EENG 5420 - Antenna Theory and Design  
Spring 2024

Course Description:
This course provides students with fundamental theories in antenna analysis as well as hands-on skills with commercial simulation tools used for antenna design. Topics include linear dipole antennas, loop antennas, microstrip antennas, slot antennas, aperture antennas, horn antennas, antenna arrays and phased arrays.

Learning Objectives:
Students will
1. Understand fundamental parameters of antennas.
2. Be familiar with Maxwell’s equations, radiation integrals, and auxiliary potential functions.
3. Be able to analyze various types of antennas, such as linear dipole, loop, microstrip, slot, aperture, and horn antennas.
4. Understand the concept and analysis of antenna arrays and phased arrays.
5. Get hands-on experience with commercial full-wave electromagnetic simulation tools widely used for antenna design such as CST Microwave Studio or ANSYS HFSS.

Prerequisite: EENG 3410 Engineering Electromagnetics

Lectures: Monday & Wednesday, 11:30 - 12:50, NTDP B227
Lecture notes and other supplementary materials will be posted on Canvas.
https://unt.instructure.com/courses/104848

Instructor:
Office Hours: Monday & Wednesday, 10:00 - 11:00, or by appointment.

TA:
Afrin Sultana. Email: AfrinSultana@my.unt.edu
Office Hours: Monday & Wednesday, 13:00 - 14:00, NTDP B250.

Textbook: (Required)

Grading Policy:
- Homeworks: 25%
- Quizzes: 30%
- Exam: 25% (Date TBD)
- Course Project: 20%

Homework Policies:
• There will be about 5 homework assignments during the semester.
• Homeworks are due at the end of class on the due date.
• Late assignments will not be accepted after 24 hours of the submission deadline. A 30% penalty is applied to accepted late assignments.
• It is fine for you to discuss homeworks with your classmates. However, each of you must write and turn in your own answer sheets.

Exam & Quiz Policies:
• Failure to show up for an exam results in receiving no credit for that exam. In such case, there will be no second chance for you to retake the missed exam, unless under very special circumstances (e.g., family or medical emergency).
• Any academic misconduct (e.g., cheating, plagiarism) should be avoided at all cost. If two or (more) answer sheets are found to be almost identical (especially in the errors and mistakes), they will receive zero credits.

General Policies:
• Technical Assistance:
UIT Help Desk: UIT Student Help Desk site (http://www.unt.edu/helpdesk/index.htm);
Email: helpdesk@unt.edu; Phone: 940-565-2324; In Person: Sage Hall, Room 130
For additional support, visit Canvas Technical Help (https://community.canvaslms.com/docs/DOC-10554-4212710328)
• Rules of Engagement: See these Engagement Guidelines (https://clear.unt.edu/online-communication-tips) for more information.
• Course Evaluation: Student Perceptions of Teaching (SPOT) is the student evaluation system for UNT and allows students the ability to confidentially provide constructive feedback to their instructor and department to improve the quality of student experiences in the course.
• Attendance Policy: Visit the UNT Attendance Policy (https://policy.unt.edu/policy/06-039) to learn more.
• Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.
• ADA Accommodation Statement. UNT makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time, however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website at https://studentaffairs.unt.edu/office-disability-access. You may also contact
ODA by phone at (940) 565-4323.

- **Emergency Notification & Procedures.** UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course materials.

Synchronous (live) sessions in this course will be recorded for students enrolled in this class section to refer to throughout the semester. Class recordings are the intellectual property of the university or instructor and are reserved for use only by students in this class and only for educational purposes. Students may not post or otherwise share the recordings outside the class, or outside the Canvas Learning Management System, in any form. Failing to follow this restriction is a violation of the UNT Code of Student Conduct and could lead to disciplinary action.