BIT POLYRECHNIC,BALASORE
LESSON PLAN

Discipline:	**Semester:**	**Name of the Teaching Faculty:**
Electronics and Telecommunication.	6^{TH}, Summer	Madhusmita Nayak Lecturer
Subject: Digital Signal Processing **Theory-3**	**No. of Days/Week:** 04	

Week	Class Day	Theory Topics
1st	1st	Basics of Signals, Systems & Signal processing.
	2nd	basic element of a digital signal processing system
	3rd	Compare the advantages of digital signal processing over analog signal processing.
	4th	Classify signals - Multi channel& Multi-dimensional signals
2nd	1st	Continuous valued verses Discrete -valued signals.
	2nd	Continuous time verses Discrete -times Signal
	3rd	Concept of frequency in continuous time & discrete time signals Continuous-time sinusoidal signals-Discrete-time sinusoidal signals-Harmonically related complex exponential.
	4th	Analog to Digital & Digital to Analog conversion
3rd	1st	Explain Sampling of Analog signal, The sampling theorem.
	2nd	Quantization of continuous amplitude signals, Coding of quantized sample.
	3rd	Digital to analog conversion.
	4th	Analysis of digital systems signals vs. discrete time signals systems.

4th	1st	**Doubt clearing class.**
	2nd	Concept of Discrete time signals,
	3rd	Elementary Discrete time signals.
	4th	Classification Discrete time signal.
5th	1st	Simple manipulation of discrete time signal.
	2nd	Discrete time system.
	3rd	Input-output of a system.
	4th	Block diagram of discrete- time systems.
6th	1st	Classify discrete time system.
	2nd	Inter connection of discrete -time system.
	3rd	Discrete time time-invariant system. techniques
	4th	Different for the Analysis of linear system.
7th	1st	Resolution of a discrete time signal into impulse
	2nd	Response of LTI system to arbitrary inputs using convolution sum.
	3rd	Convolution & interconnection of LTI system - properties.
	4th	Study systems with finite duration and infinite duration impulse response.
8th	1st	Discrete time system described by difference equation.
	2nd	Recursive & non-recursive discrete time system.
	3rd	Determine the impulse response of linear time invariant recursive system.
	4th	Correlation of Discrete Time signals.
9th	1st	**Doubt clearing class.**
	2nd	Z-transform & its application to LTI system.
	3rd	Compute Direct Z-transform problems.
	4th	Compute Direct Z-transform problems.

10th	1st	Inverse Z-transform.
	2nd	Compute Direct Inverse Z-transform problems.
	3rd	Various properties of Z-transform.
	4th	Rational Z-transform.
11th	1st	Poles & zeros. Pole location time domain behavior for casual signals.
	2nd	System functions of a linear time invariant system.
	3rd	Compute Inverse Z-transform problems. Again.
	4th	Inverse Z-transform by partial fraction expansion.
12th	1st	Inverse Z-transform by contour Integration.
	2nd	Doubt clearing class.
	3rd	Concepts of discrete Fourier transform. Frequency domain sampling and reconstruction of discrete time signals.
	4th	Discrete Time Fourier transformation (DTFT) . Discrete Fourier transformation (DFT).
13th	1st	Compute DFT as a linear transformation. Relate DFT to other transforms.
	2nd	Property of the DFT. Multiplication of two DFT & circular convolution.
	3rd	Compute DFT & FFT algorithm. Direct computation of DFT.
	4th	Divide and Conquer Approach to computation of DFT Radix-2 algorithm. (Small Problems).
14th	1st	Application of FFT algorithms. Introduction to digital filters. (FIR Filters) & General considerations.
	2nd	Introduction to DSP architecture.
	3rd	Familiarization of different types of processor.
	4th	**Doubt clearing class.**