

# Govt. Polytechnic, Manesar (Gurgaon)

## LESSON PLAN

**Name of the Faculty** : Smt Sharmila (Theory & practical)

**Discipline** : Electronics & Communication Engg.

**Semester** : 4<sup>th</sup>

**Subject** : Communication Systems

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

Work Load (Lecture / Practical) per week (in hours): Lecture-03, Practical-03

Week	Theory		Practical	
	Lecture Day	Topic (Including assignment / test)	Practical day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	Introduction about the subject/course and its syllabus	1 <sup>st</sup>	Group 1: <b>Exp 1-</b> To observe the waveforms at different stages of an AM transmitter.
	2 <sup>nd</sup>	<b>Unit-1-AM/FM Transmitter:-</b> a) Classification of transmitters on the basis of modulation	2 <sup>nd</sup>	Group 2: <b>Exp 1-</b> To observe the waveforms at different stages of an AM transmitter.
	3 <sup>rd</sup>	Classification of transmitters on the basis of service, frequency and power		
2 <sup>nd</sup>	4 <sup>th</sup>	b) Block diagram of AM transmitters and working of each stage	3 <sup>rd</sup>	Group 1: <b>Exp. 1-</b> To observe the waveforms at different stages of an AM transmitter. (Revision)
	5 <sup>th</sup>	c) Block diagram and working principles of reactance FET Transmitter	4 <sup>th</sup>	Group 2: <b>Exp. 1-</b> To observe the waveforms at different stages of an AM transmitter. (Revision)
	6 <sup>th</sup>	Armstrong FM transmitters <b>Revision and discussion</b>		
3 <sup>rd</sup>	7 <sup>th</sup>	<b>Unit-2- AM/FM Radio Receivers</b> a) Principle and working with block diagram of super heterodyne AM receiver in detail with function of each block and study I/O waveforms	5 <sup>th</sup>	Group 1: <b>Exp. 2-</b> To observe the waveforms at different stages of a Radio Receiver
	8 <sup>th</sup>	b) Performance characteristics of a radio receiver : sensitivity, selectivity	6 <sup>th</sup>	Group 2: <b>Exp. 2-</b> To observe the waveforms at different stages of a Radio Receiver
	9 <sup>th</sup>	Fidelity, S/N ratio, image rejection ratio, ISI standards on radio receivers		
4 <sup>th</sup>	10 <sup>th</sup>	c) Selection criteria for intermediate frequency (IF) d) Concepts of simple and delayed AGC	7 <sup>th</sup>	Group 1: <b>Exp. 2-</b> To observe the waveforms at different stages of a Radio Receiver (Revision)
	11 <sup>th</sup>	d) Block diagram of FM Receiver in detail with I/O waveforms.	8 <sup>th</sup>	Group 2: <b>Exp. 2-</b> To observe the waveforms at different stages of a Radio Receiver (Revision)
	12 <sup>th</sup>	Need for limiting and de-emphasis in FM reception		

