

GIET POLYTECHNIC, JAGATPUR, CUTTACK

LESSON PLAN

Discipline: ELECTRONICS	Semester: 6 th	Name Of The Teaching Faculty: RUPAK KUMAR SAHOO
Subject: DSP	No. Of Days Per Week Class Allotted: 04 P	Semester From Date: _____ To Date: _____ No. of weeks: 15
Week	Class Day	Theory Topic
1 st week	1 st	<u>UNIT 1 : INTRODUCTION</u>
	2 nd	• 1.1: Basic signal system & signal processing
	3 rd	• 1.1: Compare the advantage of DSP over ASP
	4 th	• 1.2: Classify signal
2 nd week	1 st	• 1.2: Continuous time vs Discrete time signal
	2 nd	• 1.3: Concept of frequency in continuous time signal
	3 rd	• 1.3: Continuous time vs discrete time signal
	4 th	• 1.4: Adc & dac
3 rd week	1 st	• 1.4.a : Sampling Of Analog Signal
	2 nd	• 1.4.b : The Sampling Theorem
	3 rd	• 1.4.c : Quantization Of Continuous Amplitude Signals
	4 th	• 1.4.d : Coding of quantized sample
4 th week	1 st	• 1.4.e : Digital to analog conversion.
	2 nd	• 1.4.f: Analysis of digital system signal vs discrete time signal
	3 rd	<u>UNIT 2: DISCRETE TIME SIGNALS & SYSTEMS</u>
	4 th	• 2.1 : Concept of Discrete time signals
5 th week	1 st	• 2.1.1: elementary discrete time signal
	2 nd	• 2.1.2: Classification Discrete time signal
	3 rd	• 2.1.3: Simple manipulation of discrete time signals
	4 th	• 2.2: Discrete time system
6 th week	1 st	• 2.2.1: Input- Output of system
	2 nd	• 2.2.2: Block diagram of discrete-time system
	3 rd	• 2.2.3: Classify discrete time system
	4 th	• 2.2.4: Inter connection of discrete-time system
7 th week	1 st	• 2.3: Discrete time-invariant system
	2 nd	• 2.3.1: Different techniques for the analysis of linear system
	3 rd	• 2.3.2: Resolution Of A Discrete Time Signal Into Impulse
	4 th	• 2.3.3: response of LTI system to arbitrary inputs using convolution sum
8 th week	1 st	• 2.3.4: Convolution & interconnection of LTI system properties
	2 nd	• 2.3.5: Study systems with finite duration and infinite duration impulse response
	3 rd	• 2.4: Discrete time systems described by difference equation
	4 th	• 2.4.1: Recursive & non-recursive discrete time system
9 th week	1 st	• 2.4.2: Determine the impulse response of linear time invariant recursive system
	2 nd	• 2.4.3: Correlation of Discrete Time signals
	3 rd	<u>UNIT-3: THE Z-TRANSFORM & ITS APPLICATION TO THE ANALYSIS OF LTI SYSTEM</u>
	4 th	• 3.1: Z-Transform & Its Application to LTI System
10 th week	1 st	• 3.1.1: Direct Z-Transform
	2 nd	• 3.1.1: Direct Z-Transform
	3 rd	• 3.1.1: Direct Z-Transform
	4 th	• 3.1.2: Inverse Z-Transform

8 th week	1 st	<ul style="list-style-type: none"> 3.1.2: Inverse Z-Transform
	2 nd	<ul style="list-style-type: none"> 3.2: Various Properties Of Z-Transform
	3 rd	<ul style="list-style-type: none"> 3.3: Rational Z-transform
	4 th	<ul style="list-style-type: none"> 3.3.1: Poles & zeros
9 th week	1 st	<ul style="list-style-type: none"> 3.3.2: Pole location time domain behavior for casual signals
	2 nd	<ul style="list-style-type: none"> 3.3.3: System function of a linear time invariant system.
	3 rd	<ul style="list-style-type: none"> 3.4: Discuss inverse Z-transform 3.4.1: Inverse Z-transform by partial fraction expansion
	4 th	<ul style="list-style-type: none"> 3.4.1: Inverse Z-transform by partial fraction expansion
10 th week	1 st	<ul style="list-style-type: none"> 3.4.2: Inverse Z-transform by contour Integration
	2 nd	<ul style="list-style-type: none"> 3.4.2: Inverse Z-transform by contour Integration
	3 rd	<p style="text-align: center;"><u>UNIT-4: DISCUSS FOURIER TRANSFORM & ITS APPLICATIONS</u></p> <p style="text-align: center;"><u>PROPERTIES</u></p> <ul style="list-style-type: none"> 4.1: concept of discrete Fourier transform
	4 th	<ul style="list-style-type: none"> 4.2: Frequency domain sampling and reconstruction of discrete time signals
11 th week	1 st	<ul style="list-style-type: none"> 4.2: Frequency domain sampling and reconstruction of discrete time signals
	2 nd	<ul style="list-style-type: none"> 4.3: Discrete Time Fourier Transformation (DTFT)
	3 rd	<ul style="list-style-type: none"> 4.4: Discrete Fourier Transformation (DFT)
	4 th	<ul style="list-style-type: none"> 4.5: compute DFT as a linear transformation
12 th week	1 st	<ul style="list-style-type: none"> 4.6: Relate DFT To Other Transforms
	2 nd	<ul style="list-style-type: none"> 4.6: Relate DFT To Other Transforms
	3 rd	<ul style="list-style-type: none"> 4.7: Property Of The DFT
	4 th	<ul style="list-style-type: none"> 4.7: Property Of The DFT
13 th week	1 st	<ul style="list-style-type: none"> 4.8: multiplication of two DFT & circular convolution
	2 nd	<ul style="list-style-type: none"> 4.8: multiplication of two DFT & circular convolution
	3 rd	<p style="text-align: center;"><u>UNIT-5: FAST FOURIER TRANSFORM ALGORITHM & DIGITAL</u></p> <p style="text-align: center;"><u>FILTERS</u></p> <ul style="list-style-type: none"> 5.1: compute DFT & FFT algorithm
	4 th	<ul style="list-style-type: none"> 5.2: Direct computation of DFT
14 th week	1 st	<ul style="list-style-type: none"> 5.3: Divide and Conquer Approach to computation of DFT
	2 nd	<ul style="list-style-type: none"> 5.4: Radix-2 algorithm (small problems)
	3 rd	<ul style="list-style-type: none"> 5.4: Radix-2 algorithm (small problems)
	4 th	<ul style="list-style-type: none"> 5.5: Application of FFT algorithms
15 th week	1 st	<ul style="list-style-type: none"> 5.6: Introduction to digital filters
	2 nd	<ul style="list-style-type: none"> 5.6: FIR Filters & general considerations
	3 rd	<ul style="list-style-type: none"> 5.7: Introduction to DSP architecture, familiarisation of different types of processor
	4 th	<ul style="list-style-type: none"> 5.7: Introduction to DSP architecture, familiarisation of different types of processor