



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

III Year – I SEMESTER				
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CONTROL SYSTEMS LABORATORY				

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 and Synchros.
- 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
4. Design of Lag and lead compensation – Magnitude and phase plot
5. Transfer function of DC motor
6. Bode Plot, Root locus, Nyquist Plots for the transfer functions of systems up to 5th order using MATLAB.
7. Controllability and Observability Test using MAT LAB.
8. Temperature controller using PID
9. Characteristics of magnetic amplifiers
10. Characteristics of AC servo motor
11. Characteristics of DC servo motor
12. Block Diagram Representation of Field Controlled DC servo Motor Using Simulink.

Learning Outcomes:

After the completion of the course the student should be able to:

- analyze the performance and working Magnetic amplifier, D.C and A.C. servo motors and synchros.
- design P,PI,PD and PID controllers
- design lag, lead and lag–lead compensators
- control the temperature using PID controller
- determine the transfer function of D.C Motor
- control the performance of D.C and A.C Servo Motor.
- test the controllability and observability.
- judge the stability in time and frequency domain.