NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT:Th.3 (ANALOG & DIGITAL COMMUNICATION)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	ELEMENTS OF COMMUNICATION SYSTEMS	10	10
2	AMPLITUDE (LINEAR) MODULATION SYSTEM	15	15
3	ANGLE MODULATION SYSTEMS	10	10
4	AM & FM TRANSMITTER & RECEIVER	8	8
5	ANALOG TO DIGITAL CONVERSION & PULSE MODULATION SYSTEM	17	17
6	DIGITALMODULATION TECHNIQUES	15	15
	TOTAL	75	75

LESSON PLAN		
Discipline: ELECTRICAL AND ELECTRONIC ENGINEERING	**Semester:** 5th	**Name of the Teaching Faculty: Er. ELINA JAYSINGH**
Week	**Class Day**	**Theory / Practical Topics**
1st	**1st**	**Unit-1: Elements of Communication Systems.** 1.1 Communication Process- Concept of Elements of Communication System & its Block diagram
	2nd	1.1 Communication Process- Concept of Elements of Communication System & its Block diagram
	3rd	1.1 Communication Process- Concept of Elements of Communication System & its Block diagram
	4th	1.2 Source of information & Communication Channels
	5th	1.3 Classification of Communication systems (Line & Wireless or Radio)
2nd	**1st**	1.4 Modulation Process, Need of modulation and classify modulation process
	2nd	1.5 Analog and Digital Signals & its conversion.
	3rd	1.6 Basic concept of Signals & Signals classification (Analog and Digital)
	4th	1.6 Basic concept of Signals & Signals classification (Analog and Digital)
	5th	1.7 Bandwidth limitation
3rd	**1st**	**Unit-2: Amplitude (linear) Modulation System** 2.1 Amplitude modulation & derive the expression for amplitude modulation signal, power relation in AM wave & find Modulation Index.
	2nd	2.1 Amplitude modulation & derive the expression for amplitude modulation signal, power relation in AM wave & find Modulation Index.
	3rd	2.1 Amplitude modulation & derive the expression for amplitude modulation signal, power relation in AM wave & find Modulation Index.

	4th	2.2 Generation of Amplitude Modulation(AM)- Linear level AM modulation only
	5th	2.2 Generation of Amplitude Modulation(AM)- Linear level AM modulation only
4th	1st	2.3 Demodulation of AM waves (liner diode detector, square law detector & PLL)
	2nd	2.3 Demodulation of AM waves (liner diode detector, square law detector & PLL)
	3rd	2.4 Explain SSB signal and DSBSC signal
	4th	2.5 Methods of generating & detection SSB-SC signal (Indirect method only)
	5th	2.5 Methods of generating & detection SSB-SC signal (Indirect method only)
5th	1st	2.6 Methods of generation DSB-SC signal (Ring Modulator) and detection of DSB-SC signal (Synchronous detection
	2nd	2.6 Methods of generation DSB-SC signal (Ring Modulator) and detection of DSB-SC signal (Synchronous detection
	3rd	2.6 Methods of generation DSB-SC signal (Ring Modulator) and detection of DSB-SC signal (Synchronous detection
	4th	2.7 Concept of Balanced modulators
	5th	2.8 Vestigial Side Band Modulation
6th	1st	**Unit-3: Angle Modulation Systems.** 3.1 Concept of Angle modulation & its types (PM & FM)
	2nd	3.2 Basic principle of Frequency Modulation & Frequency Spectrum of FM Signal.
	3rd	3.3 Expression for Frequency Modulated Signal & Modulation Index and sideband of FM signal
	4th	3.4 Explain Phase modulation & difference of FM & PM)- working principle with Block Diagram
	5th	3.4 Explain Phase modulation & difference of FM & PM)- working principle with Block Diagram
	1st	3.5 Compare between AM and FM modulation (Advantages & Disadvantages)
	2nd	3.6 Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram

