III Year I Semester   **L   T   P   C**
17EE511   **0   0   3   2**

CONTROL SYSTEMS AND SIMULATION LAB

Learning Objectives:

- To impart hands on experience to understand the performance of basic control system components such as magnetic amplifiers, D.C. servo motors, A.C. Servo motors, stepper motor and potentiometer.
- To understand time and frequency responses of control system with and without controllers and compensators.

Any 10 of the following experiments are to be conducted:

1. Time response of Second order system
2. Characteristics of Synchros
3. Effect of P, PD, PI, PID Controller on a second order systems using SIMULINK
4. Design of lead compensator using SIMULINK
5. Design of Lag compensator –using SIMULINK
6. DC position control system
7. Transfer function of DC motor
8. Temperature controller using PID
9. Characteristics of magnetic amplifiers
10. Characteristics of AC servo motor
11. Characteristics of DC servo motor
12. P, PI and PID control design for a DC motor model
13. Control design and stability analysis using Root locus and Bode plots
14. PID control design and analysis using Bode plots
15. State space analysis – transfer function to state space model and vice-versa

Learning Outcomes
- Able to analyze the performance and working Magnetic amplifier, D.C and A.C. servo motors and synchronous motors.
- Able to design P,PI,PD and PID controllers
- Able to design lag, lead and lag–lead compensators
- Able to control the temperature using PID controller
- Able to determine the transfer function of D.C.motor
- Able to control the position of D.C servo motor performance