GOVERNMENT POLYTECHNIC, DHENKANAL
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGG.
LESSON PLAN SUMMER 2025

Subject:- Digital Signal Processing (Th-3)	No of Days/per Week Class Allotted :- 4	Semester From:- :- 04.02.2025 To:- 17.05.2025 Name of the Faculty: Aditi Mohapatra
Week	**Class Day**	**Theory**
1st	1st	Basics of Signals, Systems & Signal processing- basic element of a digital
	2nd	Compare the advantages of digital signal processing over analog signal
	3rd	Classify signals - Multi channel& Multi-dimensional signals-Continuous time verses Discrete -times Signal. -Continuous valued verses Discrete -valued signals.
	4th	Concept of frequency in continuous time & discrete time signals-Continuous-
2nd	1st	Analog to Digital & Digital to Analog conversion & explain the following. a. Sampling of Analog signal,
	2nd	b. The sampling theorem.
	3rd	c. Quantization of continuous amplitude signals,
	4th	e. Digital to analog conversion.
3rd	1st	f. Analysis of digital systems signals vs. discrete time signals systems.
	2nd	Concept of Discrete time signals. Elementary Discrete time signals.
	3rd	Classification Discrete time signal.
	4th	Classify discrete time system
4th	1st	Simple manipulation of discrete time signal
	2nd	Discrete time system. Input-output of system.
	3rd	Block diagram of discrete- time systems
	4th	Classify discrete time system
5th	1st	Inter connection of discrete -time system.
	2nd	Discrete time time-invariant system. Different techniques for the Analysis of
	3rd	Resolution of a discrete time signal in to impulse
	4th	Response of LTI system to arbitrary inputs using convolution sum.
6th	1st	Convolution & interconnection of LTI system - properties.
	2nd	Study systems with finite duration and infinite duration impulse response
	3rd	Discrete time system described by difference equation. Recursive & non-recursive discrete time system
	4th	Determine the impulse response of linear time invariant recursive system ,Correlation of Discrete Time signals
7th	1st	THE Z-TRANSFORM & ITS APPLICATION TO THE ANALYSIS OF LTI SYSTEM.
	2nd	Z-transform & its application to LTI system
	3rd	Direct Z-transform.
	4th	Inverse Z-transform.
8th	1st	Various properties of Z-transform.
	2nd	Rational Z-transform
	3rd	Poles & zeros.
	4th	Pole location time domain behaviour for casual signals
9th	1st	System function of a linear time invariant system.
	2nd	Discuss inverse Z-transform
	3rd	Inverse Z-transform by partial fraction expansion
	4th	Inverse Z-transform by contour Integration

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

31/01/25
Signature of Faculty

31/01/25
Signature of HOD