

**GEORGE MASON UNIVERSITY**  
**ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT**

**Spring 2023    ECE 305: Electromagnetic Theory**

Time and location: Tuesday and Thursday 10:30 pm – 11:45 pm, Art and Design Building 2003  
Recitation: GTA: Zhuowen Feng,  
Instructor: Qiliang Li, Engineering Bldg. Room 3250, Tel 703-993-1596, Email: [qli6@gmu.edu](mailto:qli6@gmu.edu)  
Office Hours: Tuesday 2:20 pm – 4:20 pm; other times by appointment.  
Course website: <https://people-ece.vse.gmu.edu/~qli/ECE305/>

**COURSE DESCRIPTION**

This course is to provide the essential fundamental knowledge and concepts on electromagnetic: electrostatics, electric field in material space, magnetostatics, magnetic Fields in material, Maxwell's equations and Electromagnetic Waves.

**Required Textbook:** “Elements of Electromagnetics” Matthew O. Sadiku, 7th Edition, 2018, Oxford University Press, USA, ISBN 978-0190698614

**REFERENCE LIST**

“Introduction to Electrodynamics” by David J. Griffiths” 3rd Edition, Benjamin Cummings,  
“Div, Grad, Curl, and All That: An Informal Text on Vector Calculus” 4th Edition, H. M. Schey

**COURSE OUTLINE**

1. Coordinate Systems
2. Vector calculus
3. Electrostatic Fields
4. Electric Fields in Material Space
5. Electrostatic Boundary-Value Problem
6. Magnetostatic Fields
7. Magnetic Forces, Materials and Devices
8. Maxwell’s Equations
9. Electromagnetic Wave
10. Transmission Lines and Waveguides

**GRADING**

Homework	20%
Midterm Exam#1	20%
Midterm Exam#2	25%
Final Exam	25%
Recitation	10%
In-class performance	Extra 5 pts

The dates of the midterm exams will be announced in class at least two weeks before the exam and will depend on the course progress.