EE468G: Introduction to Engineering Electromagnetics
(Fall 2010)

http://www.engr.uky.edu/~cclu/ee468

	Instructor	Teaching Assistant
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Office Hours	Monday: 1:30-2:30pm Tuesday: 2:00pm-3:00pm	Tuesday: 10am—12pm Thursday: 10am—12pm

Expected Student Outcomes: A student who has successfully completed this course should be able to:

1. Understand electrostatic, magnetostatic, and electromagnetic fields and their interaction with matter
2. Solve basic canonical electrostatic, magnetostatic, and electromagnetic problems
3. Understand electromagnetic wave propagation
4. Solve for the reflection and transmission of uniform plane waves at infinite planar interfaces
5. Evaluate transmission line problems including methods for impedance matching
6. Use commercial mathematics software for computing and visualizing electrostatic, magnetostatic and electromagnetic field problems.

Text: *Elements of Electromagnetics*, 5th Edition, Matthew N. O. Sadiku, Oxford University Press, 2010 (ISBN 978-0-19-538775-9). [Note: The cover of this book has FIFTH EDITION, book title, author name, publisher name only. Do not confuse this book with the same book of the same edition, but with "Second Printing" on the cover]

Grading Policy: Your grade will be based on:

Homework/Quiz	for 24%
Test #1 (closed book)	for 14%
Test #2 (closed book)	for 16%
Test #3 (closed book)	for 16%
Final Exam (closed book)	for 30%

- The **letter grade assignment** is based on the following scale: from 100 to 90 pts. => A, from 89 to 80 pts. => B, from 79 to 70 pts => C, from 69 to 60 pts. => D, from 59 to 0 pts. => E.
- Any request for reviewing homework/quiz/test grades must be made by the second class period after the homework is returned to you.
- **Failure to take exams:** Make-up exams will be given in cases where the student contacts the instructor prior to the exam and receives permission to make the test up. There will be no makeup tests except in cases of extreme illness or other officially sanctioned absences from campus.
- Students are responsible for all business conducted during any scheduled class period. Any revision to the test dates, homework assignments, etc. will be made during the class period.
- The detected use of **unethical tactics** on a quiz or test will result in a zero for that quiz or test.
- The lectures will follow the text. Students are expected to read the text and are responsible for all material in the reading assignments.
- Students are expected to use MATLAB or similar software for some homework problems.

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Course Outline, Fall 2010

Vector calculus review
Charges and currents
Electric field intensity
Coulomb's law and Gauss' law
Electrostatic potential
Conductors and Dielectrics,
Capacitance and Energy
Boundary conditions
Boundary value problems

Test #1 , Monday, Sept. 20

Magnetic potential
Biot-Savart law
Magnetic field: line current
Magnetic field: loop
Ampere's law
Magnetic material
Magnetic field boundary condition
Farady's law
Inductance

Test #2, Thursday, Oct. 14

Time varying fields, phasors
Maxwell's equations
Uniform plane waves in free-space
UPW in dielectrics
UPW in conductors
UPW normal incidence on conductor interface
UPW normal incidence on dielectrics
UPW oblique incidence on planar interface
Introduction to Radiation

Test #3, Thursday, Nov.11

Voltage and current on transmission lines
Transmission line equation
Transients on transmission line
Source and load on transmission line
Time-harmonic waves on transmission line
Reflection coefficients and VSWR
Smith chart
Impedance matching
Stub tuning
Introduction to antennas

Final Exam: 1:00-3:00, Tuesday, Dec.14, 2010