

EE-401 (Digital Signal Processing)

L-T-P: 2-1-0

Unit - 1

Realization of Digital Systems: Introduction, direct form realization of IIR systems, cascade realization of an IIR systems, parallel form realization of an IIR systems, Ladder structures: continued fraction expansion of $H(z)$.

Unit - 2

Design of Infinite Impulse Response Digital Filters: Introduction to Filters, Impulse Invariant Transformation, Bi-Linear Transformation, All Pole Analog Filters: Butterworth and Chebyshev, Design of Digital Butterworth and Chebyshev Filters.

Finite Impulse Response Filter Design: Windowing and the Rectangular Window, Other Commonly Used Windows, Examples of Filter Designs Using Windows, The Kaiser Window.

Unit - 3

Discrete Fourier Transforms: Definitions, Properties of the DFT, Circular Convolution, Linear Convolution, Introduction to wavelet and curvelet transformer.

Fast Fourier Transform Algorithms: Introduction, Decimation –In Time (DIT) Algorithm, Computational Efficiency, Decimation in Frequency (DIF) Algorithm.

Unit-4

Digital Signal processor (TMS 320F28335)/Analog DSP, Timer System, Architecture and Programming, Fixed point processing, Floating point processing, Real time applications

Unit-5

DSP application to instrumentation, electromechanical systems, power systems and power conditioning

Text Book

1. S. Salivahanan, "Digital Signal Processing", Tata McGraw-Hill Education.
2. John G Prokias, Dimitris G Manolakis, "Digital Signal Processing", Pearson Education.

Reference Books:

1. Johnny R. Johnson, "Digital Signal Processing", PHI Learning Pvt Ltd.
2. Oppenheim & Schafer, " Digital Signal Processing" PHI Publication.