EE325 Electromagnetic Engineering Fall 2008

Class meets Tu/Th 2:00-3:30 in ENS116 Unique No. 16565

Course web page: Blackboard

Professor: Hao Ling
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Office Hrs: Tu 12:30-2 pm
Th 12:30-2 pm
all other times by appointment

TA : Kai Liu
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Office Hrs: M 10-12
Tu 6:30-7:30
W 2-6
Th 6:30-7:30
F 10-12

Text: Hayt and Buck, *Engineering Electromagnetics*, 7th ed., McGraw Hill, 2006.

Prerequisites: PHY303L & 103N and MATH427K with a grade of at least C in each.

Grading: Two 75-min Tests (26%x2) + Homework (10%) + Final (38%) = 100%

Course Objectives:

EE325 provides an introduction to electromagnetic theory and principles. Electromagnetics, or "field theory" provides the fundamental basis for much of electrical engineering. Direct engineering applications of electromagnetics include antennas, radio wave propagation, radar sensors, microwave and RF circuitry. In addition, electromagnetics has close ties to communication systems, opto- and solid state electronics, circuit design and power systems.

In this course we will address three major topics:

1) Electrostatics (Coulomb's law, Gauss's law, electric scalar potential, material interaction with electric field, Laplace's equation) (Hayt Chaps. 2-7)

2) Magnetostatics (Biot-Savart law, Ampere's law, magnetic vector potential, material interaction with magnetic field) (Hayt Chaps. 8-9)

3) Electrodynamics (Faraday's induction, displacement current, wave phenomena, transmission lines) (Hayt Chaps. 10-13)

Course Schedule

Chapters:	**Lectures**
1. Review of vectors & coordinate systems	1.5
2. Coulomb's law, superposition	2
3. Gauss's law	2
4. Energy and potential	1.5
5. Current and conductors	1.5
6. Dielectrics and capacitance	2
7. Poisson’s and Laplace's equations	0.5
8. Magneto-statics	3.5
9. Magnetic materials and inductance	2
10. Time-varying fields and Maxwell's equations	1
12. Uniform plane wave	3
13. Plane wave reflection from planar boundaries	2
11. Transmission lines	3.5

Homework Policies:

- Homework will usually be assigned on Thursday and due at the beginning of class the following Thursday.

- **No late homework will be accepted. No excuses.**

- Solution will be posted on Blackboard.

- Show relevant steps and circle your final answer.

- You must do your own work. Copying other people's work or letting others copy your work is considered as scholastics dishonesty and will not be tolerated under any circumstances.

Evening Problem Solving Sessions:

- The course TA, Mr. Kai Liu, will give weekly problem solving sessions on Monday and Wednesday, 6:30 – 8:00 pm in ENS 115.

- Sessions are optional, but you are highly encouraged to attend.

Exams:

- There will be 2 in-class exams and 1 comprehensive final.

Tentative Test Dates:	Test 1	10/7 (in class)
	Test 2	11/18 (in class)
	Final	12/11 (Thurs. 9-12 noon)

- You are expected to be present for every test. No make-up exams will be given.

- Additional office hours will be scheduled before each exam.

- Cheating will be dealt with in as severe a manner as possible. The minimum penalty for cheating is an 'F' in EE325.

To be successful in the course, you should:

- Attend my lectures.

- Try hard on the homework on your own, and ask questions during my office hours or the TA's office hours.

- Attend the evening problem solving sessions.

- Test preparation: Attend test reviews and make sure you know how to work the homework problems.