EC-254	SIGNALS & SYSTEMS LAB	L	T	P	C
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COURSE OBJECTIVES:

1. To understand and analyze various signals.
2. To understand sampling theorem.
3. To design and analyze the responses of various filters..
4. To design and analyze random signals.

COURSE OUTCOMES:

After successful completion of the course, the students are able to

1. demonstrate the elementary signals, LTI Systems, Fourier Series and Sampling theorem.
2. examine the output sequence for the given input sequence using Fourier transforms and Laplace transforms.
3. examine the magnitude and Phase response of LPF and HPF.
4. demonstrate the concepts of Correlation, Convolution and Power spectrum of random signals..

List of Experiments:

1. Simulate the signals(step, impulse, ramp and sinusoidal).
2. Verify the properties (linearity and time invariance) of LTI systems.
3. Find the Fourier transform of a square pulse .Plot its amplitude and phase spectrum.
4. Find DFT and IDFT of a given DT signal.
5. Write a program to convolve two discrete time sequences. Plot all the sequences. Verify the result by analytical calculation.
6. Write a program to find the trigonometric Fourier series coefficients of a rectangular periodic signal. Reconstruct the signal by combining the Fourier series coefficients with appropriate weightings.
7. Write a program to find the trigonometric and exponential Fourier series coefficients of a periodic rectangular signal. Plot the discrete spectrum of the signal.
8. Generate a discrete time sequence by sampling a continuous time signal. Show that with sampling rates less than Nyquist rate, aliasing occurs while reconstructing the signal.
9. Write a program to find the magnitude and phase response of first order low pass and high pass filter. Plot the responses in logarithmic scale.
10. Write a program to find the response of a low pass filter and high pass filter, when a speech signal is passed through these filters.
11. Write a program to find the autocorrelation and cross correlation of sequences.
12. Compute and plot the frequency response of an LTI system using Laplace transform.
13. Generate a Gaussian distributed length 1000 random sequence. Compute the mean and variance of the random signal by a suitable method.
14. Write a program to generate a random sinusoidal signal and plot four possible realizations of the random signal.
15. Obtain and plot the power spectrum of the output process when a white random process is passed through a filter with specific impulse response .

Practice Book: Contemporary Communication Systems using MATLAB by John G.Proakis, M.Salehi, Cengage Learning Publisher.

Note: A minimum of 10(Ten) experiments have to be performed and recorded by the candidate to attain eligibility for Semester End Practical Examination.