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 Signal Processing Lectures per week: 5+1 (Tutorial)

Lecture Number	Topics to be covered	Date (s)
UNIT-I: Introduction to Digital Signal Processing and Realization of Digital Filters		
1	Introduction to Digital Signal Processing	18 December 2017
2	DT signals and sequences, LTI system, Stability and causality	20 December 2017
3	Linear constant co-efficient difference equation	21 December 2017
4	Linear constant co-efficient difference equation	22 December 2017
5	Frequency domain representation of DT signals	23 December 2017
6	Tutorial (G1,G3,G2) - Problem solving on LCCDE Problems related to Sampling	18, 20, 22 December 2017
7	Applications of Z-Transform,	27 December 2017
8	Solution of difference equation of Digital filters	28 December 2017
9	System function, Stability Criteria, Frequency response of stable systems	29 December 2017
10	Problems on Z-Transforms	30 December 2017
11	Tutorial (G3,G2) - Problem solving on Z-Transform	27, 29 December 2017
12	Realization of Digital filters using Direct, Canonic forms	3 January 2018
13	Realization of Digital filters using cascade & parallel forms	4 January 2018
14	Realization of Digital filters using cascade & parallel forms	5 January 2018
15	Problems on Realization of Digital filters	6 January 2018
16	Tutorial (G3,G2) - Problems on Realization of Digital filters	3, 5 January 2018
UNIT-II: **Discrete Fourier Series and Fast Fourier Transforms**		
17	DFS representation of periodic sequences, Properties of Discrete Fourier series	8 January 2018
18	Discrete Fourier transform, Properties of Discrete Fourier transform	10 January 2018
19	linear convolution using Discrete Fourier transform	11 January 2018
20	Computation of Discrete Fourier transform: Over-lap Add method,	12 January 2018
21	Over-lap Save method, Problems	13 January 2018
22	Tutorial (G1,G3,G2) - Problem solving on DFS,DFT	8, 10, 12 January 2018
23	Relation between DTFT, DFS, DFT and Z-Transform	17 January 2018
24	Fast Fourier transform, Radix-2 DIT Fast Fourier Transform algorithm	18 January 2018
25	Radix-2 DIF Fast Fourier Transform algorithm, Problems	19 January 2018
26	Inverse DFT with general radix	20 January 2018
27	Tutorial (G3,G2) - Problem solving on Fast Fourier Transforms	17, 19 January 2018
28	Inverse FFT with general radix-N	22 January 2018
UNIT-III: **IIR Digtal Filters**		
29	Analog filter Approximations: Butterworth Approximations	24 January 2018
30	Analog filter Approximations: Chebyshev Approximations	25 January 2018
31	Problem solving on Butterworth and Chebyshev filters	27 January 2018
32	Tutorial (G1,G3) - Problem solving on Filter realization	22, 24 January 2018
33	Problem solving on Butterworth and Chebyshev filters	29 January 2018
34	Problem solving on Butterworth and Chebyshev filters	31 January 2018
35	Design of Digital Butterworth filter	1 February 2018
36	Design of Digital Chebyshev filter, Problems	2 February 2018
37	Step and Impulse Invariant Techniques	3 February 2018
38	Tutorial (G1,G3,G2) - Problem solving on Chebyshev filter	29, 31 January, 2February 2018
39	Bilinear Transformation	10 February 2018

40	Tutorial (G1) - Problem solving on Chebyshev filter	5 February 2018
41	Spectral Transformation	12 February 2018
42	Problem solving on transformations	14 February 2018
43	Revision	15 February 2018
UNIT-IV: **FIR Digital Filters**		
44	Characteristics of FIR Digital Filters	16 February 2018
45	Frequency response of Linear phase FIR filter	17 February 2018
46	Tutorial (G1,G3,G2) - Problem solving on FIR filters	12, 14, 16 February 2018
47	Design of Linear phase FIR filter using Fourier Method	19 February 2018
48	Design of Linear phase FIR filter using frequency Sampling technique	21 February 2018
49	Design of Linear phase FIR filter using window technique	22 February 2018
50	Comparison of FIR and IIR Filters,	23 February 2018
51	Problems on FIR and IIR Filters	24 February 2018
52	Tutorial (G1,G3,G2) - Problem solving on IIR filter design	19, 21, 23 February 2018
53	Problems on FIR and IIR Filters	26 February 2018
UNIT-V: **Multirate Digital Signal Processing and Finite Word Length Effects**		
54	Introduction, Down sampling, Decimation	28 February 2018
55	Up sampling, Interpolation	2 March 2018
56	Sampling Rate Conversion	3 March 2018
57	Tutorial (G1,G3,G2) - Problem solving on MDSP	26, 28 February , 2 March 2018
58	Sampling Rate Conversion	5 March 2018
59	conversion of band pass signals, Concept of re-sampling	7 March 2018
60	Advantages of multi rate signal processing, Applications	8 March 2018
61	Problem solving on Sampling rate conversion	9 March 2018
62	Limit cycles. Overflow oscillations	10 March 2018
63	Tutorial (G1,G3,G2) - Problem solving on MDSP	5, 7, 9 March 2018
64	Round-off noise in IIR digital filters, Computational output round off noise	12 March 2018
65	Methods to prevent overflow	14 March 2018
66	Trade off between round off and overflow noise	15 March 2018
67	Measurement of coefficient quantization effects through pole-zero movement	16 March 2018
68	Measurement of coefficient quantization effects through pole-zero movement	17 March 2018
69	Tutorial (G1,G3,G2) - Problem solving on finite word length	12, 14, 16 March 2018
70	Dead band effects	19 March 2018
71	Dead band effects	21 March 2018
72	Revision	22 March 2018
73	Revision	23 March 2018
74	Revision	24 March 2018
75	Tutorial (G1,G3,G2) - Revision	19, 21, 23 March 2018
76	Revision	28 March 2018
77	Revision	29 March 2018
78	Revision	31 March 2018
79	Tutorial (G3) - Revision	28 March 2018
80	Revision	2 April 2018

TEXT BOOKS:

1. Digital Signal Processing, Principles, Algorithms, and Applications: John G. Proakis, Dimitris G. Manolakis. Pearson Education / PHI. 2007.
2. Discrete Time Signal Processing-A. V. Oppenheim and R.W. Schaffer. PHI, 2009
3. Fundamentals of Digital Signal Processing - Loney Ludeman. John Wiley, 2009

Name and signature of the faculty: S Surekha ----

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