5 <sup>th</sup>	13 <sup>th</sup>	<b>Assignment &amp; class test: sensitivity, selectivity, fidelity, S/N ratio, image rejection ratio</b>	9 <sup>th</sup>	Group 1: <b>Exp.3-</b> To align AM broadcast radio receiver
	14 <sup>th</sup>	e) Block diagram of communication receivers	10 <sup>th</sup>	Group 2: <b>Exp. 3-</b> To align AM broadcast radio receiver
	15 <sup>th</sup>	Differences between communication & broadcast receivers		
6 <sup>th</sup>	16 <sup>th</sup>	<b>Unit-3-Antennas:-</b> a) Electromagnetic spectrum and its various ranges: VLF, LF, MF, HF, VHF, UHF, Microwave.	11 <sup>th</sup>	Group 1: <b>Exp. 3-</b> To align AM broadcast radio receiver (Revision)
	17 <sup>th</sup>	b) Physical concept of radiation of electromagnetic energy from a dipole. Concept of polarization of EM Waves	12 <sup>th</sup>	Group 2: <b>Exp. 3-</b> To align AM broadcast radio receiver (Revision)
	18 <sup>th</sup>	c) Physical concepts of point source, gain, directivity, aperture, effective area, radiation pattern, beam width, radiation resistance, loss resistance.		
7 <sup>th</sup>	19 <sup>th</sup>	d) Types of antenna: Half wave dipole, folded dipole antenna	13 <sup>th</sup>	Group 1: <b>Exp. 4-</b> To identify and study the various types of antennas used in different frequency ranges.
	20 <sup>th</sup>	Medium wave (mast) antenna	14 <sup>th</sup>	Group 2: <b>Exp. 4-</b> To identify and study the various types of antennas used in different frequency ranges.
	21 <sup>st</sup>	Patch antenna, <b>Revision and MCQ Quiz</b>		
8 <sup>th</sup>	22 <sup>nd</sup>	Yagi –Uda antenna	15 <sup>th</sup>	Group 1: <b>Exp. 4-</b> To identify and study the various types of antennas used in different frequency ranges. (Revision & Viva)
	23 <sup>rd</sup>	Ferrite rod antenna (used in transistor receivers)	16 <sup>th</sup>	Group 2: <b>Exp. 4-</b> To identify and study the various types of antennas used in different frequency ranges. (Revision & Viva)
	24 <sup>th</sup>	e) Description of broad-side and end fire arrays with their pattern and applications		
9 <sup>th</sup>	25 <sup>th</sup>	Explain Rhombic antenna	17 <sup>th</sup>	Group 1: <b>Exp. 5-</b> To plot the radiation pattern of a directional and omni directional antenna.
	26 <sup>th</sup>	Dish antenna	18 <sup>th</sup>	Group 2: <b>Exp. 5-</b> To plot the radiation pattern of a directional and omni directional antenna.
	27 <sup>th</sup>	<b>Assignment, Revision &amp; Class test: Dish, Patch &amp; Yagi Antenna</b>		
10 <sup>th</sup>	28 <sup>th</sup>	<b>Unit-4-Propagation:-</b> a) Basic idea about different modes of wave propagation & applications	19 <sup>th</sup>	Group 1: <b>Exp. 5-</b> To plot the radiation pattern of a directional and omni directional antenna. (Revision & Viva)
	29 <sup>th</sup>	Ground wave propagation and its characteristics	20 <sup>th</sup>	Group 2: <b>Exp. 5-</b> To plot the radiation pattern of a directional and omni directional antenna. (Revision & Viva)
	30 <sup>th</sup>	Summer field equation for field strength		

11 <sup>th</sup>	31 <sup>st</sup>	b) Space wave communication, line of sight propagation	21 <sup>st</sup>	Group 1: <b>Exp. 6-</b> To plot the variation of field strength of a radiated wave, with distance from a transmitting Antenna.
	32 <sup>nd</sup>	Concept of effective earth radius	22 <sup>nd</sup>	Group 2: <b>Exp. 6-</b> To plot the variation of field strength of a radiated wave, with distance from a transmitting Antenna.
	33 <sup>rd</sup>	Range of space wave propagation, Standard atmosphere		
12 <sup>th</sup>	34 <sup>th</sup>	c) Duct propagation	23 <sup>rd</sup>	Group 1: <b>Exp. 6-</b> To plot the variation of field strength of a radiated wave, with distance from a transmitting antenna. (Revision & Viva)
	35 <sup>th</sup>	Sky wave propagation, Ionosphere and its layers	24 <sup>th</sup>	Group 2: <b>Exp. 6-</b> To plot the variation of field strength of a radiated wave, with distance from a transmitting antenna. (Revision & Viva)
	36 <sup>th</sup>	Ionosphere and its layers contd. , <b>Revision and discussion</b>		
13 <sup>th</sup>	37 <sup>th</sup>	Definition of terms: Virtual height, critical frequency	25 <sup>th</sup>	Group 1: <b>Exp. 7-</b> Installation of Dish Antenna for best reception.
	38 <sup>th</sup>	Skip distance, maximum usable frequency	26 <sup>th</sup>	Group 2: <b>Exp. 7-</b> Installation of Dish Antenna for best reception.
	39 <sup>th</sup>	Multiple hop propagation		
14 <sup>th</sup>	40 <sup>th</sup>	<b>Unit-5-Digital Modulation Techniques:</b> Introduction of PCM	27 <sup>th</sup>	Group 1: <b>Exp. 8-</b> To observe waveforms at input and output of ASK and FSK modulators.
	41 <sup>st</sup>	DPCM & DELTA Modulation	28 <sup>th</sup>	Group 2: <b>Exp. 8-</b> To observe waveforms at input and output of ASK and FSK modulators.
	42 <sup>nd</sup>	Basic Working of ASK, FSK		
15 <sup>th</sup>	43 <sup>rd</sup>	Concept of PSK, QPSK	29 <sup>th</sup>	Group 1: <b>Exp. 8-</b> To observe waveforms at input and output of ASK and FSK modulators. (Revision & Viva)
	44 <sup>th</sup>	Spread Spectrum Techniques & Frequency Hopping Technique	30 <sup>th</sup>	Group 2: <b>Exp. 8-</b> To observe waveforms at input and output of ASK and FSK modulators. (Revision & Viva)
	45 <sup>th</sup>	<b>Assignment, Revision &amp; Class test: Delta modulation, Sky &amp; space wave propagation</b>		