EE325 Electromagnetic Engineering Fall 2009

Class meets MW 3:00-4:30 in BUR116 Unique No. 16545

Course web page: Blackboard

Professor: Hao Ling Office Hrs: M 4:30-5:30 pm
Office : ENS 622 W 2-3, 4:30-5:30 pm
Phone : 471-1710 all other times by appointment
e-mail : ling@ece.utexas.edu

TA : Leif Bagge Office Hrs: M-Th 1-3 pm
Office : ENS 137
e-mail : l.bagge@comcast.net

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 Exams (23%x2) + Nine Quizzes (16%) + 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 Policy:
Homework problems will be assigned weekly. Problems as well as their solutions will be posted simultaneously on the course webpage. **Homework assignments will not be collected or graded**. Collaboration on homework problems is permitted and encouraged.

Quizzes
There will be a 10-minute in-class quiz at the beginning of class every Wednesday. The weekly quiz will include questions very similar (and sometimes identical) to the week's assigned homework problems. Therefore, you are strongly encouraged to do the homework problems and study the solutions.

There will be no make-up exam for the weekly quizzes. There will be a total of about 10 quizzes. **The lowest quiz grade will be dropped in computing the final quiz grade.**

Evening Problem Solving Sessions:

- The course TA, Mr. Leif Bagge, will give weekly problem solving sessions on Tuesday nights for the first two weeks (9/1, 9/8), and then every Monday night (starting 9/14) from 6:30 – 8:00 pm in ENS 109.

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

Exams:

- There will be 2 exams and 1 comprehensive final.

Tentative Test Dates:	Exam 1	10/7
	Exam 2	11/18
	Final	12/15 (Tues. 2-5 pm)

- 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.

Other Info:

- Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 471-6259.

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

- Cheating will be dealt with according to the policy established by the office of the Dean of Students.

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: Make sure you know how to work the homework problems. Being able to solve homework problems is the key to doing well in this course.