B.Tech II Year I Semester

SIGNALS AND SYSTEMS LABORATORY

Course Code: 21EC308PC **L/T/P/T: 0/0/3/1.5**

Course Objectives:

- To learn basic Operations on Matrices
- To model generation of various signals
- To simulate operations on signals and systems.
- To simulate various random variables' generation and processes

Course Outcomes:

After Completion of the course the student is able to

- Analyze various types of signals and perform various operations on them.
- Apply the knowledge of signals and sequences for finding response of a system

List of Experiments:

1. Basic Operations on Matrices
2. Generation of various signals and sequences (Periodic and A periodic), such as unit Impulse step, Square, Saw tooth, Triangular, Sinusoidal, Ramp.
3. Operations on signals and sequences such as Addition, Multiplication, Scaling, Shifting, Folding, Computation of Energy and Average Power.
4. Finding the Even and Odd parts of Signal / Sequence and Real and imaginary parts of Signal.
5. Convolution between Signals and Sequences.
6. Auto Correlation and Cross Correlation of Signals and Sequences.
7. Verification of Linearity and Time Invariance Properties of a given Continuous / Discrete System.
8. Computation of Unit sample, Unit step and sinusoidal responses of the given LTI system and verifying its Physical realiazability and stability properties.
9. Gibbs Phenomenon.
10. Finding the Fourier Transform of a given signal and plotting its magnitude and phase spectrum.
11. Waveform Synthesis using Laplace Transform.
12. Locating the Zeros and Poles and Plotting the Pole-Zero maps in S plane and Z-Plane for the given transfer function.
13. Generation of Gaussian noise (Real and Complex), Computation of its mean, M.S. Value and its Skew, Kurtosis and PSD, Probability Distribution Function.
14. Sampling theorem Verification.
15. Removal of noise by Autocorrelation / Cross correlation.
16. Extraction of Periodic Signal, masked by noise using Correlation.
17. Verification of Weiner – Khinchine Relations.
18. Checking a Random Process for Stationary in Wide sense

Major Equipment required:

1. Computer System with latest specifications connected
2. Window Xp or equivalent
3. Simulation software MATLAB