Electromagnetic Applications

Course Information

Instructor: Emmanouil Tentzeris (etentze@ece.gatech.edu)
Course Prefix and Number: ECE 4350 T02
Term: Fall 2026

Course Description

This course presents concepts of electromagnetic fields applied to microwave circuit design and antenna radiation.

Course Learning Outcomes

By enrolling in this course, students will:

1. Gain experience in transmission lines theory, plane waves, dielectric interfaces, waveguides and cavities
2. Gain experience in the design of passive microwave circuits (couplers, filters) and preliminary antennas
3. Gain experience in commercial CAD tools, wireless communication platforms and state-of-the-art Electromagnetic Applications and standards (eg Internet of Things, Smart Skins, Additively Manufactured RF modules, RF applications of Nanotechnology, AI/ML RF optimization techniques)

Required Course Materials

No textbooks or materials are required. Resources for research are determined in consultation with the thesis advisor. Suggested preliminary reading: "Fundamentals of Applied Electromagnetics", F.T.Ulaby et al., Prentice Hall Eds., any edition

Grading Policy

This course is graded on a Letter Grade (A)-(F) basis.

Attendance Policy

This course does not include scheduled class meetings. Students conduct independent research under the supervision of a thesis advisor. The frequency and format of student–advisor contact are determined by mutual agreement.

Academic and Research Honesty/Integrity Statement

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review the Student Code of Conduct and the Academic Honor Code, especially Appendix A: Graduate Addendum to the Academic Honor Code.

Students are expected to perform research in an ethical and responsible manner. All Doctoral and Master's Thesis students are required to take the Responsible Conduct of Research training, and it is expected that students abide by the principles taught in that training while performing research for this thesis course.

Allegations of scientific or scholarly misconduct are handled in accordance with the procedures outlined by the Policy for Responding to Allegations of Scientific or Other Scholarly Misconduct.

Core IMPACTS

Not applicable.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Expectations of Advisors and Advisees

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Expectations of Advisors and Advisees articulates some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.