

Course No: EE340A
Title: ELECTROMAGNETIC THEORY
Instructor(s): A R HARISH
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Units: 3-1-0-0-11

2017-18 2nd Semester

1. Objectives:

Expose the students to the concepts and techniques of electromagnetics used to solve engineering problems.

After completing the course, a student should be able to

- Apply EM principles to understand the working of RF components
- Understand the meaning and significance of performance specifications of RF components

2. Prerequisites: None

3. Course Contents:

- Overview of Static Electric and Magnetic Fields, Steady Electric Currents;
- Time Varying Electromagnetic Fields, Maxwell's Equations, Boundary Conditions;
- Plane Electromagnetic Waves, Propagation in Free Space and in Matter;
- Reflection and Refraction of Waves at Conducting and Dielectric Boundary;
- Transmission Lines: TEM waves, Transmission Line Equations, Wave Propagation along Finite Transmission Lines, Transients on Lines, The Smith Chart;
- Waveguides, Waves in Guided Media, Parallel Plate Waveguide, Rectangular Waveguide, Cavity Resonators;
- Basic Theory of Antennas and Radiation Characteristics, Elementary Types of Antennas.

4. Special Emphasis: None

5. Lecture, Tutorial & Lab Schedule & Venue:

LEC: MW 08:00-09:00; Th 10:00- 11:00; TUT: F 14:00-15:00

Venue: Lectures: L3; Tutorials: TB108-TB111

6. Office Location: ACES 225

7. Evaluation Components & Policies:

Sl. No.	Component	Weightage
1.	Mini quiz (during tutorial)	10
2.	Major quiz (2 out of 4)	20
3.	Mid-semester Examination (2 hours)	30
4.	End-semester Examination (3 hours)	40
	Total	100

8. Exams, Quizzes, Assignments, Attendance, Participation etc.

Students are expected to attend all the classes and tutorials, and write all the quizzes and examinations.

Missing a quiz or an examination:

- A student misses a major quiz, no compensation, as only 2 out of 4 quizzes are considered for evaluation.
- A student misses a mini quiz or the mid-semester examination and leave is granted by the competent authority, mini quiz or mid-semester examination marks will be pro-rated based on the overall marks obtained including the marks of the end-semester examination.
- A student misses the end-semester examination, she/he will be allowed to appear in the Make-up examination, if permitted by the DOAA office.

9. Course Policies:

Attendance will be recorded during the lectures using biometric attendance system, if the beeping sound of the device can be muted.

Please see the guidelines at: <http://www.iitk.ac.in/bau/>

10. Books & References:

1. Field and Wave Electromagnetics David K. Cheng, Second Edition, Pearson Education, 2008.
2. Engineering Electromagnetics W A Haytt & J A Buck, Seventh Edition, Tata McGraw Hill, 2006.
3. Electromagnetic Waves and Radiating Systems by E. C. Jordan and K. G. Balmain, Second Edition, Prentice Hall Inc., Tata McGraw Hill
4. Principles of Electromagnetics Mathew N.O. Sadiku, Fourth Edition, Oxford University Press.
5. Electromagnetics with Applications Kraus and Fleisch, Fifth Edition, McGraw Hill, 1999.

11. Information Dissemination:

Through Brihaspati. Students are expected to have access to it.