Staff Name: Ms. B.Ananthi Associate Professor

Year : II year/III Sem

**Syllabus:**

UNIT I INTRODUCTION

Classification of systems: Continuous, discrete, linear, causal, stable, dynamic, recursive, time

variance; classification of signals: continuous and discrete, energy and power; mathematical

representation of signals; spectral density; sampling techniques, quantization, quantization error,

Nyquist rate, aliasing effect. Digital signal representation.

UNIT II DISCRETE TIME SYSTEM ANALYSIS

Z-transform and its properties, inverse z-transforms; difference equation – Solution by z-transform, application to discrete systems - Stability analysis, frequency response – Convolution – Fourier transform of discrete sequence – Discrete Fourier series.

UNIT III DISCRETE FOURIER TRANSFORM & COMPUTATION

DFT properties, magnitude and phase representation - Computation of DFT using FFT algorithm – DIT & DIF - FFT using radix 2 – Butterfly structure.

UNIT IV DESIGN OF DIGITAL FILTERS

FIR & IIR filter realization – Parallel & cascade forms. FIR design: Windowing Techniques – Need and choice of windows – Linear phase characteristics. IIR design: Analog filter design – Butterworth and Chebyshev approximations; digital design using impulse invariant and bilinear transformation - Warping, prewarping - Frequency transformation.

UNIT V DIGITAL SIGNAL PROCESSORS

Introduction – Architecture – Features – Addressing Formats – Functional modes - Introduction to Commercial Processors

TEXT BOOKS

1. J.G. Proakis and D.G. Manolakis, ‘Digital Signal Processing Principles, Algorithms

and Applications’, Pearson Education, New Delhi, 2003 / PHI.

2. S.K. Mitra, ‘Digital Signal Processing – A Computer Based Approach’, Tata McGraw

Hill, New Delhi, 2001.