BVM ENGINEERING COLLEGE [AN AUTONOMOUS INSTITUTION]

2EC10: SIGNALS AND SYSTEMS LABORATORY
CREDITS – 1 (LTP:0,0,1)

Course Objective:
Students of EC Engineering need to possess good understanding of concepts and principles of Signals & Systems by applying theorems and Transformation.

Teaching and Assessment Scheme:

Teaching Scheme (Hours per week)			Credits	Assessment Scheme				Total Marks
				Theory Marks		Practical Marks		
L	**T**	**P**	**C**	**ESE**	**CE**	**ESE**	**CE**	
0	0	2	1	00	00	40	60	100

At least 10 Experiments based on available Software / Hardware.

List of Experiments

1. Introduction to MATLAB.

2. Create synthetic music using MATLAB by creating and playing a sequence of short bursts of sinusoids. Change the different parameters of the signal like sampling frequency, length of note, length of pause between notes etc and observe and hear the output signal.

3. Write MATLAB code to plot the CT and DT signals.

4. Write MATLAB code to plot the signal with user define function 'ramp' and 'ustep'. Also find the even and odd part of the signal.

5. Write MATLAB code to plot the Convolution of DT & CT signals with & without 'conv' function and plot the graph of signals & its convolution in same window with proper label and title.

6. Write MATLAB code to Express the signals as sum of singular functions with proper label and title. Use 'ramp' and 'ustep' as a function to generate appropriate output.

7. Write MATLAB code to understand the concept of Fourier transform to find the frequency components of a signal buried in a noisy time domain signal. Consider data sampled at 1000 Hz. Form a signal containing a 50 Hz sinusoid of amplitude 10 and 120 Hz sinusoid of amplitude 15 and corrupt it with some zero-mean random noise:

8. Write MATLAB code to understand the concept Aliasing.

9. Write a MATLAB program to understand the concept of Laplace transform.

10. Write a MATLAB program to understand the concept of Fourier Series.

11. Write a MATLAB program to understand State space representation of DT and CT LTI Systems and its application.

List of References:
1. Alan V. Oppenheim, Alan S.Wilsky, with S.Hamid Nawab, "*Signals and Systems*", Prentice-Hall of India.2nd Edition, 2010.
2. H P HSU, *"Signals and systems"*, Schaums outlines series, 2006, TATA McGraw hill.
3. M.J.Roberts, *"Signals and Systems",* Tata McGraw-Hill,2006
4. Kumar, A. A. *"Signals and Systems,* PHI Learning Pvt. Ltd.
5. Simon Haykin, *"Signals and Systems",* Wiley Eastern Ltd., New Delhi.

Course Outcomes:
1. Understand the analytical frame work, mathematical description and representation of Signals and systems.
2. Derive and examine a fundamental representation of LTI systems.
3. Understand the concept of concept of continuous time LTI and the use of Laplace transform.
4. Understand the application of Fourier analysis for continuous time signals and systems.
5. Understand the application of Fourier analysis for discrete time signals and systems.
6. Understand and analyze State Space Representation of continuous and discrete time LTI system