

1.	Title of the course	Antennas and Wave Propagation
2.	Course number	EE531L
3.	Structure of credits	3-0-0-3
4.	Offered to	UG
5.	New course/modification to	Modification To EE5042/16
6.	To be offered by	Department of Electrical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	<b>Course Objective(s):</b> To introduce the principles and theory of different types of antennas using in communication systems. Further, different mechanisms of wave propagation in free space will be discussed.	
10.	<b>Course Content:</b> Physical concept of radiation, retarded potentials, Hertzian dipole; Antenna parameters: radiation pattern, gain, directivity, effective aperture, and reciprocity; Radiation from dipoles of arbitrary length; Arrays of point sources, endfire and broadside arrays, pattern multiplication, binomial and Dolph-Chebyshev arrays; Log-periodic and Yagi antennas, frequency-independent antennas; Radiation from apertures, slot and horn antennas, parabolic reflector antennas; Radiation from rectangular and circular patches, feeding techniques; Ground wave, surface wave, and space wave propagation; Tropospheric and duct propagation; Structure of ionosphere and ionospheric propagation; Multipath fading, ray bending and other propagation phenomena; Indoor propagation.	
11.	<b>Textbook(s):</b> 1. Balanis C A, <i>Antenna Theory and Design</i> , 3rd Edition, John Wiley & Sons (2005). 2. Collin R E, <i>Antennas and radio wave propagation</i> , 5th Edition, McGraw-Hill (1985).	
12.	<b>Reference(s):</b> 1. Harish A R and Sachidananda M, <i>Antennas and wave Propagation</i> , 1st Edition, Oxford University Press (2007). 2. Kraus J D and Fleisch D A, <i>Electromagnetics with Applications</i> , 5th Edition, McGraw-Hill (2010). 3. Stutzman W L and Thiele H A., <i>Antenna Theory and Design</i> , 2nd Edition, John Wiley & Sons (1998).	