

GOPAL KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY

GOURAHARI VIHAR, PO: RANIPUT, JEYPORE – 764 005

LESSON PLAN

Name of the Subject: MICROWAVE ENGINEERING

Name of the Faculty: Subrat Prasad Rath

Semester: 5th Semester

Branch: ETC

Semester From:

No. of Weeks: 15 Weeks

Week	Day	Theory/ Practical Topics	Classes
		UNIT 1- High frequency Transmission line	10
1	1.	The Lumped–Element Circuit model for a Transmission line	1
	2.	Wave propagation	1
	3.	The lossless line	1
	4.	Field Analysis of Co-axial Transmission Lines	1
2	5.	R, L, C, G parameters of Co-axial & Two wire Transmission Lines	1
	6.	Terminated lossless transmission line	1
	7.	Transmission line as circuit element	1
	8.	The Smith Chart	1
	9.	Solution of Transmission line problems using Smith Chart	1
3	10.	Single Stub and Double Stub matching. Low loss line	1
		UNIT 2- Wave guides	10
	11.	Rectangular waveguide,	1
4	12.	Field solution for TE and TM modes,	1
	13.	Field patterns power flow through waveguide	1
	14.	Attenuation due to conductor and dielectric losses	1
	15.	Design of Rectangular waveguide to support	1
	16.	Dominant TE ₁₀ only.	1
5	17.	TEM mode in Co-axial line. Cylindrical waveguide - Dominant Mode	1
	18.	Design of Cylindrical Waveguide to support Dominant TE ₁₁ mode. Microwave Resonator	1
	19.	Rectangular Waveguide Cavities. Resonant frequencies and of Cavity Supporting	1
	20.	Dominant mode only.	1
		UNIT 3-Excitation of waveguide and Resonators waveguide components	6
6	21.	Power Dividers and Directional Couplers	1
	22.	Basic Properties	2
	23.		

	24.	The T-Junction Power Divider	1
7	25.	Waveguide Directional Couplers.	2
	26.		
		UNIT 4-Principles of Operations	4
	27.	Fixed and Precision Variable Attenuator	1
	28.	Isolator, Circulator	1
8	29.	Gunn Oscillator Principle and performance	1
	30.	Simple Analysis electron field interaction.	1
		UNIT 5-Microwave propagation	4
	31.	Line of sight propagation. Attenuation of Microwaves by Atmospheric gases	1
9	32.	Water Vapour & Precipitates. Antenna Analysis and Design: Dipole	1
	33.	Monopole, Loop, Antenna arrays and Pattern synthesis, Horn Antennas	1
	34.	E-And H- Plane Horns. Radiation Patterns. Pyramidal Horn. Gain of Horn Antenna	1
	35.		
	36.		

Books Recommended:

1. Microwave Engineering by D.M.Pozor, 2nd Edition, John Wiley & Sons.
2. Microwave Devices and Circuits, 3rd Edition, Samuel Y, Liao, Pearson Education
3. R. E. Collin, Foundations Microwave Engineering, John Wiley & Sons, Inc.
4. Microwave Engineering, A Das & S Das, TMH.
5. Microwave Devices and Circuits, G S N Raju