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: IV B Tech Branch-Section: EEE Semester: I

Subject: Digital Signal Processing Lectures per week: 4+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	13 June 2016
2	DT signals and sequences, LTI system, Stability and causality	14 June 2016
3	Linear constant co-efficients difference equation	16 June 2016
4	Frequency domain representation of DT signals	18 June 2016
5	Tutorial (G3,G2, G1) - Problems related to systems	14, 17, 18 June 2016
6	Applications of Z-Transform	20 June 2016
7	Solution of difference equation of Digital filters	21 June 2016
8	System function, Stability Criteria	23 June 2016
9	Frequency response of stable systems	25 June 2016
10	Tutorial (G3,G2, G1) - Problems related to systems and stability	21, 24, 25 June 2016
11	Realization of Digital filters using Direct, Canonic and parallel forms	27 June 2016
12	Problems related to system stability	28 June 2016
13	Problems related to Digital Filters	30 June 2016
14	Problems related to Digital Filters using Direct, Canonic and parallel forms	2 July 2016
15	Tutorial (G3,G2, G1) - Problems related to System stability, Digital Filters	28 June, 1, 2 July 2016
UNIT-II: Discrete Fourier series and Fast Fourier Transforms		
16	DFS representation of periodic sequences	4 July 2016
17	Properties of Discrete Fourier series.	5 July 2016
18	Discrete Fourier transform	9 July 2016
19	Tutorial (G3,G2, G1) - Problems related to DFS,DFT	5, 8, 9 July 2016
20	Properties of Discrete Fourier Transform	11 July 2016
21	linear convolution using Discrete Fourier transform	12 July 2016
22	Computation of Discrete Fourier transform: Over-lap Add method	14 July 2016
23	Over-lap Save method	16 July 2016
24	Tutorial (G3,G2, G1) - Problems related to DFT, Convolution	12, 15,16 July 2016
25	Relation between DTFT, DFS, DFT and Z-Transform	18 July 2016
26	Fast Fourier transform	19 July 2016
27	Radix-2 DIT Fast Fourier transform algorithm	21 July 2016
28	Radix-2 DIF Fast Fourier transform algorithm	23 July 2016
29	Tutorial (G3,G2, G1) - Problems related to FFT	19, 22, 23 July 2016
30	Inverse DFT with general radix N	25 July 2016
31	Inverse DFT with general radix N	26 July 2016
UNIT-III: IIR Digital Filters		
32	Analog filter Approximations: Butterworth Approximations	28 July 2016
33	Analog filter Approximations: Chebyshev Approximations	30 July 2016
34	Tutorial (G3,G2, G1) - Problems related to Butterworth and Chebyshev Approximations	26, 29, 30 July 2016
35	Problem related to Butterworth and Chebyshev filters	2 August 2016
36	Design of Digital Butterworth filter	4 August 2016
37	Design of Digital Chebyshev filter	6 August 2016
38	Tutorial (G3,G2, G1) - Problems related to Digital Butterworth and Chebyshev filters	2, 5, 6 August 2016
39	Step and Impulse Invariance Transformation	16 August 2016

40	Bilinear Transformation	18 August 2016
41	Spectral Transformation	20 August 2016
42	Tutorial (G3,G2, G1) - Problems related to Step and Impulse Invariance Transformation	16, 19, 20 August 2016
43	Problem related to Step and Impulse Invariance Transformation	22 August 2016
44	Problem related to Bilinear Transformations	23 August 2016
45	Problem related to Spectral Transformations	27 August 2016
46	Tutorial (G3,G2, G1) - Problems related to Bilinear and Spectral transformations	23, 26, 27 August 2016
UNIT-IV: **FIR Digital Filters**		
47	Characteristics of FIR Digital Filters	29 August 2016
48	Frequency response of Linear phase FIR filter	30 August 2016
49	Design of Linear phase FIR filter using Fourier Method	1 September 2016
50	Design of Linear phase FIR filter using window technique	3 September 2016
51	Tutorial (G3,G2, G1) - Problems related to FIR filters	30 August, 2, 3 September 2016
52	Design of Linear phase FIR filter using frequency Sampling technique	6 September 2016
53	Comparison of FIR and IIR Filters	8 September 2016
54	Problems related to FIR filters	10 September 2016
55	Tutorial (G3,G2, G1) - Problems related to FIR filters	6, 9, 10 September 2016
56	Problems related to Design of Linear phase FIR filter using Fourier Method	13 September 2016
57	Problems related to Design of Linear phase FIR filter using window technique	15 September 2016
58	Problems related to FIR and IIR filters	17 September 2016
59	Tutorial (G3,G2, G1) - Problems related to FIR filters	13, 15, 17 September 2016
UNIT-V: : Multirate Digital Signal Processing and Finite Word Length Effects		
60	Introduction	19 September 2016
61	Down sampling	20 September 2016
62	Decimation	22 September 2016
63	Up sampling	24 September 2016
64	Tutorial (G3,G2, G1) - Problems related to Down sampling, Up Sampling	20, 22, 24 September 2016
65	Interpolation	26 September 2016
66	Sampling Rate Conversion	27 September 2016
67	Problems related to Interpolation	29 September 2016
68	Problems related to Sampling Rate Conversion	1 October 2016
69	Tutorial (G3, G1) - Problems related to Interpolation , Sampling Rate Conversion	27 September, 1 October 2016
70	Limit cycles, Overflow oscillations	3 October 2016
71	Round-off noise in IIR digital filters, Computational output round off noise	4 October 2016
72	Tutorial (G3) - Problems related to	4 October 2016
73	Methods to prevent overflow	27 October 2016
74	Trade Off between round off and overflow noise	29 October 2016
75	Tutorial (G2, G1) - Problems related to Finite Word Length	28, 29 October 2016
76	Dead band effects	31 October 2016
77	Problems related to Finite Word Length	1 November 2016
78	Discussion of previous question papers	3 November 2016
79	Tutorial (G3) - previous question papers	1 November 2016

Text books:

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

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

Name and signature of Head of the Department: Ms Y Mastanamma ----