Term M.Tech ECE II semester				
Course Name: ANTENNA THEORY AND DESIGNFaculty name: PreetKaur				
Course objective	To introduce students to about fundamental concept of antennas, wire and loop antennas, practical antennas and antenna arrays.			
UNIT	Topic	Duration (in hours)	Reference	
I	Fundamental Concepts: Radiation pattern, near- and far-field regions, reciprocity	3	1
	Directivity and gain, effective aperture, polarization, input impedance, efficiency	4	1
	Friis transmission equation, radiation integrals and auxiliary potential functions	2	1
II	Radiation from Wires and Loops: Infinitesimal dipole	2	2
	finite-length dipole, linear elements near conductors	2	2
	Dipoles for mobile communication, small circular loop	3	2
III	Aperture Antennas: Huygens' principle, radiation from rectangular and circular apertures	3	1
	Design considerations, Babinet's principle	2	1
	Fourier transform method in aperture antenna theory	3	1
IV	Horn and Reflector Antennas:Radiation from sectoral and pyramidal horns	2	2
	design concepts, prime-focus parabolic reflector and cassegrain antennas	3	2
V	Microstrip Antennas: Basic characteristics, feeding methods	2	3
	Methods of analysis, design of rectangular and circular patch antennas.	4	3
VI	Antenna Arrays: Analysis of uniformly spaced arrays with uniform and non-uniform excitation amplitudes	3	1
	extension to planar arrays, synthesis of antenna arrays using Schelkunoff polynomial method	2	1
	Fourier transform method, and Woodward-Lawson method.	2	1
	Total Lecture	42	
Text Book	1.Balanis, C.A., "Antenna Theory and Design", 3rd Ed., John Wiley & Sons.		
	2.Stutzman, W.L. and Thiele, H.A., "Antenna Theory and Design", 2nd Ed., John Wiley & Sons		
	3. Garg, R., Bhartia, P., Bahl, I. and Ittipiboon, A., "Microstrip Antenna Design Handbook", Artech House		
Reference Book	Jordan, E.C. and Balmain, K.G., "Electromagnetic Waves and Radiating Systems", 2nd Ed., Prentice-Hall of India		