



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



LESSON PLAN

SUBJECT: Th.3 (ANALOG & DIGITAL COMMUNICATION)

CHAPTERWISE 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	DIGITAL MODULATION TECHNIQUES	15	15
	TOTAL	75	75

LESSONPLAN		
Discipline: ELECTRICAL AND ELECTRONIC ENGINEERING	Semester: 5th	NameoftheTeachingFaculty: Er.Rakesh Kumar Sethi
Week	Class Day	Theory/Practical Topics
1st	1st	Unit-1:ElementsofCommunicationSystems. 1.1CommunicationProcess-ConceptofElementsof Communication System & its Block diagram
	2nd	1.1CommunicationProcess-ConceptofElementsof CommunicationSystem&itsBlockdiagram
	3rd	1.1CommunicationProcess-ConceptofElementsof Communication System & its Block diagram
	4th	1.2Sourceofinformation&CommunicationChannels
	5th	1.3ClassificationofCommunicationsystems(Line&Wirelessor Radio)
2nd	1st	1.4ModulationProcess,Needofmodulationandclassify modulationprocess
	2nd	1.5AnalogandDigitalSignals&itsconversion.
	3rd	1.6BasicconceptofSignals&Signalsclassification(Analog and Digital)
	4th	1.6BasicconceptofSignals&Signalsclassification(Analog and Digital)
	5th	1.7Bandwidthlimitation
3rd	1st	Unit-2:Amplitude(linear)Modulation System 2.1Amplitudemodulation&derivetheexpressionforamplitude modulation signal, power relation in AM wave & find Modulation Index.
	2nd	2.1Amplitudemodulation&derivetheexpressionforamplitude modulation signal, power relation in AM wave & find ModulationIndex.
	3rd	2.1Amplitudemodulation&derivetheexpressionforamplitude modulation signal, power relation in AM wave & find Modulation Index.

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

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

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

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