EE 3321 Electromagnetic Field Theory

Fall 2016
Section: 11767
Time: 03:00 pm - 4:20 pm
Days: MW
Classroom: CBA 331
Instructor: Dr. Benjamin C. Flores


Catalog Description: Fundamental laws and concepts of static and time-varying electromagnetics, wave propagation in free space and lossy media, wave reflections, transmission lines, basic radiation sources and arrays.

Prerequisites

By Course. Students must have earned a grade of “C” or better:
- MATH 2313 – Calculus III
- MATH 2326 – Differential Equations
- EE 2351 – Electric Circuits II
- PHYS 2421 – Fields and Waves

By Topic. Students must remember and understand:
- Phasors
- Ordinary differential equations
- Vector calculus
- Fields and waves

Study Habits. For every hour of lecture, students are expected to dedicate three hours of study per day or until the material is understood and the homework assignment is completed. This is a standard expectation for a regular semester. Thus, you should study approximately 9 hours per week or until you fully understand the material discussed in class. Time on task is essential for your success!

Course Outcomes: From an educational perspective, students are expected to remember (recall facts and basic concepts), understand (explain ideas and concepts), apply (use information in new situations), and analyze (draw connections among ideas). By the end of the summer session, you will be able to:

- Apply vector calculus to solve basic magnetostatic problems.
- Apply vector calculus to solve basic electrostatic problems.
- Analyze electromagnetic wave propagation.
- Analyze electromagnetic wave propagation in transmission lines.
- Analyze radiation sources (antennas).

**Grading.** There will be 4 quizzes. The average of these quizzes will determine 80% of the grade. A MATLAB project will count 10% of the grade, classroom participation and team collaboration will count 5%, and homework solutions will count 5%.

**Academic Dishonesty.** As an entity of The University of Texas at El Paso, the Department of Electrical and Computer Engineering is committed to the development of its students and to the promotion of personal integrity and self-responsibility. The assumption that a student’s work is a fair representation of the student’s ability to perform is the basis for departmental and institutional quality. All students within the Department are expected to observe appropriate standards of conduct. Acts of scholastic dishonesty such as cheating, plagiarism, collusion, the submission for credit of any work or materials that attributable in the whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts will not be tolerated. Any case involving academic dishonesty will be referred to the Office of the Dean of Students. The Dean will assign a Student Judicial Affairs Coordinator who will investigate the charge and alert the student as to its disposition. Consequences of academic dishonesty may be as severe as dismissal from the University.

See the Office of the Dean of Students’ homepage (Office of Student Life) at http://studentaffairs.utep.edu/dos for more information.

You can also refer to the IEEE website for information on our code of ethics: http://www.ieee.org/about/corporate/governance/p7-8.html.

**American Disabilities Act.** The UTEP Disabled Student Services Office was established for the purpose of providing appropriate and reasonable accommodations as mandated by the Rehabilitation Act of 1973 (http://www.dol.gov/oasam/regs/statutes/sec504.htm) and the Americans with Disabilities Act (http://www.ada.gov/). If you have needs regarding learning disabilities, please report your special needs to the course instructor the first day of classes. For additional help, contact the Center for Accommodations and Support Services (CASS): (915) 747-5148, cass@utep.edu, http://sa.utep.edu/cass/.

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**Campus Concealed Carry.** For details see http://sa.utep.edu/campuscarry.
ACCREDITATION INFORMATION

1. **Contribution to Professional Component of EE Program:** EE 3321 is a junior level core course that builds on topics covered primarily in required STEM courses to advance the understanding of electromagnetic phenomena and devices.

2. **Relationship to EE Program Outcomes:**

   - Ability to apply knowledge of mathematics, science, and engineering: *Students use concepts from physics and calculus in the analysis of electromagnetic problems.*
   - Ability to identify, formulate, and solve engineering problems: *Students solve problems and observe simulations of electromagnetic problems.*
   - Ability to communicate effectively: *Students solve problems and discuss electromagnetic solutions in class.*
   - Ability to use computers to enhance problem solving: *Students use MATLAB to solve problems and visualize solutions*