

PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY
Department of Electronics & Communication Engineering

LESSON PLAN

Subject Name: - Antennas & Propagation
Year: - 3rd

Subject Code: - ECP-6A
Semester: - 6th

Lecture No	Unit No	Topic	COs Covered
L 1	UNIT-I	Physical concept of radiation	CO1
L 2		Retarded potential	
L 3		Radiation pattern, near- and far- field regions	
L 4		Radiation Resistance Gain, Directive Gain, Power Gain	
L 5		Directivity, Efficiency, Beam width, Effective Height	
L 6		Effective Aperture, Bandwidth and Antenna Temperature	
L 7		Radiation from Hertzian Dipole	
L 8		Short Dipole	
L 9		Monopole Antenna, Folded Dipole Antenna	
L10		Half Wave Dipole	
L 10	UNIT-II	Uniform Linear Arrays - Broadside Arrays	CO2
L 11		End fire Arrays	
L 12		Analysis of arrays of 2 Isotropic Sources - Different Cases	
L 15		Binomial Array, Chebyshev Array	CO3
L16		Turnstile Antennas	
L17		Yagi-Uda antennas	
L 18		Loop Antenna (Rectangular & Circular)	
L 19		Helical Antenna	
L 20	Biconical Antenna.		
L 21	UNIT-III	Radiation from Rectangular Apertures, Uniform and Tapered Aperture	CO3
L 22		Horn antenna, Reflector Antenna	
L 23		Cassegrain and Gregorian Feeding Structures	
L 24		Rectangular Slot Antenna	
L 25		Basic configurations of patch antennas	
L 26		Method to Analyze Patch antenna	
L 27		Transmission Line Model	
L 28		Rumsey's principle	

L 29		Frequency Independent Planar Log Spiral Antenna	
L 30	UNIT- IV	Introduction, Ground Wave Propagation	CO4
L 31		Sky Wave Propagation: Virtual Height, Critical Frequency	
L 32		Maximum Usable Frequency (MUF) – Skip Distance	
L 33		Fading	
L 34		Duct Propagation	
L 35		Troposcatter Propagation	
L 36		Flat Earth and Curved Earth Concept.	
L37		Space Wave Propagation	
L38		Multi Hop Propagation	

Text Books:

1. J. D. Kraus, Antennas, McGraw Hill, 1988.
2. C.A. Balanis, Antenna Theory - Analysis and Design, John Wiley, 1982.

References:

3. Antenna & Wave Propagation- K.D. Prasad, Satya Parkashan.
3. R.E. Collin, Antennas and Radio Wave Propagation, McGraw Hill, 1985.
4. I.J. Bahl and P. Bhartia, Micro Strip Antennas, Artech House, 1980.
6. A.R.Harish, M.Sachidananda, Antenna and Wave Propagation, Oxford University Press.

Web resources:

1. Antenna Parameters
<https://nptel.ac.in/courses/108101092/4>
2. Microstrip Patch Antennas
<https://nptel.ac.in/courses/108101092/19>
3. Radiation mechanism
<https://www.youtube.com/watch?v=T-SbBINgUTU>