



**ChristuJyothi Institute of Technology & Science**  
Colombonagar, Yeshwanthapur, Jangaon

**Department of Electronics and Communication Engineering**

<b>Program Name:</b>	B.Tech in ECE	<b>AY</b>	2022-23
<b>Course Name:</b>	EC602PC:DIGITAL SIGNAL PROCESSING	<b>Class / Sem</b>	III/II
<b>Faculty Name:</b>	Dr. SREEJA MOLE S S	<b>Regulation</b>	R18

**Lesson Plan**

Lecture No.	Topic to be covered	Teaching Aid(TA)/ Methodology (TM)	Text/Reference	Web Reference
	<b>Unit-I</b>			
1	Introduction to Digital Signal Processing	BB	T1,T2	
2	Discrete Time Signals & Sequences,conversion of continuous to discrete signal	BB,PPT	T1,T2	<a href="https://www.slideshare.net/SnehalHedau1/final-dsp-ppt">https://www.slideshare.net/SnehalHedau1/final-dsp-ppt</a>
3	Normalized Frequency, Linear Shift Invariant Systems,Stability, and Causality, linear differential equation to difference equation,	BB	T1,T2	
4	Linear Constant Coefficient Difference Equations	BB	T1,T2	
5	Frequency Domain Representation of Discrete Time Signals and Systems	BB, PPT	T1,T2	<a href="https://en.wikipedia.org/wiki/Digital_signal_processor">https://en.wikipedia.org/wiki/Digital_signal_processor</a>
6	<b>Multirate Digital Signal Processing</b>	BB	T1,T2	
7	Introduction,DownSampling,	BB,RC	T1,T2	
8	Decimation,Upsampling	BB	T1,T2	
9	Interpolation	BB,PPT	T1,T2	
10	Sampling Rate Conversion.	BB	T1,T2	
11	Slip Test 1	BB	T1,T2	
12	<b>UNIT - II: Discrete Fourier series</b>	BB	T1,T2	
13	Fourier Series	BB	T1,T2	
14	Fourier Transform	BB	T1,T2	
15	Laplace Transform and Z-Transform relation	BB	T1,T2	
16	DFS Representation of Periodic Sequences	BB, Tutorial Class	T1,T2	<a href="https://www.tutorialspoint.com/digital_signal_processing/dsp_discrete_fourier_transform_introduction.htm">https://www.tutorialspoint.com/digital_signal_processing/dsp_discrete_fourier_transform_introduction.htm</a>
17	Properties of Discrete Fourier	BB		

	Series			
18	Discrete Fourier Transform.	BB,PPT	T1,T2	<a href="https://www.researchgate.net/publication/345430283_DFT_PPT">https://www.researchgate.net/publication/345430283_DFT_PPT</a>
19	Properties of DFT	BB	T1 ,T2	
20	Linear Convolution of Sequences using DFT	BB	T1,T2	
21	Computation of DFT: Over-Lap Add Method	BB	T1,T2	
22	Over-Lap Save Method	BB	T1,T2	
23	Relation between DTFT DFS, DFT and Z-Transform.	BB	T1,T2	
24	<b>Slip Test-2</b>	BB		
	<b>Unit-III IIR Digital Filters:</b>	BB		
28	Analog filter	BB	T1,T2	
29	Approximations – Butterworth and Chebyshev	BB,TC	T1,T2	
30	Design of IIR Digital Filters from Analog Filters	BB	T1,T2	
31	Step and Impulse Invariant Techniques	BB	T1,T2	
32	Bilinear Transformation Method	BB	T1,T2	
33	Spectral Transformations	BB,PPT	T1,T2	<a href="https://www.tutorialspoint.com/digital_signal_processing/dsp_discrete_fourier_transform_introduction.htm">https://www.tutorialspoint.com/digital_signal_processing/dsp_discrete_fourier_transform_introduction.htm</a>
35	Slip Test-3	BB		
	<b>UNIT - IV FIR Digital Filters:</b>			
36	Characteristics of FIR Digital Filters	BB	T1,T2	
37	Frequency Response.	BB	T1,T2	
38	Design of FIR Filters	BB	T1,T2	
39	Fourier Method	BB	T1,T2	
40	Digital Filters using Window Techniques	BB,PPT	T1,T2	<a href="https://www.slideshare.net/op205/design-of-fir-filters-presentation">https://www.slideshare.net/op205/design-of-fir-filters-presentation</a>
41	Frequency Sampling Technique,	BB	T1,T2	
42	Comparison of IIR & FIR filters.	BB	T1,T2	
46	Slip Test-4	BB		
	<b>UNIT-V Realization of Digital Filters:</b>	BB		
47	Applications of Z – Transforms,	BB	T1,T2	
48	Solution of Difference Equations of Digital Filters,	BB	T1,T2	
49	System Function, Stability	BB	T1,T2	

	Criterion			
50	Frequency Response of Stable Systems	BB,PPT	T1,T2	<a href="https://www.slideshare.net/op205/implementation-of-digital-filters">https://www.slideshare.net/op205/implementation-of-digital-filters</a>
51	Realization of Digital Filters – Direct, Canonic,	BB	T1,T2	
52	Cascade and Parallel Forms.	BB,TT	T1,T2	
53	<b>Finite Word Length Effects:</b>	BB	T1,T2	
54	Limit cycles, Overflow Oscillations	BB,RC	T1,T2	<a href="https://www.powershow.com/view/26e4f1-Mjc4N/Finite_Wordlength_Effects_powerpoint_ppt_presentation">https://www.powershow.com/view/26e4f1-Mjc4N/Finite_Wordlength_Effects_powerpoint_ppt_presentation</a>
55	Round-off Noise in IIR Digital Filters	BB	T1,T2	
56	Computational Output Round Off Noise,	BB	T1,T2	
57	Methods to Prevent Overflow	BB	T1,T2	
58	Trade Off Between Round Off and Overflow Noise	BB	T1,T2	
59	Measurement of Coefficient Quantization	BB	T1,T2	
60	Effects through Pole-Zero Movement, Dead Band Effects.	BB	T1,T2	
61	Slip Test-5			
62	UQ paper Discussionm	BB		

#### **TEXT BOOKS:**

3. Discrete Time Signal Processing – A. V. Oppenheim and R.W. Schaffer, PHI, 2009
4. Digital Signal Processing, Principles, Algorithms, and Applications: John G. Proakis, Dimitris G.Manolakis, PearsonEducation / PHI, 2007.

#### **REFERENCE BOOKS:**

4. Digital Signal Processing – Fundamentals and Applications – Li Tan, Elsevier, 2008
5. Fundamentals of Digital Signal Processing using MATLAB – Robert J. Schilling, Sandra L.Harris, Thomson, 2007
6. Digital Signal Processing – S. Salivahanan, A. Vallavaraj and C. Gnanapriya, TMH, 2009
7. Digital Signal Processing - A Practical approach, Emmanuel C. Ifeachor and Barrie W. Jervis, 2<sup>nd</sup> Edition, PearsonEducation, 2009

**Faculty Signature**

**HOD**

