

PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY
Department of Electronics & Communication Engineering

LESSON PLAN

Subject Name: - Microwave Theory and Techniques
Year: - 2021

Subject Code: - ECP-14A
Semester:- 7th

Lecture No	Unit No	Topic	References
L1	Unit-1	Introduction To Microwave Engineering, Applications Of Microwave Engineering And Discussion Of Syllabus	PPT
L2		History of Microwaves, Microwave Frequency bands	PPT
L3		Applications of Microwaves: Civil and Military, Medical, EMI/ EMC, Effect of Microwaves on Human Body.	Samuel Y. Liao, Microwave Engineering, Pearson Education 3rd/4th/ higher Ed
L4		Mathematical Model of Microwave Transmission-Concept of Mode	Samuel Y. Liao, Microwave Engineering, Pearson Education 3rd/4th/ higher Ed
L5		Features of TEM, TE and TM Modes	Annapurna & Sisir K. Das, Microwave Engineering
L6		Losses associated with microwave transmission	Annapurna & Sisir K. Das, Microwave Engineering
L7		Concept of Impedance in Microwave Transmission.	https://www.youtube.com/watch?v=ro1NBnqQBIQ
L8		Review of waveguides in brief	https://www.youtube.com/watch?v=r9-m17IPOco
L9		Coaxial Transmission Line, Strip line, Microstrip line.	https://www.youtube.com/watch?v=W05mR0ouz90
L10		Microwave Resonators: Cavity Resonators: Rectangular	https://www.youtube.com/watch?v=ydjf_1VHpjk
L11		Cylindrical, and Coaxial Resonators Excitation	https://www.youtube.com/watch?v=ydjf_1VHpjk
L12		Coupling of cavities, Q factor	https://www.youtube.com/watch?v=ydjf_1VHpjk
L13		Unit-3	Matrix description of microwave circuits Scattering matrix-its properties, measurement of scattering coefficients, scattering matrices for common microwave systems.
L14	Microwave Components: Waveguide Tees-E-Plane		https://www.youtube.com/watch?v=5Q4TNOflgMc

			NPTEL VIDEOS
L15		H-PLANE	https://www.youtube.com/watch?v=5Q4TNOOf1gMc NPTEL VIDEOS
L16		Numericals and queries	Samuel Y. Liao, Microwave Engineering, Pearson Education 3rd/4th/ higher Ed
L17		Magic tee, rat race	https://www.youtube.com/watch?v=pp23nMoS2_0 NPTEL VIDEOS
L18		Directional coupler	https://www.youtube.com/watch?v=44mBn7nyMIMNPTEL VIDEOS
L19		Tuning screws and stubs, isolators	https://www.youtube.com/watch?v=TiAuAf6cZUM NPTEL VIDEOS
L20		Circulators-their constructional features	https://www.youtube.com/watch?v=pp23nMoS2_0 NPTEL VIDEOS
L21		Applications. Microwave filters	https://www.youtube.com/watch?v=E0G-13MeTFc NPTEL VIDEOS
L22		Numericals and queries	Samuel Y. Liao, Microwave Engineering, Pearson Education 3rd/4th/ higher Ed
L23		Phase shifters	https://www.youtube.com/watch?v=5Q4TNOOf1gMc NPTEL VIDEOS
L24		Attenuators, wavemeters	https://www.youtube.com/watch?v=pp23nMoS2_0 NPTEL VIDEOS
L25	Unit-4	Solid state microwave devices: tranferred electron devices- gunn effect	https://www.youtube.com/watch?v=h-uD3IEOLbM NPTEL VIDEOS
L26		Numericals and queries	Samuel Y. Liao, Microwave Engineering, Pearson Education 3rd/4th/ higher Ed
L27		Negative diffrential resistance phenomenon	https://www.youtube.com/watch?v=gUdlk87j8hE NPTEL VIDEOS
L28		Field domain formation	https://www.youtube.com/watch?v=p-0qK5I7C8Q NPTEL VIDEOS
L29		Baritt diodes,	https://www.youtube.com/watch?v=TXjHWGngsME

			NPTEL VIDEOS
L30		Parametric amplifiers	
L31		Numericals	Samuel Y. Liao, Microwave Engineering, Pearson Education 3rd/4th/ higher Ed
L32		Numericals and queries	Annapurna & Sisir K. Das, Microwave Engineering, Tata McGraw-Hill. David M. Pozar, Microwave Engineering, John Wiley and Sons Inc
L33	Unit-2	Microwave generators:construction, characteristics, operating principle and typical applications of klystron	https://www.youtube.com/watch?v=-9QIUsu0s-U NPTEL
L34		Operating principle and typical applications of klystron	https://www.youtube.com/watch?v=-9QIUsu0s-U NPTEL
L35		Reflex klystron	https://www.youtube.com/watch?v=-9QIUsu0s-U NPTEL
L36		Derivation of reflex klystron	https://www.youtube.com/watch?v=-9QIUsu0s-U NPTEL
L37		Magnetron(cylindrical magnetron and description of π mode applications)	https://www.youtube.com/watch?v=YkfwrTXJqaQ
L38		Derivation of magnetron	https://www.youtube.com/watch?v=YkfwrTXJqaQ
L39		Numerical and queries	Annapurna & Sisir K. Das, Microwave Engineering, Tata McGraw-Hill. David M. Pozar, Microwave Engineering, John Wiley and Sons Inc
L40		Traveling wave tube(twt).	https://www.youtube.com/watch?v=K8bItHwpFZ8
L41		Derivation of traveling wave tube(twt).	https://www.youtube.com/watch?v=K8bItHwpFZ8
L42		Microwave measurements: measurement of frequency,	https://www.youtube.com/watch?v=zIyeWF1iAfQ&list=PLL6Ah8JHS-GABe6o44AsSOY4fi1sIUyH4

L43		Impedance (using slotted section)	https://www.youtube.com/watch?v=zIyeWF1iAfQ&list=PLL6Ah8JHS-GABe6o44AsSOY4fI1sIUyH4
L44		Attenuation, power, dielectric constant	https://www.youtube.com/watch?v=zIyeWF1iAfQ&list=PLL6Ah8JHS-GABe6o44AsSOY4fI1sIUyH4
L45		Numerical and queries	Samuel Y. Liao, Microwave Engineering, Pearson Education 3rd/4th/ higher Ed
L46		Measurement of v.s. W. R., insertion loss and permeability	https://www.youtube.com/watch?v=zIyeWF1iAfQ&list=PLL6Ah8JHS-GABe6o44AsSOY4fI1sIUyH4

Text Book:

1. Samuel Y. Liao, Microwave Engineering, Pearson Education 3rd/4th/ higher Ed.

Reference Books:

2. Annapurna & Sisir K. Das, Microwave Engineering, Tata McGraw-Hill.
David M. Pozar, Microwave Engineering, John Wiley and Sons Inc