II Year II Semester

L	T	P	C

Code:20EC4106

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SIGNALS & SYSTEMS LAB

Course Objectives:
1. To Understand the basic ideas of the signals and systems encountered in engineering.
2. To Learn various transform techniques for spectral characteristics of signals.
3. To Characterize and analyse continuous time signals and systems.

List of Experiments:
1. To generate sinusoidal signal, delta function, unit step function and periodic signals.
2. To perform arithmetic operations: addition, subtraction and multiplication on continuous-time signals.
3. To perform continuous-time signal operations: time shifting, time scaling, and computation of energy and power.
4. To synthesize periodic signals using Fourier series.
5. To write a program to find the trigonometric and exponential Fourier series coefficients of a periodic rectangular signal. Plot the discrete spectrum of the signal.
6. To Find Fourier Transform and Inverse Fourier Transform of a given signal and plot its Magnitude and Phase Spectra.
7. To compute and plot the impulse response and pole-zero diagram of transfer function using Laplace transform.
8. To compute the linear convolution of continuous-time signals and verify its properties.
9. To compute auto correlation and cross correlation between continuous-time signals and verify its properties.
10. To verify the sampling theorem.
11. To compute and plot the impulse response and pole-zero diagram of transfer function using Z-transform.
12. To generate a uniformly distributed length 1000 random sequence in the range (0,1). Plot the histogram and the probability function for the sequence. Compute the mean and variance of the random signal.

Equipment required:
1. MATLAB / SCI Lab / Equivalent Industrial Standard Licensed simulation software tool.
2. Computer Systems with required specifications

Course Outcomes:
A student who successfully fulfils this course requirement will be able to:

S.No	Course Outcome	BTL
1.	Generate and characterize various continuous and discrete time signals.	L5
2.	Perform basic arithmetic operations on the signals.	L3
3.	Analyze the spectral characteristics of signals using Fourier analysis	L4
4.	Compute the output response of a LTI system.	L3
5.	Analyze system characteristics using Laplace transform and Z-transform.	L4

Correlation of COs with POs& PSOs:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	-	-	1	-	-	-	3	-	-	-	3	3
CO2	3	2	-	-	2	-	-	-	3	-	-	-	3	3
CO3	3	3	1	1	2	-	-	-	3	-	-	-	3	3
CO4	3	3	1	1	2	-	-	-	3	-	-	-	3	3
CO5	3	2	1	1	2	-	-	-	3	-	-	-	3	3