MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR (M.P.)

A Govt. Added UGC Autonomous and NAAC Accredited Institute, Affiliated to R.G.P.V, Bhopal

DEPARTMENT OF ELECTRONICS ENGINEERING

Multiple Mode Teaching Learning Pattern

Name of Course with Code: Digital Signal Processing (140601)	**Class:** B. Tech. III Year	**Session:** Jan-June 2023

S. No.	Unit	Content to be Covered	Teaching Session	Mode
1.	Unit 1	Review of discrete time signals and systems	1	Offline & Open discussions
2.		Properties and applications of discrete time Fourier transform	2	Offline & activity based learning
3.		Review of Z transform	3	Offline & Open discussions
4.		Analysis of minimum phase	4-5	Offline & Experiment with problem solving in group based learning
5.		Maximum phase and inverse system.	6	Online & demonstration based learning
6.	Unit 2	Introduction and properties of DFT.	7	Offline & problem solving based learning
7.		Computation of circular convolution using DFT.	8	Offline & problem solving based learning
8.		Decimation in time FFT algorithm.	9	Offline & problem solving based learning
9.		Decimation of frequency FFT algorithm with radix-2.	10	Offline & problem solving based learning
10.		Decimation of frequency FFT algorithm with radix-4.	11	Offline & problem solving based learning
11.		Review of Unit-II	12	Online
12.	Unit 3	Characteristics of practical frequency selective filters.	13	Offline & Experiment with problem solving in group based learning
13.		Various signal flow graph structure of IIR filters.	14	Offline & Experiment with problem solving in group based learning
14.		IIR Filter design.	15	Offline & Experiment with problem solving in group based learning
15.		Overview of Butterworth	16	Offline & Experiment with problem solving in group based learning
16.		Chebyshev and Elliptic Approximations.	17	Offline & Experiment with problem solving in group

				based learning
17.		Design of discrete time IIR filters using Impulse invariant.	18	Offline & Open discussions
18.		Bilinear transformation Methods.	19	Offline & Experiment with problem solving in group based learning
19.		Spectral transformation of IIR filters.	20	Offline & Experiment with problem solving in group based learning
20.	**Unit 4**	Introduction and Signal flow graph structure of FIR Filter.	21	Offline & Experiment with problem solving in group based learning
21.		Symmetric, and Asymmetric FIR filters.	22	Offline & Experiment with problem solving in group based learning
22.		Design of linear phase FIR filters using windows.	23	Offline & Learning through projects
23.		Frequency sampling method.	24	Online & demonstration based learning
24.		Design of Optimum Equiripple linear phase FIR filters.	25	Offline & group based learning
25.		Design of FIR differentiators.	26	Online & demonstration based learning
26.	**Unit 5**	Introduction	27	Online & demonstration based learning
27.		Decimation and Interpolation.	28	Offline & group based learning
28.		Sampling rate conversion by a Rational factor.	29	Online & demonstration based learning
29.		Sampling rate conversion with Cascaded integrator.	30	Offline & Experiment with problem solving in group based learning
30.		Comb filters	31	Offline & Open discussions
31.		Polyphase structures for decimation.	32	Offline & Onsite/ field visit based Learning
32.		Interpolation filters.	33	Offline & Onsite/ field visit based Learning
33.		Application of multirate signal processing.	34	Offline & Onsite/ field visit based Learning
34.		Review of Unit-V	35	Online & demonstration based learning

Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field based learning

20.8	13.42	7.71	2.85	1.85	31.42	11.42	10.42

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