

GANPAT UNIVERSITY										
FACULTY OF DIPLOMA ENGINEERING										
Programme		Diploma Engineering				Branch/Spec.	Electronics and Communication Engineering			
Semester		VI				Version	1.0.0.0			
Effective from Academic Year				2026-27		Effective for the batch Admitted in			July 2024	
Subject code		1EC6102		Subject Name		Fundamentals of antenna Engineering				
Teaching scheme						Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total	
	L	TU	P	TW						
Credit	3	0	1	0	4	Theory	40	60	100	
Hours	3	0	2	0	5	Practical	30	20	50	
Pre-requisites:										
Fundamental of Electromagnetic Theory										
Course outcomes:										
COs	Description									
CO1	Understand basic concepts of antennas and electromagnetic radiation.									
CO2	Explain antenna parameters and radiation characteristics.									
CO3	Analyze different types of antennas and their applications.									
CO4	Understand antenna arrays, propagation mechanisms, and practical measurement concepts.									
Theory syllabus										
Unit	Content								Hrs	
1	Introduction to Antennas and Antenna Parameters: Introduction to electromagnetic theory, Basic concept of antenna, necessity of antenna, antenna as a transducer, types of antennas, frequency spectrum, basic antenna terminology, radiation mechanism Radiation pattern, beam width, gain, directivity, efficiency, polarization, bandwidth, input impedance, antenna temperature, radiation resistance.								12	
2	Elementary Antennas: Hertzian dipole, half-wave dipole, monopole antenna, current distribution, radiation pattern, folded dipole, loop antenna.								8	
3	Antenna Arrays: Principle of pattern multiplication, broadside and end-fire arrays, uniform linear array, binomial array, phased array concept, applications.								8	
4	VHF, UHF and Microwave Antennas: Yagi-Uda antenna, log-periodic antenna, Log periodic antenna, Helical antenna, horn antenna, parabolic reflector antenna, microstrip patch antenna, applications in modern communication.								12	

5	Wave Propagation & Measurements: Ground wave, sky wave, space wave propagation, basics of antenna measurements, radiation pattern measurement, impedance measurement, VSWR.	5
Practical content		
Practical assignments and tutorials are based on the above syllabus.		
Text Books		
1	“Antennas for all applications”, J.D. Krauss (TMH)	
Reference Books		
1	“Antenna & Wave Propagation”, K.D. Prasad Satyaprakash Publications	
2	“Antenna Theory: Analysis and design”, C. Balanis Wiley India	
ICT/MOOCs Reference		
1	https://onlinecourses.nptel.ac.in/noc20_ee20/preview	

Mapping of CO with PO and PSO:															
	P O 1	P O 2	P O 3	P O 4	P O 5	P O 6	P O 7	P O 8	P O 9	P O 10	P O 11	P O 12	P S O 1	P S O 2	P S O 3
CO1	2	2	1	0	0	0	0	0	0	1	0	2	2	2	1
CO2	3	3	2	2	1	0	0	0	0	1	0	1	2	1	2
CO3	2	3	3	2	2	0	0	0	0	2	1	1	3	2	2
CO4	3	3	2	2	2	0	0	0	0	1	1	2	2	2	1