SIGNALS & SYSTEMS (IEC-402)

L T P
3 1 0

OBJECTIVE OF COURSE :

1. To understand representation & classification of signal.

2. To study the basic of signal analysis using different transforms.

3. To study the analysis of Continuous & Discrete time signal using Fourier Series, Fourier Transform & Z Transform.

4. To understand the sampling of the signal & reconstruction of signal from it's sample form.

PREREQUISITES OF COURSE:

1. Engineering Mathematics (IMA-101 & IMA-201)

UNIT-I

Signal Classification, Basic Signals

Signal Operations: transformation of the independent variable, Convolution, continuous and discrete time system, basic system properties

LTI systems, Characterization of LTI system by differential equation, Impulse response, Step response

8

UNIT-II

Fourier Transform

Fourier series representation of periodic signal, Fourier Transform, properties, Fourier transform of periodic signals.

Discrete time Fourier transform: representation of non periodic signals, Fourier transform of periodic discrete signals, properties of discrete Fourier transform.

8

UNIT-III

Time and frequency characterization

Magnitude- phase representation of Fourier transform, frequency response of LTI systems, time domain properties of ideal frequency selective filters, time domain and frequency domain aspects of ideal and non-ideal filters, first order and second order continuous and discrete systems.

8

UNIT-IV

Sampling

Sampling theorem, ideal sampling, flat top sampling, natural sampling, reconstruction of signals from samples, aliasing effect, up-sampling and down-sampling, discrete time processing of continuous time signals, sampling of band pass signals

8

UNIT-V

Z-Transform

Introduction to Z- transform properties, inverse Z- transform, analysis and characterization of decretive LTI systems, realization of discrete time systems

8

References:

1. A.V.Oppenheim, A.S.Willsky & S.H.Nawab, 'Signal & Systems', PHI, India

OUTCOME

On completion of this course the student will understand

1. The concept of Continuous and Discrete Time signals & systems.
2. The various transforms for analysis of continuous & discrete time systems..