter 1. Electrostatics: Charges and Fields
Week 2, 9/1,	Chapter 2. The Electric Potential
Week 3, 9/8,	Chapter 2. (continue)
Week 4, 9/15,	Chapter 3. Electric Fields Around Conductors
Week 5, 9/22,	Chapter 3. (continue) (1 st mid term)
Week 6, 9/29,	Chapter 4. Electric Current

Week 7, 10/6,	Chapter 5. The Field of Moving Charges
Week 8, 10/13 (fall break),	Chapter 5. (continue)
Week 9, 10/20,	Chapter 6. The Magnetic Field
Week 10, 10/27,	Chapter 7. Electromagnetic Induction (2 nd mid term)
Week 11, 11/3,	Chapter 8. Alternating Currents
Week 12, 11/10,	Chapter 8. (continue)
Week 13, 11/17,	Chapter 9. Maxwell's Equations and E&M Waves
Week 14, 11/24 (Thanksgiving),	Chapter 9. (continue)
Week 15, 12/1,	Chapter 10. E&M Fields in Materials
Week 16, 12/8,	Final Study Week

Disabilities:

If you have a disability that requires special testing accommodations or other classroom modifications, you need to notify both the instructor and the [Disability Resources and Services](#) no later than the 2nd week of the term. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations. To notify Disability Resources and Services, call 648-7890 (Voice or TTD) to schedule an appointment. The Office is located in 140 William Pitt Union.

Studying Guilds:

- Attend all the lectures. You may get information on materials that you would not find in the textbook. You will also get some ideas about what I consider important and likely to appear on exams.
- Read the textbook. Do not try to speed-read. Read the associated material a first time (or at least scan it) ahead of the lecture. You will find it advantageous to re-read the chapters again to let the ideas sink in.
- Heavy-duty memorization might get you by, but it is not the ticket to real understanding of the material. Generally speaking, physics courses do not require the kind of extensive memorization you might find essential in studying some other subjects.
- The real trick is to think and ask many questions.