

Lesson Plan

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Discipline: ETC	Semester-5th <i>Winter 2023</i>	Name of the Teaching Faculty: Sr B B NAIK(Training Superintendent, ETC Engg)	
SI. No.	Subject-Th.3 - ANALOG & DIGITAL COMMUNICATION subject-TH.	No. Of Days/Week class alloted:05	Semester From date: 01.08.2023 To date: 30.11.2023 (No of weeks: 17)
	Weeks/Months	Class Day	Topic
1	1st week Aug to 5th week Aug	1st	Unit-1: Elements of Communication Systems.
		2nd	1.1 Communication Process- Concept of Elements of Communication System & its Block diagram.
		3rd	1.2 Source of information & Communication Channels.
		4th	1.3 Classification of Communication systems (Line & Wireless or Radio)
		5th	1.4 Modulation Process, Need of modulation and classify modulation process
2	2nd week 7th Aug to 12th Aug	1st	1.5 Analog and Digital Signals & its conversion.
		2nd	1.6 Basic concept of Signals & Signals classification (Analog and Digital)
		3rd	1.7 Bandwidth limitation
		4th	Unit-2: Amplitude (linear) Modulation System.
		5th	2.1 Amplitude modulation & derive the expression for amplitude modulation signal, power relation in AM wave & find Modulation Index.
3	3rd week 14th Aug to 19th Aug	1st	2.2 Generation of Amplitude Modulation(AM)- Linear level AM modulation only.
		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	2.6 Methods of generation DSB-SC signal (Ring Modulator) and detection of DSB-SC signal (Synchronous detection).
4	4th week 21th Aug to 26th Aug	1st	2.7 Concept of Balanced modulators.
		2nd	2.8 Vestigial Side Band Modulation.
		3rd	Unit-3: Angle Modulation Systems.
		4th	3.1 Concept of Angle modulation & its types (PM & FM).
		5th	3.2 Basic principle of Frequency Modulation & Frequency Spectrum of FM Signal.
5	5th week 28th Aug to 2nd sept	1st	3.3 Expression for Frequency Modulated Signal & Modulation Index and sideband of FM signal.
		2nd	3.4 Explain Phase modulation & difference of FM & PM)-working principle with Block Diagram.
		3rd	3.5 Compare between AM and FM modulation (Advantages & Disadvantages).
		4th	3.6 Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram .

		5th	3.7 Methods of FM Demodulator or detector (Forster-Seely & Ratio detector)- working principle with Block Diagram.
6	1st week 4th sept to 9th sept	1st	3.7 Methods of FM Demodulator or detector (Forster-Seely & Ratio detector)- working principle with Block Diagram
		2nd	Unit-4: AM & FM TRANSMITTER & RECEIVER.
		3rd	4.1 Classification of Radio Receivers.
		4th	4.2 Define the terms Selectivity, Sensitivity, Fidelity and Noise Figure.
		5th	4.3 AM transmitter - working principle with Block Diagram.
7	2nd week 11th Sept to 16th Sept	1st	4.4 Concept of Frequency conversion, RF amplifier & IF amplifier ,Tuning, S/N ratio.
		2nd	4.5 Working of super heterodyne radio 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.
		5th	5.1 Concept of Sampling Theorem , Nyquist rate & Aliasing
8	3rd week 18th Sept to 23rd Sept	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	5.4 Concept of Quantization of signal & Quantization error.
		4th	5.5 Generation & Demodulation of PCM system with Block diagram & its applications
		5th	5.6 Companding in PCM & Vocoder.
9	4th week 25th sept to 30th Sept	1st	5.7 Time Division Multiplexing & explain the operation with circuit diagram.
		2nd	5.8 Generation & demodulation of Delta modulation with Block diagram.
		3rd	5.9 Generation & demodulation of DPCM with Block diagram.
		4th	5.10 Comparison between PCM, DM , ADM & DPCM
		5th	Unit-6: DIGITALMODULATION TECHNIQUES.
10	1st week 02nd oct to 07th oct	1st	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	6.4 Generation and Detection of binary ASK, FSK, PSK, QPSK, QAM, MSK, GMSK

11	2nd week 9th oct to 14th oct	5th	6.4 Generation and Detection of binary ASK, FSK, PSK, QPSK, QAM, MSK, GMSK
		1st	6.5 Working of T1-Carrier system.
		2nd	6 Spread Spectrum & its applications
		3rd	6.7 Working operation of Spread Spectrum Modulation Techniques (DS-SS & FH-SS).
		4th	6.8 Define bit, Baud, symbol & channel capacity formula.(Shannon Theorems)
		5th	6.4 Generation and Detection of binary ASK, FSK, PSK, QPSK, QAM, MSK, GMSK.
12	3rd week 16th oct to 20th oct	1st	6.3 Digital modulation techniques & types
		2nd	6.5 Working of T1-Carrier system.
		3rd	6.8 Define bit, Baud, symbol & channel capacity formula.(Shannon Theorems)
		4th	6.9 Application of Different Modulation Schemes
		5th	6.7 Working operation of Spread Spectrum Modulation Techniques (DS-SS & FH-SS).
13	1st week 30th oct to 04th Nov	1st	6.9 Application of Different Modulation Schemes
		2nd	6.10 Types of Modem & its Application
		3rd	5.10 Comparison between PCM, DM , ADM & DPCM
		4th	6.10 Types of Modem & its Application
		5th	1.2 Source of information & Communication Channels.
14	2nd week 6th Nov to 11th Nov	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	6 Spread Spectrum & its applications
		3th	4.3 AM transmitter - working principle with Block Diagram
		4th	6.3 Digital modulation techniques & types
		5th	6.8 Define bit, Baud, symbol & channel capacity formula.(Shannon Theorems)
15	3rd week 13th Nov to 20th Nov	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	5.10 Comparison between PCM, DM , ADM & DPCM
		3rd	1.2 Source of information & Communication Channels.
		4th	6.8 Define bit, Baud, symbol & channel capacity formula.(Shannon Theorems)
		5th	1.2 Source of information & Communication Channels.

4th week 20th Nov to 25th Nov	1st	4.3 AM transmitter - working principle with Block Diagram
	2nd	
	3rd	6.10 Types of Modem & its Application
	4th	3.1 Concept of Angle modulation & its types (PM & FM)
	5th	5.10 Comparison between PCM, DM , ADM & DPCM
27th Nov to 30th Nov	1st	5.5 Generation & Demodulation of PCM system with Block diagram & its application
	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	4.3 AM transmitter - working principle with Block Diagram
	4th	3.1 Concept of Angle modulation & its types (PM & FM)

Signature of the Teacher