SIGNALS AND SYSTEMS LAB

(Core Subject)

Course Code:	**10B17EC307**	**Semester:**	**3rd Semester, B. Tech (ECE)** **4th Semester, B. Tech (CSE/IT)**
Credits:	**1**	**Contact Hours:**	**L-0, T-0,P-2**

Course Objectives

The primary objective of this course is to provide a thorough understanding and analysis of signals and systems using MATLAB.

Course Outcomes

Upon successful completion of this course the students will be able to:

1. Understand basics of MATLAB syntax, functions and programming.
2. Generate and characterize various continuous and discrete time signals.
3. Perform the basic operations on the signals.
4. Design and analyze linear time-invariant (LTI) systems and compute its response.
5. Analyze the spectral characteristics of signals using Fourier analysis.
6. Analyze the systems using Laplace transform and Z-transform.

List of Experiments

1. Introduction to MATLAB
2. To create user defined functions for generating sinusoidal signal, delta function, unit step function and periodic signal.
3. To create user defined functions for signal operation: signal addition, time shifting, time scaling and time inversion.
4. To compute convolution of two signals and verify its properties.
5. To compute auto-correlation and cross-correlation of two signals and verify its properties.
6. To obtain the response of LTI system defined by linear constant coefficient difference equations.
7. To synthesize the periodic signal using Fourier series.
8. To analyze the spectrum of the signal using Fourier transform and verify its properties.
9. To compute and plot the impulse response and pole-zero diagram of transfer function using Laplace transform.

10. To compute and plot the impulse response and pole-zero diagram of transfer function using Z-transform.

Evaluation Scheme

1. Mid Sem. Evaluation	20 Marks
2. End Sem. Evaluation	20 Marks
3. Attendance	15 Marks
4. Class response	30 Marks
5. File	15 Marks
Total Marks	**100 Marks**

Text Books

- B.P. lathi, Linear Systems and Signals, 2nd Edition, Oxford University Press, India.
- Barry Van Veen & Simon Haykin "Signals and Systems, 2nd Edition" Willey Publishers
- Oppenheim, Alan S. Willsky, S. Hamid Nawab, "Signals and Systems". 2nd Edition, PHI, India.