



Module PMRF-ISSS036/III/2025

Basic of Electromagnetics & Transmission Lines

Name of the PMRF student

Pritam Pal

Required background of the students taught

Electrical Engineering (EE)

Electronics and Communication Engineering (ECE)

Electrical and Electronics Engineering (EEE)

Details of the content of the module

Module 1 Vector Analysis (2 hours)

Module 2 Electrostatics: (3 hours)

Gauss's Law-Maxwell's Equation, Coulomb's law, Electric Potential and flux lines, Continuity equation, boundary conditions, Poisson's and Laplace's equations

Module 3 Magnetostatics (3 hours) :

Biot-Savart's law, Ampere's Circuit Law-Maxwell's Equation, Magnetic flux, magnetic potentials, boundary conditions.

Module 4 Time-Varying Electromagnetic Fields (2 hours) :

Maxwell's equation for static EM fields, Faraday's law of induction, Transformer & Motional EMF, Displacement Current.

Module 5 Electromagnetic Waves (4 hours) :

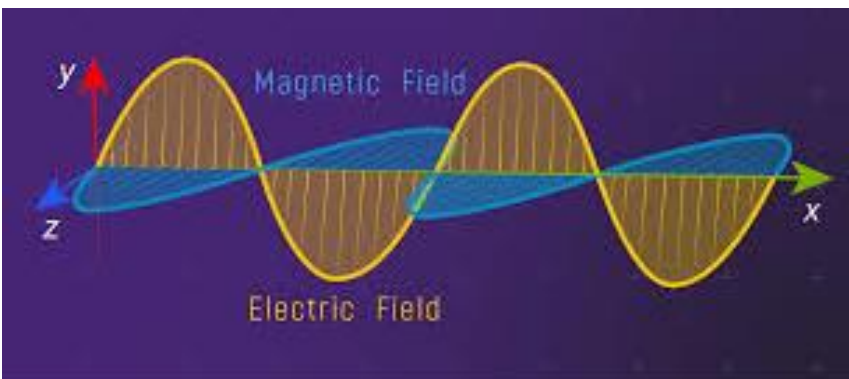
Wave impedance & wave propagation in Materials, Wave polarization, Normal incidence & Oblique incidence- Plane wave reflection/transmission

Module 6 Transmission Lines (6 hours) :

Transmission Line equation & Circuit- impedance, reflection coefficient, SWR ; Smith Chart

Module 7 Waveguides (4 hours) :

Waveguide equations, TM/TE Modes, Dominant mode, Power Transmission in waveguides.



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Transmission Lines

Schedule of the module

Start Date: April 11, 2025

End Date: April 22, 2025

Total Duration: 24 hours

Class Schedule: Everyday

Class Timings: 6:30 pm to 8:30 pm

Meeting link : Will be shared later

Contact email ID: issf.forum@gmail.com

Registration link:

<https://docs.google.com/forms/d/e/1FAIpQLSdJxe9kUsXNKq0dLgmiE2yY8cl4GbINdpFE5deS-qMTcp1BYA/viewform>