

**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-C

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

<b>UNIT-IV: Error Control Codes</b>		
40	Linear block codes and Error Correcting codes	17 February 2018
41	Tutorial (G1,G2,G3) - Problems related to linear block codes	14, 15, 17 February 2018
42	Matrix description of Linear block codes	20 February 2018
43	Error detection capabilities of linear block codes	21 February 2018
44	Error correction capabilities of linear block codes	22 February 2018
45	Error correction capabilities of linear block codes	24 February 2018
46	Tutorial (G1,G2,G3) - Problems related to Cyclic codes	21, 22, 24 February 2018
47	Cyclic codes Algebraic structure, encoding	27 February 2018
48	Syndrome calculation and decoding	28 February 2018
49	Convolutional codes	3 March 2018
50	Tutorial (G1, G3) - Problems related to Convolutional codes	28 February , 3 March 2018
51	Decoding using states, tree decoding using state diagrams	6 March 2018
52	Decoding using Viterbi algorithm	7 March 2018
53	Problems related to Convolutional codes	8 March 2018
54	Tutorial (G1, G2) - Problems related to IV unit	7, 8 March 2018
<b>UNIT-V: Spread Spectrum Modulation</b>		
55	Spread spectrum	13 March 2018
56	PN-sequences: Generation and characteristics	14 March 2018
57	Direct Sequence spread spectrum	15 March 2018
58	Problems on DSSS	17 March 2018
59	Tutorial (G1,G2,G3) - Problems related to PN sequences	14, 15, 17 March 2018
60	Synchronization in spread spectrum systems	20 March 2018
61	Code division Multiple Access ,PN sequences	21 March 2018
62	Problems on DSSS and Ranging using DSSS	22 March 2018
63	Frequency hopping spread spectrum	24 March 2018
64	Tutorial (G1,G2,G3) - Problems related to DSSS	21, 22, 24 March 2018
65	Synchronization in spread spectrum systems	27 March 2018
66	Revision	28 March 2018
67	Revision of I and II Unit	29 March 2018
68	Revision of III Unit	31 March 2018
69	Tutorial (G1,G2,G3) - Problems related to FHSS	28, 29, 31 March 2018
70	Revision of IV and V 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: Ms G Srilakshmi ----

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