

# Bhoj Reddy Engineering College for Women: Hyderabad

Department of Electronics and Communication Engineering

Lesson plan of faculty member for the academic year 2017–18

Class: III B Tech

Branch-Section: ECE-A

Semester: II

Subject: Digital Communications

Lectures per week: 4+1 (Tutorial)

Lecture Number	Topics to be covered	Date (s)
<b>UNIT – I: Elements of Digital Communication System</b>		
1	Introduction to Digital communication systems	19 December 2017
2	Model of Digital communication system	20 December 2017
3	Digital representation of analog signal	22 December 2017
4	Hartley Shannon law, Sampling theorem	23 December 2017
5	Tutorial (G3,G2,G1) - Problems related to Sampling	19, 22, 23 December 2017
6	Comparisons between Analog and Digital communications	27 December 2017
7	Line coding Techniques	29 December 2017
8	Advantages of Digital communication, Bandwidth-S/N tradeoff.	30 December 2017
9	Tutorial (G3, G2, G1) - Problems on Sampling theorem and Shannon theorem	29, 30 December 2017
10	PCM generation and reconstruction	2 January 2018
11	Quantization noise of PCM	3 January 2018
12	Non- Uniform Quantization and Companding	4 January 2018
13	Differential PCM, Adaptive Differential PCM	6 January 2018
14	Tutorial (G3, G2, G1) - Problems on Quantization Noise and PCM	2, 5, 6 January 2018
15	Delta modulation and Adaptive Delta Modulation	9 January 2018
16	Quantization Error of DPCM and DM	10 January 2018
<b>UNIT-II: Digital Modulation Techniques</b>		
17	Introduction, Amplitude Shift Keying	12 January 2018
18	ASK Modulator	13 January 2018
19	Tutorial (G3,G2,G1) - Problems related to DM, ASK and FSK	9, 12,13 January 2018
20	Coherent and Non-Coherent ASK detector	16 January 2018
21	FSK, Bandwidth and Frequency spectrum of FSK	17 January 2018
22	Non-Coherent FSK detector	19 January 2018
23	Coherent FSK detector, Coherent PSK detection	20 January 2018
24	Tutorial (G3,G2,G1) - Problems related to ASK and FSK	16, 19, 20 January 2018
25	FSK detection using PLL	23 January 2018
26	Problems on PSK, Differential PSK Pulse shaping for optimal Transmission	24 January 2018
27	Binary phase shift Keying( BPSK) , Quadrature Phase shift keying	27 January 2018
28	Tutorial (G3,G1) - Problems related to BPSK and DPSK	23, 27 January 2018
<b>UNIT-III: Base band Transmission and Optimal Reception</b>		
29	Probability of Error, Optimum receiver	30 January 2018
30	Optimal of coherent reception, Signal space representation	31 January 2018
31	Probability of Error	2 February 2018
32	Eye diagrams, cross talk	3 February 2018
33	Tutorial (G3,G2,G1) - Problems related to Probability of error	30 January 2,3February 2018
34	Information and Entropy, Conditional Entropy	6 February 2018
35	Redundancy, Shannon Fano coding	10 February 2018
36	Tutorial (G3,G1) - Problems related to Huffmann coding	6, 10 February 2018
37	Huffmann coding; Variable length coding	14 February 2018
38	Source coding to increase average information per bit	16 February 2018
39	Problems on Entropy and Shannon Fano coding	17 February 2018
40	Tutorial (G2,G1) - Problems related to Shannon Fano coding	16,17 February 2018
41	Mutual Information	20 February 2018

UNIT-IV: Linear Block Codes		
42	Matrix description of Linear block codes	21 February 2018
43	Error detection capabilities of linear block codes	23 February 2018
44	Error correction capabilities of linear block codes	24 February 2018
45	Tutorial (G3,G2,G1) - Problems related to Cyclic codes	20 ,23,24 February 2018
46	Cyclic codes Algebraic structure, encoding	27 February 2018
47	Syndrome calculation and decoding	28 February 2018
48	Convolutional codes	2 March 2018
49	Decoding using states, tree decoding using state diagrams	3 March 2018
50	Tutorial (G3,G2,G1) - Problems related to Convolutional codes	27 February 2,3 March 2018
51	Decoding using Viterbi algorithm	6 March 2018
UNIT-V: Spread Spectrum Modulation		
52	Use of spread spectrum	7 March 2018
53	PN-sequences: Generation and characteristics	9 March 2018
54	Direct Sequence spread spectrum	10 March 2018
55	Tutorial (G3,G1,G2) - Problems related to DSSS	6, 9, 10 March 2018
56	Problems on DSSS	13 March 2018
57	Synchronization in spread spectrum systems	14 March 2018
58	Code division Multiple Access ,PN sequences	16 March 2018
59	Problems on DSSS	17 March 2018
60	Tutorial (G3,G2,G1) - Problems related to PN sequences	13, 16, 17 March 2018
61	Ranging using DSSS	20 March 2018
62	Frequency hopping spread spectrum	21 March 2018
63	Synchronization in spread spectrum systems	23 March 2018
64	Revision on I Unit	24 March 2018
65	Tutorial (G3,G2,G1) - Problems related to DSSS	20, 23,24 March 2018
66	Revision on I Unit	27 March 2018
67	Revision on II Unit	28 March 2018
68	Revision on III Unit	31 March 2018
69	Tutorial (G3,G1) - Problems related to Previous question papers	27,28,31 March 2018
70	Revision on IV Unit	3 April 2018

**Text books:**

1. Simon Haykin, "Digital Communication", John Wiley and Sons, 2005
2. Sam Shanmugam, "Digital and Analog Communication System", 2/e, John Wiley , 2005
3. H Taub, Schilling and Gautam Sahe, "Principles of Communication Systems", 3/e, TMH, 2008.

Name and signature of the faculty: Nazma Sultana ----

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