Discipline :- **ETC**	Semester:- **5th**	Name of the Teaching Faculty: - Aditi Mohapatra
Subject:- **Analog & Digital Communication (Th. 3)**	No of Days/per Week Class Allotted :- **05**	Semester From:- **01.07.2024** To:- **08.11.2024**
Week	**Class Day**	**Theory**
1st	1st	**Elements of Communication Systems.**
	2nd	Communication Process- Concept of Elements of Communication System & its Block diagram
	3rd	Source of information & Communication Channels.
	4th	Classification of Communication systems (Line & Wireless or Radio)
	5th	Modulation Process, Need of modulation
2nd	1st	classify modulation process
	2nd	Analog and Digital Signals & its conversion
	3rd	Basic concept of Signals & Signals classification (Analog and Digital)
	4th	
	5th	Bandwidth limitation
3rd	1st	**Amplitude (linear) Modulation System**
	2nd	Amplitude modulation & derive the expression for amplitude modulation signal
	3rd	derive the expression for power relation in AM wave
	4th	derive the expression for Modulation Index and simple problems
	5th	Generation of Amplitude Modulation(AM)- Linear level AM modulation only
4th	1st	Demodulation of AM waves (liner diode detector)
	2nd	Demodulation of AM waves (square law detector & PLL)
	3rd	Explain SSB signal and DSBSC signal
	4th	Methods of generating & detection SSB-SC signal (Indirect method only)
	5th	
5th	1st	Methods of generation DSB-SC signal (Ring Modulator)
	2nd	Detection of DSB-SC signal (Synchronous detection)
	3rd	
	4th	Concept of Balanced modulators
	5th	Vestigial Side Band Modulation
6th	1st	**Angle Modulation Systems.**
	2nd	Concept of Angle modulation & its types (PM & FM)
	3rd	Basic principle of Frequency Modulation & Frequency Spectrum of FM Signal.
	4th	Expression for Frequency Modulated Signal & Modulation Index and sideband of FM signal
	5th	
7th	1st	Explain Phase modulation & difference of FM & PM)- working principle with Block Diagram
	2nd	Compare between AM and FM modulation (Advantages & Disadvantages)
	3rd	Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram
	4th	Methods of FM Demodulator or detector (Forster-Seely & Ratio detector)- working principle with Block Diagram
	5th	
8th	1st	Classification of Radio Receivers
	2nd	Define the terms Selectivity
	3rd	Fidelity and Noise Figure
	4th	AM transmitter - working principle with Block Diagram
	5th	Concept of Frequency conversion, RF amplifier & IF amplifier ,Tuning, S/N ratio
	1st	Working of super heterodyne radio receiver with Block diagram
	2nd	

9th	3rd	Working of FM Transmitter & Receiver with Block Diagram.
	4th	Concept of Sampling Theorem
	5th	, Nyquist rate & Aliasing
10th	1st	Sampling Techniques (Instantaneous, Natural, Flat Top)
	2nd	Analog Pulse Modulation - Generation and detection of PAM
	3rd	PWM & PPM system with the help of Block diagram & comparison of all above.
	4th	
	5th	Concept of Quantization of signal & Quantization error.
11th	1st	Generation & Demodulation of PCM system with Block diagram & its applications.
	2nd	
	3rd	Companding in PCM & Vocoder
	4th	Time Division Multiplexing & explain the operation with circuit diagram.
	5th	
12th	1st	Generation & demodulation of Delta modulation with Block diagram.
	2nd	
	3rd	Generation & demodulation of DPCM with Block diagram.
	4th	
	5th	Comparison between PCM, DM , ADM & DPCM
13th	1st	
	2nd	**Concept of Multiplexing (FDM & TDM)**
	3rd	(Basic concept , Transmitter & Receiver) & Digital modulation formats
	4th	
	5th	Advantages of digital communication system over Analog system
14th	1st	Digital modulation techniques & types
	2nd	Generation and Detection of binary ASK, FSK, PSK, QPSK, QAM, MSK, GMSK.
	3rd	
	4th	
	5th	Working of T1-Carrier system.
15th	1st	Spread Spectrum & its applications
	2nd	Working operation of Spread Spectrum Modulation Techniques (DS-SS & FH-SS).
	3rd	Define bit, Baud, symbol & channel capacity formula.(Shannon Theorems)
	4th	Application of Different Modulation Schemes
	5th	Types of Modem & its Application

16.8.24
Teaching Faculty

16/8/24
HOD, ETC