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

NIST POLYTECHNIC

LESSON PLAN

SUBJECT:Th.3 (ANALOG & DIGITAL COMMUNICATION)

Name of the Faculty- Er.Rakesh kumar sethi

Branch- Electrical & Electronics Engineering

Session- 2024-25

Semester- 5th

Examination- 2024(W)

CHAPTERWISEDISTRIBUTIONOFPERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periodsas perthe Syllabus	No. of periods actually needed
1	ELEMENTS OF COMMUNICATION SYSTEMS	10	11
2	AMPLITUDE(LINEAR) MODULATION SYSTEM	8	8
3	ANGLE MODULATION SYSTEMS	8	8
4	AM & FM TRANSMITTER & RECEIVER	8	8
5	ANALOG TO DIGITAL CONVERSION &PULSEM ODULATION SYSTEM	10	12
6	DIGITAL MODULATION TECHNIQUES	16	16
	TOTAL	60	63

SIGN OF FACULTY

SIGN OF HOD

Discipline: EEE	Semester: 5th	Name of the Teaching Faculty: Er.RAKESH KUMAR SETHI	
		SESSION : 2024-25	EXAMINATION : 2024 (W)
Week	Class Day	Theory/Practical Topics	
1st	1st	Unit-1:Elements of Communication Systems. 1.1Communication Process-Concept of Elements of Communication	
	2nd	1.1Communication Process-Concept of Elements of Communication System & its Block diagram	
	3rd	1.1Communication Process-Concept of Elements of Communication System & its Block diagram	
	4th	1.2Source of information & Communication Channels	
2nd	1st	1.3Classification of Communication systems(Line & Wireless or Radio)	
	2nd	1.3Classification of Communication systems(Line & Wireless or Radio)	
	3rd	1.4Modulation Process,Need of modulation and classify modulation process	
	4th	1.5Analog and Digital Signals & its conversion.	
3rd	1st	1.5Analog and Digital Signals & its conversion.	
	2nd	1.6Basic concept of Signals &Signals classification(Analog and Digital)	
	3rd	1.7Bandwidth limitation	
	4th	Unit-2:Amplitude (linear) Modulation System 2.1Amplitude modulation & derive the expression for amplitude modulation signal, power	
4th	1st	2.2Generation of Amplitude Modulation(AM)-Linear level AM modulation only	
	2nd	2.3Demodulation of AM waves(linear diode detector,square law detector & PLL)	
	3rd	2.4Explain SSB signal and DSBSC signal	
	4th	2.5Methods of generating & detection SSB-SC signal(Indirect method only)	
5th	1st	2.6Methods of generation DSB-SCsignal(RingModulator)and detection of DSB-Scsignal (Synchronous detection)	
	2nd	2.7Concept of Balanced modulators	
	3rd	2.8Vestigial SideBand Modulation	
	4th	Unit-3:Angle Modulation Systems. 3.1Concept of Angle modulation & its types(PM & FM)	

Week	Class Day	Theory/Practical Topics
6th	1st	3.2Basic principle of Frequency Modulation & Frequency Spectrum of FM Signal.
	2nd	3.3Expression for Frequency Modulated Signal & Modulation Index and sideband of FM signal
	3rd	3.4Explain Phase modulation & difference of (FM&PM)- working principle with Block Diagram
	4th	3.5Compare between AM and FM modulation(Advantages & Disadvantages)
7th	1st	3.6Methods of FM Generation(Indirect (Armstrong) method only) working principle with Block Diagram
	2nd	3.7Methods of FM Demodulator or detector(Forster-Seely & Ratio detector)- working principle with Block Diagram
	3rd	3.7Methods of FM Demodulator or detector(Forster-Seely& Ratio detector)- working principle with Block Diagram
	4th	Unit-4:AM & FM TRANSMITTER & RECEIVER 4.1Classification of Radio Receivers
8th	1st	4.2Define the terms Selectivity,Sensitivity,Fidelity and Noise Figure
	2nd	4.3AM transmitter-working principle with Block Diagram
	3rd	4.3AM transmitter-working principle with Block Diagram
	4th	4.4Concept of Frequency conversion,RF amplifier & IF amplifier ,Tuning, S/N ratio
9th	1st	4.5Working of superheterodyne radio receiver with Block diagram
	2nd	4.6Working of FM Transmitter & Receiver with Block Diagram
	3rd	4.6Working of FM Transmitter & Receiver with Block Diagram
	4th	Unit-5:ANALOG TO DIGITAL CONVERSION & PULSE MODULATION SYSTEM. 5.1Concept of Sampling Theorem,Nyquist rate & Aliasing
10th	1st	5.2Sampling Techniques (Instantaneous,Natural,FlatTop)
	2nd	5.3Analog Pulse Modulation-Generation and detection of PAM, PWM & PPM system with the help of Block diagram & its comparison
	3rd	5.4Concept of Quantization of signal & Quantization error.
	4th	5.5Generation & Demodulation of PCM system with Block diagram & its applications

Week	Class Day	Theory/Practical Topics
11th	1st	5.6Companding in PCM & Vocoder
	2nd	5.7Time Division Multiplexing & explain the operation
	3rd	5.7Time Division Multiplexing & explain the operation with circuit diagram
	4th	5.8Generation & demodulation of Deltamodulation with Block diagram.
12th	1st	5.9Generation & demodulation of DPCM with Block diagram
	2nd	5.9Generation & demodulation of DPCM with Block diagram
	3rd	5.10Comparison between PCM,DM,ADM & DPCM
	4th	**Unit-6:DIGITAL MODULATION TECHNIQUES.** 6.1Concept of Multiplexing (FDM&TDM)-(Basic concept,
13th	1st	6.2Advantages of digital communication system overAnalog system
	2nd	6.3Digital modulation techniques & types.
	3rd	6.3Digital modulation techniques & types.
	4th	6.4Generation and Detection of binary ASK,FSK,PSK,QPSK, QAM,MSK,GMSK.
14th	1st	6.4Generation and Detection of binary ASK,FSK,PSK,QPSK, QAM, MSK, GMSK.
	2nd	6.4Generation and Detection of binary ASK,FSK,PSK,QPSK, QAM, MSK, GMSK.
	3rd	6.4Generation and Detection of binary ASK,FSK,PSK,QPSK, QAM,MSK,GMSK.
	4th	6.5Working of T1-Carriersystem
15th	1st	6.5Working of T1-Carriersystem
	2nd	6.6Spread Spectrum & its applications
	3rd	6.7Working operation of Spread Spectrum Modulation Techniques (DS-SS&FH-SS).
	4th	6.7Working operation of Spread Spectrum Modulation Techniques (DS-SS&FH-SS).

Week	Class Day	Theory/Practical Topics
16th	1st	6.8 Define bit, Baud, symbol & channel capacity formula.(Shannon Theorems)
	2nd	6.9 Application of Different Modulation Schemes
	3rd	6.10 Types of Modem & its Application
	4th	RIVISION

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