

GOVERNMENT POLYTECHNIC SAMBALPUR, RENGALI

DEPARTMENT OF E&TC ENGINEERING

LESSON PLAN(WINTER-23)

SUBJECT-ANALOG AND DIGITAL COMMUNICATION (TH.3)

SEMESTER- 5th

NAME OF THE FACULTY-

TOTAL NO. OF PERIODS-75(5/W)

UNIT	DATE	PERIOD	TOPICS TO BE COVERED AS PER SYALLABUS
1	1 st week of August 2022		Elements of Communication Systems.
		1	Communication Process- Concept of Elements of Communication System & its Block diagram
		2	Source of information & Communication Channels
		3	Classification of Communication systems (Line & Wireless or Radio)
		4	Modulation Process, Need of modulation and classify modulation process
		5	Analog and Digital Signals & its conversion
		6	Basic concept of Signals & Signals classification (Analog and Digital)
		7	Bandwidth limitation
		8	Previous year questions discussion & assignments
2	3 rd week of August 2022		Amplitude (linear) Modulation System
		1	Amplitude modulation & derive the expression for amplitude modulation signal, power relation in AM wave & find Modulation Index.
		2	Generation of Amplitude Modulation(AM)- Linear level AM modulation only
		3	Demodulation of AM waves (liner diode detector, square law detector & PLL)
		4	Explain SSB signal and DSBSC signal
		5	Methods of generating & detection SSB-SC signal (Indirect method only)
		6	Methods of generation DSB-SC signal (Ring Modulator) and detection of DSB-SC signal (Synchronous detection)
		7	Concept of Balanced modulators
		8	Vestigial Side Band Modulation

		9	Previous year questions discussion & assignments
3	1 st week of September, 2022		Angle Modulation Systems.
		1	Concept of Angle modulation & its types (PM & FM)
		2	Basic principle of Frequency Modulation & Frequency Spectrum of FM Signal
		3	Expression for Frequency Modulated Signal & Modulation Index and sideband of FM signal
		4	Explain Phase modulation & difference of FM & PM)- working principle with Block Diagram
		5	Compare between AM and FM modulation (Advantages & Disadvantages)
		6	Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram
		7	Methods of FM Demodulator or detector (Forster-Seely & Ratio detector)- working principle with Block Diagram
		8	Previous year questions discussion & assignments
4	3 rd week of September, 2022		AM & FM TRANSMITTER & RECEIVER
		1	Classification of Radio Receivers
		2	Define the terms Selectivity, Sensitivity, Fidelity and Noise Figure
		3	AM transmitter - working principle with Block Diagram
		4	Concept of Frequency conversion, RF amplifier & IF amplifier ,Tuning, S/N ratio
		5	Working of super heterodyne radio receiver with Block diagram
		6	Working of FM Transmitter & Receiver with Block Diagram.
		7	Previous year questions discussion & assignments
5	1 st week of October, 2022		ANALOG TO DIGITAL CONVERSION & PULSE MODULATION SYSTEM
		1	Concept of Sampling Theorem , Nyquist rate & Aliasing
		2	Sampling Techniques (Instantaneous, Natural, Flat Top)
		3	Analog Pulse Modulation - Generation and detection of PAM, PWM & PPM system with the help of Block diagram & comparison of all above.
		4	Concept of Quantization of signal & Quantization error
		5	Generation & Demodulation of PCM system with Block diagram & its applications
		6	Companding in PCM & Vocoder
		7	Time Division Multiplexing & explain the operation with circuit diagram
		8	Generation & demodulation of Delta modulation with Block diagram.
		9	Generation & demodulation of DPCM with Block diagram.
		10	Comparison between PCM, DM , ADM & DPCM

		11	Previous year questions discussion & assignments
6	1 st week of November,2022		DIGITALMODULATION TECHNIQUES.
		1	Concept of Multiplexing (FDM & TDM)- (Basic concept , Transmitter & Receiver) & Digital modulation formats.
		2	Advantages of digital communication system over Analog system
		3	Digital modulation techniques & types.
		4	Generation and Detection of binary ASK, FSK, PSK, QPSK, QAM, MSK, GMSK.
		5	Working of T1-Carrier system
		6	Spread Spectrum & its applications
		7	Working operation of Spread Spectrum Modulation Techniques (DS- SS & FH-SS)
		8	Define bit, Baud, symbol & channel capacity formula.(Shannon Theorems)
		9	Application of Different Modulation Schemes.
		10	Types of Modem & its Application
11	Previous year questions discussion & assignments		