

BEEE303P	Control Systems Lab			L	T	P	C
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Pre-requisites	BEEE101L, BEEE101P, BMAT102L			Syllabus version			
				1.0			
Course Objectives							
1. Develop transfer function and state space models of physical systems. 2. Design and implement a PID controller/State feedback controller/ Lag/Lead/Lag-lead compensators.							
Course Outcomes							
On the completion of this course, the student will be able to: 1. Design feedback control for meeting system specifications. 2. Analyze the stability and response of linear time invariant systems. 3. Perform the time and frequency domain analyses of first and second order systems.							
Indicative Experiments							
1.	Simulation study of block diagram reduction technique						
2.	Determination of time domain specifications						
3.	Study of first and second order electrical networks						
4.	Stability analysis of linear systems						
5.	PID controller design using Bode plot						
6.	PID controller design using root locus						
7.	Compensator design in frequency and time domains						
8.	Analysis of controllability and observability properties of a system						
9.	Lag compensator design for linear servo motor for speed control application						
10.	Pole placement controller design for inverted pendulum						
11.	PD controller design for position control of servo plant						
12.	Cascade control design for ball and beam system						
13.	PID controller design for magnetic levitation system						
14.	Determination of transfer function of separately excited DC generator						
15.	Identification of transfer function of field-controlled separately excited DC Motor						
16.	Controller realization from MATLAB / SIMULINK using Embedded Coder						
						Total Laboratory Hours	30 hours
Mode of assessment: Continuous assessment, FAT							
Text Book							
1. Norman S. Nise, Control System Engineering, 2019, 8 th Edition, John Wiley & Sons							
Recommended by Board of Studies				19-02-2022			
Approved by Academic Council				No. 65	Date	17-03-2022	