LESSON PLAN

NAME OF THE FACULTY : - HIMANSHU YADAV

DISCIPLINE : - ECE

SEMESTER : - FIFTH

SUBJECT : - MICROWAVE ENGG

LESSON PLAN DURATION : - 15 weeks (from JULY 2018 to NOVEMBER 2018)

WORK LOAD (LECTURE/PRACTICAL) PER WEEK (IN HOURS):- LECTURE-**03**, PRACTIACL-**03**

WEEK	THEORY		PRACTICAL	
	LECTURE DAY	TOPIC (including assignment/test)	PRACTICAL DAY	TOPIC
1st	1st	**Introduction to Microwaves** Introduction to microwaves and its applications	1st Group-1	**1.** To measure electronic and mechanical tuning range of a Reflex Klystron
	2nd	Classification on the basis of its frequency bands (HF, VHF, UHF, L, S, C, X, KU, KA, mm, SUB, mm)		
	3rd	• **assignments** • **Class Test**	2nd Group-2	**1.** To measure electronic and mechanical tuning range of a Reflex Klystron
2nd	4th	**Wave guides** Rectangular and circular wave guides and their Applications.	3rd Group-1	**2.**To measure VSWR of a given Load
	5th	Mode of wave guide; Propagation constant of a rectangular wave guide		

	6th	cut off wavelength, guide wavelength and their relationship with free space wavelength (no Mathematical Derivation).	4th Group-2	**2.**To measure VSWR of a given Load
3rd	7th	Impossibility of TEM mode in a wave guide.	5th Group-1	**Revision**
	8th	• **assignments** • **Class Test**		
	9th	**Microwave Components** Constructional features	6th Group-2	**Revision**
4th	10th	Characteristics and application of tees, bends, matched termination	7th Group-1	**3.** To measure the Klystron frequency by slotted section method
	11th	twists, detector, mount, slotted section, directional coupler		
	12th	Fixed and variable attenuator, isolator, circulator	8th Group-2	**3.** To measure the Klystron frequency by slotted section method
5th	13th	duplex, coaxial to wave guide adaptor	9th Group-1	**4.** To measure the directivity and coupling factor of directional coupler
	14th	• **assignments** • **Class Test**		
	15th	**Microwave Devices** Basic concepts of thermionic emission and vacuum Tubes	10th Group-2	**4.** To measure the directivity and coupling factor of directional coupler

6th	16th	Effects of inter- electrode capacitance, Lead Inductance and Transit time on the high frequency performance of conventional vacuum tubes and Step to extend their high frequency operations.	11th Group-1	**Revision**
	17th	Construction, characteristics, operating principles and typical applications of Multi Cavity Klystron		
	18th	Construction, characteristics, operating principles and typical applications of Reflex Klystron	12th Group-2	**Revision**
7th	19th	Construction, characteristics, operating principles and typical applications of Multi Cavity magnetron	13th Group-1	**5.** To plot the radiation pattern of a HORN antenna in horizontal and vertical planes
	20th	Construction, characteristics, operating principles and typical applications of TWT		
	21th	Construction, characteristics, operating principles and typical applications of Gunn Diode	14th Group-2	**5.** To plot the radiation pattern of a HORN antenna in horizontal and vertical planes

8th	22th	Construction, characteristics, operating principles and typical applications of Impatt Diode	15th Group-1	**Revision**
	23th	• **assignments** • **Class Test**		
	24th	**Microwave antennas** Structure characteristics and typical applications of Horn antenna	15th Group-2	**Revision**
9th	25th	Structure characteristics and typical applications of Dish antenna	17th Group-1	**6.** To verify the properties of magic TEE
	26th	• **assignments** • **Class Test**		
	27th	**Microwave Communication systems** Block diagram and working principles of microwave Communication link.	18th Group-2	**6.** To verify the properties of magic TEE
10th	28th	Troposcatter Communication: Troposphere and its properties	19th Group-1	**Revision**
	29th	Tropospheric duct formation and propagation		
	30th	troposcatter propagation	20th Group-2	**Revision**
11th	31th	• **assignments** • **Class Test**	21th Group-1	**Revision**

	32th	**Radar Systems** Introduction to radar, its various applications		
	33th	Radar range equation (no derivation) And its applications.	22th Group-2	**Revision**
12th	34th	Block diagram and operating principles of basic pulse radar	23th Group-1	**Revision**
	35th	Concepts of ambiguous range, radar area of Cross-section and its dependence on frequency.		
	36th	Block diagram and operating principles of CW (Doppler) And their applications.	24th Group-2	**Revision**
13th	37th	Block diagram and operating principles of FMCW Radar And their applications.	25th Group-1	**Test**
	38th	Block diagram and operating principles of MTI radar		
	39th	Radar display- PPI	26th Group-2	**Test**
14th	40th	• **assignments** • **Class Test**	27th Group-1	**Revision**
	41th	Introduction to VSAT transponders multiple access techniques		
	42th	VSAT and its features	28th Group-2	**Revision**

15th	43th	• **assignments** • **Class Test**	29th Group-1	**Revision**
	44th	• **Class Test**		
	45th	• **Class Test**	30th Group-2	**Revision**