

ACADEMIC LESSON PLAN FOR WINTER-2025

Dept. of Electronics & Telecommunication, Govt. Polytechnic, Balasore

Name of the Faculty : Jadunath Murmu(Sr. Lect, in E&TC)

Th.3 -ANALOG & DIGITAL COMMUNICATION

Theory : 5P/W

Internal Assesment :20 Mark

Total Periods : 75P/Sem.

End Sem. Exam : 80 Mark

Total Marks :100

Sem : 5TH Sem

Start of Class :14/07/2025

Week	Class Day	Topics
1st	1st	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	1.2 Source of information & Communication Channels.
	4th	1.2 Source of information & Communication Channels.
	5th	1.3 Classification of Communication systems (Line & Wireless or Radio)
2nd	1st	1.3 Classification of Communication systems (Line & Wireless or Radio)
	2nd	1.4 Modulation Process, Need of modulation and classify modulation process
	3rd	1.5 Analog and Digital Signals & its conversion.
	4th	1.6 Basic concept of Signals & Signals classification (Analog and Digital)
	5th	1.7 Bandwidth limitation
3rd	1st	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	2.2 Generation of Amplitude Modulation(AM)- Linear level AM modulation only
	4th	2.2 Generation of Amplitude Modulation(AM)- Linear level AM modulation only
	5th	2.3 Demodulation of AM waves (liner diode detector, square law detector & PLL)
4th	1st	2.3 Demodulation of AM waves (liner diode detector, square law detector & PLL)
	2nd	2.4 Explain SSB signal and DSBSC signal
	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	2.7 Concept of Balanced modulators
	4th	2.7 Concept of Balanced modulators
	5th	2.8 Vestigial Side Band Modulation
6th	1st	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	3.5 Compare between AM and FM modulation (Advantages & Disadvantages)
7th	1st	3.6 Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram
	2nd	3.6 Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram
	3rd	3.7 Methods of FM Demodulator or detector (Forster-Seely & Ratio detector)- working principle with Block Diagram
	4th	DOUBT CLEAR CLASS
	5th	SURPRISE EXAM

Week	Class Day	Topics
7th	2nd	3.6 Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram
	3rd	3.7 Methods of FM Demodulator or detector (Forster-Seely & Ratio detector)- working principle with Block Diagram
	4th	DOUBT CLEAR CLASS
	5th	SURPRISE EXAM
8th	1st	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	4.4 Concept of Frequency conversion, RF amplifier & IF amplifier ,Tuning, S/N ratio
	5th	4.5 Working of super heterodyne radio receiver with Block diagram
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	5.1 Concept of Sampling Theorem , Nyquist rate & Aliasing
	5th	5.1 Concept of Sampling Theorem , Nyquist rate & Aliasing
10th	1st	5.2 Sampling Techniques (Instantaneous, Natural, Flat Top)
	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	5.3 Analog Pulse Modulation - Generation and detection of PAM, PWM & PPM system with the help of Block diagram & comparison of all above.
	4th	5.3 Analog Pulse Modulation - Generation and detection of PAM, PWM & PPM system with the help of Block diagram & comparison of all above.
	5th	5.4 Concept of Quantization of signal & Quantization error.
11th	1st	5.5 Generation & Demodulation of PCM system with Block diagram & its applications.
	2nd	5.5 Generation & Demodulation of PCM system with Block diagram & its applications.
	3rd	5.6 Companding in PCM & Vocoder
	4th	5.7 Time Division Multiplexing & explain the operation with circuit diagram.
	5th	5.7 Time Division Multiplexing & explain the operation with circuit diagram.
12th	1st	5.8 Generation & demodulation of Delta modulation with Block diagram.
	2nd	5.8 Generation & demodulation of Delta modulation 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	6.1 Concept of Multiplexing (FDM & TDM)- (Basic concept , Transmitter & Receiver) & Digital modulation formats.
	2nd	6.1 Concept of Multiplexing (FDM & TDM)- (Basic concept , Transmitter & Receiver) & Digital modulation formats.
	3rd	6.2 Advantages of digital communication system over Analog system
	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	6.6 Spread Spectrum & its applications
	5th	6.7 Working operation of Spread Spectrum Modulation Techniques (DS-SS & FH-SS).
15th	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	DOUBT CLEAR CLASS
	5th	MONTHLY TEST

Kusum
11/07/2025

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