Lecture Plan

Name of Subject: Advance Digital Signal Processing

Class: M.Tech (ECE)

Semester: 2nd

UNIT	Name of Topic	Number of Lectures Required
I.	Introduction to Signal Processing, Discrete Linear Systems, superposition Principle, Linearity, time-invariance &causality	4
I	Unit-Sample response, stability &causality Criterion, Linearity, time- invariance &causality, the discrete convolution, the transfer function, stability tests, steady state response,	4
II.	Frequency domain design of digital filters, Fourier transform, use of Fourier transform in Signal processing. The inverse fourier transform	4
II.	Sampling continuous function to generate a sequence, Reconstruction of continuous –time signals from Discrete-time sequences.	3
III.	Discrete Fourier transform, properties of DFT, Circular Convolution, Fast Fourier Transform, Realizations of OFT	6
III.	The Z transform, the system function of a digital filter, Digital Filter implementation from the system function, the inverse Z- transform, properties &applications	4
III.	Special computation of finite sequences, sequence of infinite length &continuous time signals, computation of fourier series &time sequences from spectra	4
IV.	Amplitude &Phase characteristics, stabilization procedure, Ideal LP Filter, Physical reliability &specifications.FIR Filters, Truncation windowing &Delays, design example	4
IV.	IIR Filters: Review of design of analog filters &analog frequency transformation. Digital frequency transformation. Design of LP filters using impulse invariance method, Bilinear transformation, Phase equalizer, digital all pass filters.	4
V.	Realization block diagrams, Cascade &parallel realization	3
V.	effect of infinite-word length, transfer function of	5

	degree 1&2, Sensitivity comparisons, effects of finite precision arithmetic on Digital filters	