Antennas Lab

Course Code	23ES1552	Year	III	Semester	I
Course Category	ES	Branch	ECE	Course Type	Lab
Credits	1	L-T-P	0-0-2	Prerequisites	Electro Magnetic Fields & Waves
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes		
Upon successful completion of the course, the student will be able to		BL
CO1	Utilize simulation software tools for antenna design.	L3
CO2	Model and simulate various antennas for different frequency ranges.	L3
CO3	Measure the radiation characteristics of the antennas.	L3
CO4	Analyse the radiation characteristics of antenna arrays.	L4
CO5	Make an effective report of the experiments.	L3

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of Correlations (3:High, 2:Medium,1:Low)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3				3						1	3	
CO2	3				3						1	3	
CO3	3				1	1					1	3	
CO4	3	1			1	1					1	3	
CO5									3		1	3	
Average	3	1			2	1			3		1	3	

Syllabus		
S. No.	**Experimental Topics**	**Mapped CO**
1	Introduction to antenna simulation software tools	CO1, CO5
2	Design and analysis of wire antennas (Dipoles, Monopoles, Loop antennas, Yagi-Uda antenna etc.)	CO1, CO2, CO3, CO5
3	Design and analysis of wideband antennas (Conical & Bow-Tie antennas)	CO1, CO2, CO3, CO5
4	Design and analysis of Rectangular microstrip patch antenna.	CO1, CO2, CO3, CO5
5	Measurement of radiation characteristics of Antennas	CO1, CO3, CO5
6	Analysis of End fire and Broadside Arrays.	CO1, CO4, CO5

NOTE: ANSYS HFSS/ MATLAB may be used for conducting the experiments.

- A Minimum of **TEN** experiments covering all the above topics need to be conducted.

Learning Resources
Text Books
1. Constantine A. Balanis - Antenna Theory and Applications – John Wiley & Sons, 4th Ed., 2021 2. J.D Kraus, R. J. Marhefka & A.S.Khan - Antennas and Wave Propagation –TMH, 4th Ed., 2010.
Reference Books
1. E.C. Jordan and K.G. Balmain - Electromagnetic Waves and Radiating Systems – PHI, 2nd Ed., 2009. 2. K.D. Prasad, Satya Prakashan - Antennas and Wave Propagation – Tech India Publications, New Delhi, 2001
e- Resources & other digital material
1. https://anlage.umd.edu/HFSSv10UserGuide.pdf 2. https://www.youtube.com/watch?v=kUDlCVOPlvY