

# PHYSICS 7600

## ELECTROMAGNETIC THEORY I

### WINTER 2018

Microscopic and macroscopic Maxwell's equations, special relativity, Lagrangian and Hamiltonian formulation of EM theory, energy-momentum tensor, conservation laws, radiation, scattering, applications  
Prerequisites: PHY6610 with minimum grade of C (PHY7110 is strongly recommended). This is a 3 credit course.

**Instructor:** Prof. Robert Harr      **Office:** 262 Physics  
**Phone:** 577-2677      **E-mail:** robert.harr@wayne.edu  
**Office Hours:** 10:30 - 11:30 Monday and Wednesday, or by appointment.  
**Web Page:** See Blackboard

**Textbook:** *Classical Electrodynamics* third edition, by John David Jackson, Wiley, (1998); ISBN 0-471-30932-X. Try this link to get a price comparison from a number of online bookstores: [Classical Electrodynamics](#).

The course will follow the text, and appropriate sections for reading will be given at the start of lecture. A bibliography of other useful texts is on the web. Many of these are available in the library.

**Lectures:** MWF 11:30am to 12:30pm, Physics Research Building, room 185.

We will schedule one additional hour each week for discussing homework problems, both solutions to graded problems and techniques for solving the assigned problems. We will choose the time during the first week of class. You are encouraged to ask questions; if something isn't clear to you, it likely isn't clear to others in the class as well.

**Homework:** The practice of Physics requires problem solving skills. In this course you will learn and practice problem solving skills with weekly homework assignments. You may discuss and collaborate with classmates on the problems, but the final solution must be your own. Copying of solutions will result in failure for all parties involved. Your solutions will be collected, graded, and contribute to your final grade. Homework must include **explanatory text** and be **neatly written** or it will be given zero credit. The best 10 of 12 homework scores will be used in calculating your grade.

**Exams:** There will be a mid-term and a final exam. The date of the midterm is tentatively Friday February 23, 2018. The final exam will be on Monday, April 30, 2018 from 10:15am to 12:15pm. The format of the exams is to be determined.

<b>Grading:</b>	Homework	85%	weekly
	Mid-term	5%	Wednesday, February 23, 2018 (tentative)
	Final Exam	10%	Monday, April 30, 2018
	TOTAL	100%	

The grade scale is as follows:

A+	95 -- 100%
A	90 -- 95%
A-	85 -- 90%
B+	80 -- 85%
B	75 -- 80%
B-	70 -- 75%
C+	65 -- 70%
C	60 -- 65%
F	< 60%

**Policies:** Late work is not accepted. The two lowest homework scores will be dropped. You are allowed and encouraged to discuss problems together, but what you turn in must be your own work -- do not copy problem solutions and turn them in as your own work. As a general rule, your classmates should not see the solutions you will turn in, and you should not see their solutions. Follow [this link](#) to view the English department's statement on plagiarism and a copy of Wayne State's academic integrity policy.

It is widely known that solutions to many of the problems in Jackson are available on the internet. If you need help with a problem there are other sources you can consult: your instructor, other books on electrodynamics, and your classmates. Copying solutions will result in failure for the class. **This is a zero-tolerance policy.**

## Course Content

We will cover chapters 1 to 7 in the text.

*Robert Harr*

*November 7, 2017*