

Electromagnetic Field Theory (IEC-302)

Class Period	As per class schedule
Classroom	As per class schedule
Instructor	Shrish Bajpai
Office	Room Number : 315, Second Floor, ECE Department, Civil Building
Office Hours	Lunch Time or by appointment
Contact Info	ShrishBajpai@GMail.Com
Course Web Page	ShrishBajpai.YolaSite.Com

Motivation : Electronics & Communication engineers of the 21st century need to understand the fundamental principles and laws of electromagnetism to develop and implement better analog and digital electronic system that take into account electromagnetic propagation and radiation effects. You may find this course to be one of the more challenging junior courses in the ECE degree plan. However, it will get you ready for advanced courses as Antenna & Wave Propagation, Microwave Engineering, Optical Communication & Radar Guidance and Navigation.

Syllabus : This is a working document to help us plan activities for the course. Your input on how to make this a better course is always appreciated.

Catalog Description : Fundamental laws and concepts of static and time-harmonic electromagnetic fields. Wave propagation in free space and in transmission lines. .

Pre-requisite: Clear knowledge of Engineering Mathematics & Engineering Physics.

Textbook (Required) M. N. O. Sadiku, "Principles of Electromagnetics", 4th Edition International Version, Oxford University Press. India. ISBN : 978-0-19-806229-5

Library TBS 621.34 SAD/P

There is a *plethora* of books on electromagnetic field theory available at the central library. You are urged to check one out and use it as a reference.

Reading Assignments : You need to prepare for lecture so you can get the most benefit out of it. You are responsible for reading the sections in the book ahead of time as indicated in the lecture plan.

Course Outline : The course will be organized in lecture plan according to main themes:

<i>Unit 1</i>	Vector Analysis & Electrostatics Field
<i>Unit 2</i>	Magnetostatics Field
<i>Unit 3</i>	Electromagnetic Wave Propagation
<i>Unit 4</i>	Transmission Lines
<i>Unit 5</i>	Introduction to different waveguide structures

Course Outcomes : By the end of the semester you will demonstrate the ability to:

1. Apply vector calculus to understand the behavior of static electric fields in standard configurations
2. Apply vector calculus to understand the behavior of static magnetic fields in standard configurations
3. Describe and analyze electromagnetic wave propagation in free-space
4. Describe and analyze transmission lines
5. Work in a small team using a cooperative learning rules
6. Communicate electromagnetic concepts both orally and in writing

Contribution to Professional Component: Electromagnetic Field Theory (IEC-302) is a junior core course that builds on topics covered primarily in sophomore physics and electrical engineering courses.

Test and Final Examination: There will be two midterms during the semester. Typically, a test will have four or five problems. Three problems you have to attempt. The final End Semester Examination will be an opportunity to challenge any problem scores you wish to improve upon.

Important: No make-up exam will be granted without prior permission from the Head of Department. Students are strongly advised to refrain from copying the assignments of their

classmates or works submitted at other places. Also they should not do any sort of malpractices during any examinations. Any student found to have violated these rules will be awarded “zero” mark for the respective test/assignment and the matter will be reported to HoD for suitable further action. Also students have to offer perfect discipline in the classroom in all respects.