

University of Mumbai			
Class: S.E.	Branch: Computer Engineering	Semester: IV	
Subject: Analog and Digital Communication (Abbreviated as ADC)			
Periods per Week (each 60 min.)	Lecture	04	
	Practical	02	
	Tutorial	--	
		Hours	Marks
Evaluation System	Theory	03	100
	Practical & Oral	02	25
	Oral	-	-
	Term Work	-	25
	Total	05	150

Module	Contents	Hours
1	Introduction Basics of communication systems, modulation and demodulation, analog and digital modulation, noise in communication system, various noise parameters.	04
2	Analog Modulation and Demodulation Different types of analog modulation, amplitude modulators and demodulators, frequency modulators and demodulators, phase modulation and demodulation, amplitude modulation and frequency modulation receivers.	07
3	Pulse Analog Modulation Sampling theorem for low pass and band-pass filters, sampling technique principle, generation, demodulation and spectrum, types of pulse analog modulation, generation of direction of pulse amplitude modulation(PAM), pulse width modulation(PWM) and pulse position modulation(PPM), principle of time division multiplexing(TDM) and frequency division multiplexing(FDM)	07
4	Digital Modulation Techniques Discrete messages, concept of information, average information, information rate, Shannon's theorem, channel capacity, capacity of Gaussian channel, pulse code modulation(PCM), adaptive delta modulation(ADM)-transmission systems	07
5	Base Band Modulation PCM waveform types, M-array pulse modulation, base band signal receiver, detection of binary signals in Gaussian noise, inter symbol interference(ISI) and equalization.	08

6	Bandpass Modulation and Demodulation Types of bandpass modulation, phase shift keying-BPSK, DPSK,DEPSK, QPSK, M-array PSK, amplitude shifting-BASK, QAM, frequency shift keying-BFSK, M-array,FSK	08
7	Channel Coding Types of error control, linear block codes, error detection and correction capacity, cyclic codes, convolution codes	07

Topics of Experiments

1. Amplitude modulation generation and detection
2. Amplitude modulation receiver
3. Frequency modulation generation and detection
4. Frequency modulation receiver
5. Pulse width WM generation and detection
6. PPM generation and detection
7. Delta modulation and demodulation
8. TDM
9. BPSK
10. BFSK
11. BASK
12. QPSK
13. Error detection and correction
14. Eye pattern

TERM WORK

1. Term work should consist of at least 10 experiments and 5 assignments covering all the topics(15 Marks).
2. A term work test of 100 marks like University pattern must be conducted and scaled to 10 marks.