LESSON PLAN

NAME OF FACULTY : Pradeep Singla
DISCIPLINE : ME
SEMESTER : 7th
SUBJECT : Digital Signal Processing (MT-401)
LESSON PLAN DURATION : 15 WEEKS (FROM July , 2018 TO Dec, 2018)
WORK LOAD (LECTURE/PRACTICAL)PER WEEK (IN HOURS) : 4 LECTURE, 3 PRACTICAL, 1 Tutorial

WEEK	THEORY		Practical	
	Lectrue Day	Topic (Including Assignment/Test)	Practical Day	Topic
1st	I	Introduction to Digital Signal Processing & its applications	Ist	Define a function to compute DTFT of a finite length signal. Plot the magnitude and phase plots using subplots. Use this function to obtain DTFT of a 21 point triangular pulse over the domain 10<n<10: Plot the results over -1t<w<1t.
	II	Z- transform and its properties		
	III	Properties, Inversion of Z-transform,		
	IV	One sided Ztransform and solution of differential equations.		
2nd	I	Analysis of LTI systems in Zdomain, causality,	2nd	Write a program to plot the following functions: a)impulse function b)unit step c)unit ramp d) exponential e) sinusoidal
	II			
	III	Stability, schur-cohn stability test; relationship between Z transform and Fourier transform.		
	IV	Frequency selective filters; all pass filters,		
3rd	I	minimum-phase, maximumphase and mixed-phase systems.	3rd	Verify the Symmetry, time shifting and modulating properties of DTFT with a rectangular pulse of length 21.
	II	Frequency domain sampling and DFT		
	III			
	IV	properties of DFT,		
4th	I	Linear filtering using DFT, Frequency analysis of signals using DFT	4th	Study the aliasing effect by using a Sinusoidal Signal. Show the plots of' continuous time Signal. Sampled Signal and reconstructed signals by using subplot.
	II	radix 2, radix-4,		
	III	goertzel algorithm, Chirp Z-transform		
	IV	Applications of FFT algorithm, computation of DFT of real sequences		
5th	I		5th	Study different window functions available in signal processing toolbox and their Controlling parameters.
	II	UNIT-1 Test		
	III	UNIT – II : IMPLEMENTATION OF DISCRETE TIME SYSTEMS: Direct form, cascade form		
	IV			
6th	I	frequency sampling and lattice structures for FIR systems	6th	Write a program to plot real, imaginary phase and magnitude of exponential function.
	II			
	III	Direct forms, transposed form, cascade form parallel form.		
	IV			
7th	I	Lattice and lattice ladder structures for IIR systems	7th	Verify the properties of Discrete Fourier Transform (DFT).
	II			
	III	State space structures Quantization of filter co-efficient structures for all pass filters.		
	IV	State space structures Quantization of filter co-efficient structures for all pass filters.		
8th	I	Unit-2 Test	8th	Write a program to find the convolution of two sequences using in built convolution function
	II	UNIT – III DESIGN OF FIR FILTERS: Characteristics of practical frequency selective filters		
	III	Filters design specifications peak pass band ripple, minimum stop band attenuation		
	IV	Four types of FIR filters Design of FIR filters using windows		
9th	I		9th	Study of Digital Signal Processing Kit (TMSI ADSP)
	II	Four types of FIR filters Design of FIR filters using windows		
	III			
	IV	Four types of FIR filters Design of FIR filters using windows		
10th	I		10th	Implementation of FlR/digital filter using DSP Kit.
	II	Introduction of Finite State Machine		
	III	Kaiser window method		
	IV	comparison of design methods for FIR filters Gibbs phenomenon, design of FIR filters by frequency sampling method		
11th	I	design of optimum equiripple FIR filters, alternation theorem.		
	II	UNIT-III Test		
	III	UNIT – IV DESIGN OF IIR FILTERS		
	IV	Design of IIR filters from analog filters		
	I			

12th	II	Design by approximation of derivatives
	III	Impulse invariance method
	IV	bilinear transformation method
13th	I	characteristics of Butterworth
	II	
	III	Chebyshev filter
	IV	Elliptical analog filters
14th	I	Design of IIR filters
	II	
	III	Frequency transformation
	IV	
15th	I	least square methods
	II	Design of IIR filters in frequency domain.
	III	
	IV	Doubt Clearing