

**Department of Electrical & Computer Engineering
The University of Kansas**

EECS 420- Electromagnetics II

Spring, 2008

Catalog Data: This course applies electromagnetic analysis to high frequency devices and systems where wave propagation effects cannot be neglected. Topics covered include waves, transmission lines, waveguides, radiation, and antennas. Laboratory experiments include transmission line, waveguide, and antenna measurements and characterizations. 3 hours lecture, 1 hour laboratory: 4 credits. Prerequisite: EECS 220, and upper level eligibility

Textbook: **Engineering Electromagnetics**, by Kenneth R. Demarest, Prentice Hall, 1998

Course Objectives: To apply electromagnetic techniques and analysis to determine the electrical characteristics of signal propagation in a variety of media and devices. Upon completion of this course, students should be capable of identifying the features and applications of transmission line, waveguide, and radiation methods of signal propagation.

Tools Usage: Agilent EEsof EDA microwave analysis software

Laboratory Projects:

1. High frequency characterization of lumped circuit components
2. Time-domain reflectometry
4. Cable characterization
5. SWR and impedance measurements
6. EEsoF familiarization and design
7. Design project
8. Antenna measurements

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Office Hours: 12:30 - 2:00 MW (Eaton)
4:00-4:30 MWF (Eaton)
11:00 - 12:00 F (Eaton)
T,R (325 Nichols Hall, by appointment)

Grading: The following percentages will be used to arrive at the final grade scores

Exam I	20
Exam II	20
Final Exam	25
Homework	15
Laboratory	20

Final letter grades are determined from the final grade scores using a scale similar to the traditional 90-100 A, 80-90 B, etc..., but can vary from semester to semester. Occasionally, the instructor may, at his discretion, add up to 3 percentage points to a student's raw score to include intangibles such as exceptional class participation or effort outside of class. **A passing grade must be earned in each of the three grade categories (exams, quizzes, laboratory, and homework) to earn a passing grade for the course.** Changes announced in class supersede these written instructions.

- Homework:** Homework will be collected at the beginning of class on roughly a weekly basis. Late homework is not accepted, except for unusual circumstances. Collaboration with classmates is permitted. Copying is *not* permitted and will be penalized.
- Special Needs:** Any student who has a disability that demands special accommodations should contact the instructor personally in order to make arrangements. Also, members of KU sanctioned organizations (band, athletic teams, etc.) that have special needs should also contact the instructor as the need arises.
- Academic Misconduct :** Instances of cheating may result in expulsion from class and referral to the Dean. Cheating includes, but is not limited to: copying another exam paper, copying another homework paper, copying from solution manuals or previous students' homework papers, having another student do your work, etc.

Course topics and tentative schedule:

<u>Week</u>	<u>Topic/Chapter</u>
1-6	Transmission Lines: / Chapter 11
	 Exam I (Wednesday, February 27 - tentative). . . .
7-10	Plane Waves / Chapter 12
10-12	Waveguides / Chapter 13
	 Exam II (Monday, April 21 - tentative)
13-14	Radiation and Antennas/ Chapter 14
	 Final Exam .(comprehensive; Monday, May 12, 10:30AM)