Department of Electrical & Electronics Engineering

Lesson Plan & Work-done Diary for AY:2024-25, ODD Semester

	Course with Code: Signals & Digital Signal Processing / BEE502				Faculty: Ms. Kavyashree S		Semester & Section: V	
Class No.	**Date planned (DD/MM)**	**Topics to be covered**	**TLP Planned**	**Class No.**	**Date of Conduction (DD/MM)**	**Topics Covered**	**TLP Executed**	**Remarks if any deviation**
	MODULE-1							
1		Introduction to Course, Advantages, Applications: Definitions of signals and a system	ICT					
2		Basic operations on signals, Problems on operations on signals	Chalk & Talk					
3		Classification of signals, Problems on classification of signals	Chalk & Talk					
4		Problems on classification of signals	Chalk & Talk					
5		Problems on properties of systems	Chalk & Talk					
6		Concept of frequency in continuous and Discrete time signals	Chalk & Talk					
7		Sampling of analog signals, the sampling theorem, quantization of continuous amplitude and sinusoidal signals	Chalk & Talk					
8		Coding of quantized samples, digital to analog conversion,	Chalk & Talk					
9		**Time-domain representations for LTI systems:** Convolution, impulse response representation, Problems	Chalk & Talk					
10		Convolution Sum and Convolution Integral, Properties of impulse response representation, solution of difference equations.	Chalk & Talk					

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	MODULE-2							
11		**Discrete Fourier transforms:** Introduction, Advantages, Applications of DSP Definitions, definition of DFT and its inverse	ICT					
12		Matrix relation to find DFT and IDFT , Numerical , Properties of DFT, linearity, circular time shift, circular frequency shift	Chalk & Talk					
13		Circular folding derivation Symmetry of : real valued sequences, real even and odd sequences	Chalk & Talk					
14		DFT of complex conjugate sequence, Multiplication of two DFTs- the circular convolution, Numerical	Chalk & Talk					
15		Parseval's theorem, circular correlation, Digital linear filtering using DFT. Signal segmentation	Chalk & Talk					
16		Overlap-Save method Problem	Chalk & Talk					
17		Overlap-add/ Save method Problem	Chalk & Talk					
18		Overlap-add method Problem						

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	MODULE 3							
19		**Fast Fourier Transforms Algorithms**: Introduction, Direct computation of DFT	ICT					
20		Need for efficient computation of the DFT (FFT algorithms)., speed improvement factor	Chalk & Talk					
21		Radix-2 FFT algorithm for the computation of DFT and IDFT– decimation-in-time	Chalk & Talk					
22		Radix-2 FFT algorithm for the computation of DFT and IDFT– decimation-in-time	Chalk & Talk					
23		Radix-2 FFT algorithm for the computation of DFT and IDFT– Decimation-in-frequency algorithms	Chalk & Talk					
24		Radix-2 FFT algorithm for the computation of DFT and IDFT– Decimation-in-frequency algorithms						
25		Calculation of DFT when N is not a power of 2	Chalk & Talk					

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	MODULE 4							
26		**IIR filter desig**n: Classification of analog filters, generation of Butterworth polynomials, frequency transformations	ICT					
27		Design of Butterworth filters, low pass, high pass, band pass and band stop filters	ICT					
28		Generation of Chebyshev polynomials, design of Chebyshev filters	ICT					
27		Design of Butterworth and Chebyshev filters using bilinear transformation	Chalk & Talk					
29		Impulse invariance method	Chalk & Talk					
30		Filters using bilinear transformation	ICT					
31		Representation of IIR filters using direct form one and two, series form and parallel form						
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	MODULE 5							
33		FIR filter design: Introduction to FIR filters, symmetric and antisymmetric FIR filters	ICT					
34		Filter Designs and Numericals	Chalk & Talk					
35		Design of linear phase FIR filters using - Rectangular, Bartlett	Chalk & Talk					
36		Hamming, Hanning and Blackman windows	Chalk & Talk					
37		Design of FIR differentiators and Hilbert transformers	Chalk & Talk					
38		FIR filter design using frequency sampling Technique	Chalk & Talk					
39		Representation of FIR filters using direct form and lattice structure.	Chalk & Talk					
40		VTU question Paper Discussion and SRS conduction	ICT					

	Activity	Planned	Actual	Remarks
1	Theory Classes	**40 hours Theory +10 Lab slots(2 hour /slot) =Total 60**		
2	Assignments/Quizzes/ Self study	Write up: 2 SRS:3 Virtual Lab: 1		
3	Tutorials/ Extra classes	-		
4	Internal Assessments	03		
5	ICT based Teaching (% of usage in Curriculum)	20%		
Planning			**Execution**	
Faculty Signature:			**Faculty Signature:**	
HoD Signature:			**HoD Signature:**	