7th	3rd	3.6 Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram
	4th	3.7 Methods of FM Demodulator or detector (Forster-Seely & Ratio detector)- working principle with Block Diagram
	5th	3.7 Methods of FM Demodulator or detector (Forster-Seely & Ratio detector)- working principle with Block Diagram
8th	1st	**Unit-4: AM & FM TRANSMITTER & RECEIVER** 4.1 Classification of Radio Receivers
	2nd	4.2 Define the terms Selectivity, Sensitivity, Fidelity and Noise Figure
	3rd	4.3 AM transmitter - working principle with Block Diagram
	4th	4.3 AM transmitter - working principle with Block Diagram
	5th	4.4 Concept of Frequency conversion, RF amplifier & IF amplifier ,Tuning, S/N ratio
9th	1st	4.5 Working of super heterodyne radio receiver with Block diagram
	2nd	4.6 Working of FM Transmitter & Receiver with Block Diagram
	3rd	4.6 Working of FM Transmitter & Receiver with Block Diagram
	4th	**Unit-5: ANALOG TO DIGITAL CONVERSION & PULSE MODULATION SYSTEM.** 5.1 Concept of Sampling Theorem , Nyquist rate & Aliasing
	5th	5.2 Sampling Techniques (Instantaneous, Natural, Flat Top)
10th	1st	5.3 Analog Pulse Modulation - Generation and detection of PAM, PWM & PPM system with the help of Block diagram & comparison of all above
	2nd	5.3 Analog Pulse Modulation - Generation and detection of PAM, PWM & PPM system with the help of Block diagram & comparison of all above
	3rd	5.4 Concept of Quantization of signal & Quantization error.
	4th	5.5 Generation & Demodulation of PCM system with Block diagram & its applications

	5th	5.5 Generation & Demodulation of PCM system with Block diagram & its applications
11th	**1st**	5.6 Companding in PCM & Vocoder
	2nd	5.7 Time Division Multiplexing & explain the operation with
	3rd	5.7 Time Division Multiplexing & explain the operation with circuit diagram
	4th	5.8 Generation & demodulation of Delta modulation with Block diagram.
	5th	5.8 Generation & demodulation of Delta modulation with Block diagram.
12th	**1st**	5.8 Generation & demodulation of Delta modulation with Block diagram.
	2nd	5.9 Generation & demodulation of DPCM with Block diagram
	3rd	5.9 Generation & demodulation of DPCM with Block diagram
	4th	5.9 Generation & demodulation of DPCM with Block diagram
	5th	5.10 Comparison between PCM, DM , ADM & DPCM
13th	**1st**	**Unit-6: DIGITALMODULATION TECHNIQUES.** 6.1 Concept of Multiplexing (FDM & TDM)- (Basic concept , Transmitter & Receiver) & Digital modulation formats.
	2nd	6.2 Advantages of digital communication system over Analog system
	3rd	6.3 Digital modulation techniques & types.
	4th	6.3 Digital modulation techniques & types.
	5th	6.4 Generation and Detection of binary ASK, FSK, PSK, QPSK, QAM, MSK, GMSK.
14th	**1st**	6.4 Generation and Detection of binary ASK, FSK, PSK, QPSK, QAM, MSK, GMSK.
	2nd	6.4 Generation and Detection of binary ASK, FSK, PSK, QPSK, QAM, MSK, GMSK.
	3rd	6.5 Working of T1-Carrier system
	4th	6.5 Working of T1-Carrier system
	5th	6.6 Spread Spectrum & its applications

15th	1st	6.7 Working operation of Spread Spectrum Modulation Techniques (DS-SS & FH-SS).
	2nd	6.7 Working operation of Spread Spectrum Modulation Techniques (DS-SS & FH-SS).
	3rd	6.8 Define bit, Baud, symbol & channel capacity formula.(Shannon Theorems)
	4th	6.9 Application of Different Modulation Schemes
	5th	6.10 Types of Modem & its Application

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