

Bhoj Reddy Engineering College for Women: Hyderabad
Department of Electronics and Communication Engineering
Lesson plan of faculty member for the academic year 2016–17

Class: III B Tech

Branch-Section: ECE-C

Semester: II

Subject: Digital communications

Lectures per week: 4+1(T)

Lecture Number	Topic to be covered	Date(s)
UNIT-1: Elements of Digital communication system		
1.	Introduction to Digital communication systems	10 December 2016
2.	Tutorial(-, -, G2) Revision	10 December 2016
3.	Model of Digital communication system	13 December 2016
4.	Advantages of digital communication systems	15 December 2016
5.	Bandwidth S/N tradeoff, Hartley Shannon law, Sampling theorem	17 December 2016
6.	Tutorial (-, G1, G3): Comparisons between Analog and Digital communications, problems on sampling theorem	12,13,17 December 2016
7.	Certain issues in Digital transmission, digital representation of analog signal	19 December 2016
8.	Pulse Code Modulation	20 December 2016
9.	PCM generation and reconstruction	22 December 2016
10.	Types of quantization, Quantization noise of PCM	24 December 2016
11.	Tutorial (G2, G1, G3): problems on sampling theorem , problems on PCM	19,20,24 December 2016
12.	Signal to noise ratio and multiplexing of PCM	27 December 2016
13.	Non- Uniform Quantization	29 December 2016
14.	Non- Uniform Quantization	31 December 2016
15.	Tutorial (-, G1, G3): problems on quantization	26,27,31 December 2016
16.	Companding, Differential PCM, Adaptive Differential PCM	2 January 2017
17.	Delta modulation and Adaptive Delta Modulation	3 January 2017
18.	Quantization Error of DPCM and DM	5 January 2017
19.	Noise in PCM and DM	7 January 2017
20.	Tutorial (G2, G1, G3): problems on DPCM / DM	2,3,7 January 2017
UNIT-2: Digital Modulation Techniques		
21.	Introduction to digital modulation techniques, optimum receiver	9 January 2017
22.	Optimum receiver, ASK, ASK modulator, Coherent ASK detector,	10 January 2017
23.	Non- coherent ASK detector, FSK, Bandwidth and Frequency spectrum of FSK	12 January 2017
24.	Tutorial (G2, G1, -): Problems on Amplitude Shift Keying and FSK	9,10,14 January 2017
25.	FSK, Bandwidth and Frequency spectrum of FSK, Non-Coherent FSK detector	16 January 2017
26.	Coherent FSK detector, Coherent PSK detection	17 January 2017
27.	FSK detection using PLL	19 January 2017
28.	Binary phase shift Keying(BPSK) , DPSK	21 January 2017
29.	Tutorial (G2, G1, G3): Problems on PSK, DPSK	16,17,21 January 2017
30.	Quadrature phase shift keying	23 January 2017
UNIT-3 Base band transmission and optimal reception of Digital signal		
31.	A base band signal receiver	24 January 2017
32.	Tutorial (G2, G1, --): Problems on BPSK, DPSK	23,24,28 January 2017
33.	Base band pulse shaping	20 February 2017
34.	Probability of Error, Optimum receiver	21 February 2017
35.	Optimum receiver	23 February 2017

36.	Optimal of coherent reception, Signal space representation	25 February 2017
37.	Tutorial (G2, G1, G3): Problems on optimum receiver	20,21,25 February 2017
38.	Probability of Error	27 February 2017
39.	Eye diagrams, cross talk	28 February 2017
40.	Information and Entropy, Conditional Entropy	2 March 2017
41.	Redundancy, Shannon Fano coding	4 March 2017
42.	Tutorial (G2, G1, G3): Problems on probability of error	27,28 February, 4 March 2017
43.	Mutual Information, Information loss due to noise	6 March 2017
44.	Mutual Information, Information loss due to noise	7 March 2017
45.	Huffmann coding ; Variable length coding	9 March 2017
46.	Source coding to increase average information per bit	11 March 2017
47.	Tutorial (G2, G1, G3): Problems on Entropy	6,7,11 March 2017
48.	Lossy source coding	13 March 2017
UNIT-4 Linear block codes		
49.	Introduction to codes	14 March 2017
50.	Matrix description of Linear block codes	16 March 2017
51.	Error detection capabilities of linear block codes	18 March 2017
52.	Tutorial (G2, G1, G3): Problems on Huffmann and shannon Fano coding	13,14,18 March 2017
53.	Error correction capabilities of linear block codes	20 March 2017
54.	Cyclic codes Algebraic structure, encoding by polynomial	21 March 2017
55.	Cyclic codes by register shift method and syndrome calculation and decoding	23 March 2017
56.	Convolutional codes	25 March 2017
57.	Tutorial (G2, G1, G3): Problems on Linear block codes	20,21,25 March 2017
58.	Decoding using states	27 March 2017
59.	Decoding using Viterbi algorithm	28 March 2017
60.	tree decoding using state diagrams	30 March 2017
61.	Problems on trellis diagrams	1 April 2017
62.	Tutorial (G2, G1, G3): Problems on cyclic codes	27,28 March 2016,1 April 2017
Unit-5 Spread Spectrum Modulation		
63.	Use of spread spectrum	3 April 2017
64.	PN-sequences: Generation and characteristics	4 April 2017
65.	Direct Sequence spread spectrum , Code division Multiple Access	6 April 2017
66.	Ranging using DSSS; FHSS ,Problems on DSSS	8 April 2017
67.	Tutorial (G2, G1, G3): Problems on convolutional codes	3,4,8 April 2017
68.	PN sequences, Synchronization in spread spectrum systems	10 April 2017
69.	Frequency hopping spread spectrum	11 April 2017
70.	Frequency hopping spread spectrum	13 April 2017
71.	Tutorial (G2, G1, -): Problems on spread spectrum	10,11,14 April 2017

Text books:

- [1]. Digital and Analog Communication Systems- Sam Shanmugam, John Wiley, 2005
(for Units-I, III, IV, VI and VII).

REFERENCE BOOKS:

- [1]. Digital Communication – Simon Haykin, John Wiley, 2005. (for Unit II)

Name and signature of the faculty: Jyothsna B -----

Name and signature of Head of the Department: Ms Shribala N -----

