

Department of Electronics and Telecommunication Engg.

Lecture Plan for EC 35009 (B.Tech. III year)

Antenna and Wave Propagation

Session June – Dec 2024

Lecture No.	Topic Covered	Remark
1.	Antenna Fundamentals: Retarded Potential, Radiation Equation.	Unit 1
2.	Radiation Mechanism of Antennas	
3.	Radiation Integral and Auxiliary Potential Functions. Radiation from Linear Wire Antennas	
4.	Infinitesimal Dipole, Small Dipole	
5.	Finite Length Dipole and Half Wave Dipole	
6.	Antenna Performance Parameters: Radiation pattern	Unit 2
7.	Isotropic, Directional, and Omni directional Patterns, Radiation Intensity and Power density	
8.	Gain & Directivity, Effective area and Aperture, Band width and beam width	
9.	Antenna impedance, Antenna Efficiency	
10.	Polarization. Friis Transmission Equation and reciprocity.	
11.	Antenna Radar Cross Section and SAR.	
12.	Antenna array and Fundamentals:	Unit 3
13.	Linear, planar and circular. End fire & broad side arrays, Two and multielement arrays	
14.	Technique of multiplication of patterns, Binomial and Dolph Chebysheff arrays	
15.	Phased array, Smart antennas and Beam forming techniques.	
16.	Antenna Synthesis and techniques	
17.	Types of Antennas and Analysis	Unit 4
18.	Linear wire antenna and dipole, MF & HF antennas, Tower antenna, VHF & UHF antenna, GSM antennas	
19.	Loop Antenna, Rhombic antenna, Aperture antennas	
20.	Broad band antennas, Equiangular and Conical equiangular spiral antenna, Frequency independent antennas	
21.	Log periodic antenna, Reflector and Horn antennas, approach	

22.	Micro strip antennas	Unit 5
23.	measurement and Design	
24.	Radio Wave Propagation Fundamental	
25.	Ground wave propagation, reflection from earth's surface, Space wave and sky wave propagation	
26.	Tropospheric wave and tropospheric scattering, Duct propagation.	
27.	Ionosphere propagation	
28.	Structure of ionosphere	
29.	atmosphere, various parameters	
30.	Critical frequency, Maximum usable frequency	
31.	Least usable frequency	
32.	Virtual heights	

Remedial classes and MST classes are additive.

Note: - Institute and Department Vision Mission is disseminated in the Initial lecture.

Rubric based assessment, CO, PO are discussed in the class.