|  |
| --- |
|  **LESSON PLAN** |
| **Semester: 5th Branch: ETC&TC Subject:-Analog & Digital Communication** |
| MONTH | NOs ofPeriods as Per Syllabus | NOs ofPeriodsActually available |  TOPICS TO BE COVERED |
|  |  |  | **Unit-1: Elements of Communication Systems.*** 1. Communication Process-Concept of Elements of Communication System & its Block diagram
	2. Source of information & Communication Channels.
	3. Classification of Communication systems (Linear & Wireless or Radio)
	4. Modulation Process, Need of modulation and classify modulation process
	5. Analog and Digital Signals &its conversion.
	6. Basic concept of Signals & Signals classification(Analog and Digital)
	7. Bandwidth limitation

**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.* 1. Generation of Amplitude Modulation(AM)-Linear level AM modulation only
	2. Demodulation of AM waves(liner diode detector, square law detector &PLL)
	3. Explain SSB signal and DSBSC signal
	4. Methods of generating & detection SSB-SC signal(Indirect method only)
	5. Concept of Balanced modulators
	6. Vestigial Side Band Modulation

**Unit-3: Angle Modulation Systems.**3.1 Concept of Angle modulation & its types(PM&FM)* 1. Basic principle of Frequency Modulation & Frequency Spectrum of FM Signal.
	2. Expression for Frequency Modulated Signal & Modulation Index and side band of FM signal
	3. Explain Phase modulation & difference of FM&PM)-working principle with Block Diagram
	4. Compare between AM and FM modulation( Advantages &Disadvantages)
 |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  | **Unit-4: AM& FM TRANSMITTER & RECEIVER*** 1. Classification of Radio Receivers
	2. Define the terms Selectivity, Sensitivity, Fidelity and Noise Figure
	3. AM transmitter-working principle with Block Diagram
	4. Concept of Frequency conversion, RF amplifier & IF amplifier, Tuning, S/N ratio
	5. Working of superheterodyne radio receiver with Block diagram

Working of FM Transmitter & Receiver with Block Diagram**Unit-5: ANALOG TO DIGITAL CONVERSION & PULSE MODULATION SYSTEM.*** 1. Concept of Sampling Theorem, Nyquist rate& Aliasing
	2. Sampling Techniques( Instantaneous, Natural, Flat Top)

Analog Pulse Modulation-Generation and detection of PAM, PWM & PPM system with the help of Block diagram & comparison of all above* 1. Concept of Quantization of signal & Quantization error.

5.6 Companding in PCM & Vocoder* 1. Time Division Multiplexing & explain the operation with circuit diagram.
	2. Generation & demodulation of Delta modulation with Block diagram.
	3. Generation & demodulation of DPCM with Block diagram.
	4. Comparison between PCM,DM,ADM & DPCM

**Unit-6: DIGITAL MODULATION TECHNIQUES.**6.1 Concept of Multiplexing (FDM&TDM)-* 1. Advantages of digital communication system over Analog system
	2. Digital modulation techniques &types.
	3. Generation and Detection of binary ASK,FSK, PSK,QPSK,QAM,MSK,GMSK.
	4. Working of T1-Carriersystem.Spread Spectrum & its applications
	5. Working operation of Spread Spectrum ModulationTechniques(DS-SS&FH-SS).
	6. Define bit, Baud, symbol &channel capacity formula.(Shannon Theorems)
	7. Application of Different Modulation Schemes.

Types of Modem & its Application |
|  |  |  |  |