

ENG205 Fundamentals of Applied Electromagnetics

Level: 2

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY JAN

Synopsis:

ENG205 Fundamentals of Applied Electromagnetics introduces the fundamentals in Electromagnetics Theory and exposes students to its current day applications. Microwave ovens, GPS, X-ray, RFID, LCD, LEDs, Communication systems are a few examples to cite for the applications of electromagnetics theory. Students will gain knowledge on the mathematical models used in electromagnetics theory and will be able to appreciate its applications in current day systems.

Topics:

- Introduction to Waves and Phasors
- Transmission Lines
- Vector Analysis
- Electrostatics
- Magnetostatics
- Maxwell's equation for time-varying fields
- Plane-wave propagation
- Wave Transmission and Reflection
- Wave Radiation
- Antennas
- Applications of EM in Satellite, Mobile Communication Systems
- Electromagnetic Hazards, RFID, GPS, X-rays, Oven

Textbooks:

Fawwaz T. Ulaby, Umberto Ravaioli: Fundamentals of Applied Electromagnetics 7 Pearson
ISBN-13: 9781292082455

Learning Outcome:

- Explain Maxwell's equations
- Describe waves and phasors, and perform vector analysis
- Calculate parameters, viz, line length, power and circuit parameters
- Solve for the gradient, divergence and curl, and other mathematical equations
- Analyse the induced current and emf
- Use Smith chart for analysis
- Appraise the applications of electromagnetics
- Determine the parameters to satisfy the given system requirements

Assessment Strategies (Evening Class):

Components	Description	Weightage Allocation (%)
Overall Continuous Assessment	CLASS TEST 1	15
	CLASS TEST 2	15
Overall Examinable Components	Written Exam	70
Total		100