

LESSON PLAN

Name of the Faculty : Balinder Singh

Discipline : ECE

Semester : 3rd

Subject : ANALOG AND DIGITAL COMMUNICATION

Lesson Plan Duration : from Aug., 2024 to Dec., 2024 (16) weeks

Work Load (Lecture/ Practical) per week (in hours): Lectures-03, Practicals-04

Week	Theory		Practical	
	Lecture Day	Topics (including Assignments/Tests)	Week	Topic
1 st	1 st	Need for modulation	1 st	Observe wave forms at input and output of pulse code modulator with CRO
	2 nd	frequency translation		
	3 rd	Demodulation in communication systems		
2 nd	4 th	Basic scheme of a modern communication system	2 nd	Observe wave forms at input and output of pulse code modulator with CRO
	5 th	Derivation of expression for an amplitude modulated wave		
	6 th	Carrier and side band components		
3 rd	7 th	Modulation index. Spectrum and BW of AM Wave	3 rd	To observe an AM wave on CRO produced by a standard signal generator using internal and external modulation
	8 th	Relative power distribution in carrier and side bands		
	9 th	Relative power distribution in carrier and side bands		
4 th	10 th	Elementary idea of DSB-SC	4 th	To observe an AM wave on CRO produced by a standard signal generator using internal and external modulation
	11 th	SSB-SC		
	12 th	ISB and VSB modulations, their comparison, and areas of applications		
5 th	13 th	Assignment/Revision	5 th	To measure the modulation

	14 th	1 st Sessional Test		index of the wave obtained in above practical
	15 th	Expression for frequency modulated wave and its frequency spectrum (without Proof and analysis of Bessel function) Modulation index		
6 th	16 th	maximum frequency deviation and deviation ratio	6 th	To measure the modulation index of the wave obtained in above practical
	17 th	BW of FM signals, Carson's rule		
	18 th	Effect of noise on FM carrier, Noise triangle		
7 th	19 th	Role of limiter, Need for pre-emphasis and de-emphasis	7 th	To obtain an FM wave and measure the frequency

	20 th	Role of limiter, Need for pre-emphasis and de-emphasis		deviation for different modulating signals.
	21 st	Capture effect		
8 th	22 nd	Comparison of FM and AM in communication systems	8 th	To obtain an FM wave and measure the frequency deviation for different modulating signals.
	23 rd	Basic block diagram of digital and data communication systems		
	24 th	Their comparison with analog communication systems		
9 th	25 th	Sampling theorem and its basic concept. Use of Sampling Theorem	9 th	Observe wave forms at input and output of QPSK modulators
	26 th	Introduction to PAM, PPM		
	27 th	Introduction to PWM		
10 th	28 th	Quantization and error of Quantization	10 th	Observe wave forms at input and output of QPSK modulators
	29 th	PCM, DPCM, their advantage and disadvantages		
	30 th	Delta Modulation and Adaptive Delta		

		Modulation		
11 th	31 st	concept of Companding	11 th	Observe wave forms at input and output of PSK modulators
	32 nd	Frequency hopping spread spectrum technique		
	33 rd	Assignment /Revision		
12 th	34 th	2 nd Sessional Test	12 th	Observe wave forms at input and output of PSK modulators
	35 th	Basic block diagram and principle of working of the following : Amplitude shift keying (ASK)		
	36 th	Basic block diagram and principle of working of the following : Amplitude shift keying (ASK)		
13 th	37 th	Interrupted continuous wave (ICW), two tone Modulation	13 th	Observe wave forms at input and output of ASK modulators
	38 th	Interrupted continuous wave (ICW), two tone Modulation		
	39 th	Frequency Shift keying (FSK)		
14 th	40 th	Frequency Shift keying (FSK)	14 th	Observe wave forms at input and output of ASK modulators
	41 st	Phase shift keying (PSK)		
	42 nd	Phase shift keying (PSK)		
15 th	43 rd	Quadrature Phase Shift Keying (QPSK)	15 th	Observe wave forms at input and output of FSK modulators
	44 th	Quadrature Phase Shift Keying (QPSK)		
	45 th	Assignment/Revision		
16 th	46 th	3 rd Sessional Test	16 th	Observe wave forms at input and output of FSK modulators
	47 th	Revision		
	48 th	Revision		