Course Name: Control System I LAB

Course Code : EE593

Course Credit: 2

Contact Hour: 3P

Prerequisite: MATLAB/ SIMULINK

Course Objective

The course objectives are:

1. To make students familiar with control system toolbox and basic commands.
2. To make students accustomed with software based control technique, design & analysis.
3. To make them feel the features of computer based control in terms of : user friendly, accuracy, reliability, easy to edit.

Course Outcome

On completion of the course students will be able to

1. Understand basic control system toolbox and can apply that knowledge to realize a physical system.
2. Analyze performance of a real time system for different input signals.
3. Investigate system stability in frequency domain.
4. Study effect of system parameter variations on system response in time & frequency domain.
5. Investigate the effect of addition of poles/ zeros on system response.

CO Mapping with departmental POs

H: High, M: Medium, L: Low

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	H	M	L	H	M							
CO 2	H	M		H	M							
CO 3	H	H	H	H	M							
CO 4	H	H	L	H	M							
CO 5	H	M		H	M							

Course Content:

The following experiments are included in the course:

1. Familiarization with MATLAB control system tool box, MATLAB/Simulink Tool Box.
2. Determination of Step response for first order & Second order system with unity feedback using MATLAB & calculation of control system specification like Time constant, % peak overshoot, settling time etc. from the response.
3. Simulation of Step response for type-0, type-1 & Type-2 system with unity feedback using MATLAB.
4. Simulation of Impulse response for 1st order and 2nd order system with unity feedback using MATLAB.
5. Determination of Root locus plot using MATLAB control system tool box for 2nd order system & determination of different control system specification from the plot.
6. Determination of Bode plot using MATLAB control system tool box for 2nd order system & determination of different control system specification from the plot.

7. Determination of Nyquist plot using MATLAB control system tool box for 2nd order system & determination of different control system specification from the plot.
8. Study the effect of addition of poles in open loop & closed loop transfer function of a system.
9. Study the effect of addition of zeros in open loop & closed loop transfer function of a system.