



Discipline : ETC	Semester:- 6 th	Name of the Teaching Faculty: - Biswajit Mishra
Subject:- Digital Signal Processing (Th. 3)	No of Days/per Week Class Allotted :- 04	Semester From:- 14.02.2023 To:- 23.05.2023
Week	Class Day	Theory
1 st	1 st	Basics of Signals, Systems & Signal processing- basic element of a digital signal processing system
	2 nd	Compare the advantages of digital signal processing over analog signal processing
	3 rd	Classify signals - Multi channel & Multi-dimensional signals- Continuous time verses Discrete -time Signal. -Continuous valued verses Discrete -valued signals.
	4 th	Concept of frequency in continuous time & discrete time signals- Continuous-time sinusoidal signals- Discrete-time sinusoidal signals- Harmonically related complex exponential.
2 nd	1 st	Analog to Digital & Digital to Analog conversion & explain the following.
	2 nd	a. Sampling of Analog signal,
	3 rd	b. The sampling theorem.
	4 th	c. Quantization of continuous amplitude signals,
3 rd	1 st	d. Coding of quantized sample.
	2 nd	e. Digital to analog conversion.
	3 rd	f. Analysis of digital systems signals vs. discrete time signals systems.
	4 th	Concept of Discrete time signals. Elementary Discrete time signals.
4 th	1 st	Classification Discrete time signal.
	2 nd	Simple manipulation of discrete time signal
	3 rd	Discrete time system. Input-output of system.
	4 th	Block diagram of discrete- time systems
5 th	1 st	Classify discrete time system
	2 nd	Inter connection of discrete -time system.
	3 rd	Discrete time time-invariant system. Different techniques for the Analysis of linear system.
	4 th	Resolution of a discrete time signal in to impulse
6 th	1 st	Response of LTI system to arbitrary inputs using convolution sum.
	2 nd	Convolution & interconnection of LTI system - properties.
	3 rd	Study systems with finite duration and infinite duration impulse response
	4 th	Discrete time system described by difference equation. Recursive & non-recursive discrete time system
7 th	1 st	Determine the impulse response of linear time invariant recursive system ,Correlation of Discrete Time signals
	2 nd	THE Z-TRANSFORM & ITS APPLICATION TO THE ANALYSIS OF LTI SYSTEM.
	3 rd	Z-transform & its application to LTI system
	4 th	Direct Z-transform.
8 th	1 st	Inverse Z-transform.
	2 nd	Various properties of Z-transform.

	2 nd	Rational Z-transform
	3 rd	Poles & zeros.
	4 th	Pole location time domain behaviour for casual signals
9 th	1 st	System function of a linear time invariant system.
	2 nd	Discuss inverse Z-transform
	3 rd	Inverse Z-transform by partial fraction expansion
	4 th	
10 th	1 st	Inverse Z-transform by contour Integration
	2 nd	
	3 rd	DISCUSS FOURIER TRANSFORM: ITS APPLICATIONS PROPERTIES
	4 th	Concept of discrete Fourier transform.
11 th	1 st	Frequency domain sampling and reconstruction of discrete time signals.
	2 nd	
	3 rd	Discrete Time Fourier transformation(DTFT)
	4 th	Discrete Fourier transformation (DFT).
12 th	1 st	Compute DFT as a linear transformation
	2 nd	
	3 rd	Relate DFT to other transforms
	4 th	
13 th	1 st	Property of the DFT.
	2 nd	
	3 rd	Multiplication of two DFT & circular convolution
	4 th	FAST FOURIER TRANSFORM ALGORITHM & DIGITAL FILTERS
14 th	1 st	Compute DFT & FFT algorithm
	2 nd	Direct computation of DFT
	3 rd	Divide and Conquer Approach to computation of DFT
	4 th	
15 th	1 st	Radix-2 algorithm. (Small Problems)
	2 nd	Application of FFT algorithms
	3 rd	Introduction to digital filters.(FIR Filters)& General considerations
	4 th	Introduction to DSP architecture
		familiarization of different types of processor


 13.02.23
 Teaching Faculty


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