# Control Systems Lab

In the field of modern Science and Engineering, machines are controlled without any human assistance. Students are usually unable to relate the theory to applications in the real world. Therefore different experiments are designed in control system. This Lab makes an integrated lab atmosphere that combines data acquisition and analysis. This lab includes the study of temperature and speed control of motor, circuit implementation of controllers, mathematical modelling and simulation of control systems.

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| **Area in sq.m** | : 150 |
| **Established in the year** | : 2001 |
| **Total Investment made** | : Rs 8,70,281.00 |
| **Licensed Software available in the lab** | : MATLAB (7.1V), LABVIEW. |

**LIST OF EXPERIMENTS**

1. Modelling of Physical Systems (Mechanical and Electrical systems).
2. Block Diagram Reduction of Linear Systems
3. Time response analysis of Linear Systems for impulse and step inputs
4. Frequency response analysis of Linear Systems
5. Stability and relative stability analysis of Linear Systems Using (Root Locus, Bode and Nyquist plot).
6. Time Response analysis of Second Order System.
7. Study the Effect of P, PD, PI, PID controllers on second order systems.
8. Magnitude and phase plot of Lag and lead compensators.
9. Determination of transfer function and effect of feedback on DC servo motor.
10. Study of logic gates using PLC
11. Designing Lag and Lead Compensators for a given system
12. Stepper motor control using LABVIEW.
13. Study the effect of P, PD, PI, PID controllers on DC servomotor system using PLC

**Major Equipment :**

| | Name of the Equipment |
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| 1. | A.C Servo motor trainer kit |
| 2. | Experiment To Draw Speed To Rqve Characteristics of Two Phase AC Servo Motor |
| 3. | 30 MHz Dual Trace Oscilloscope Model HM 203G, Make : Scientific |
| 4. | 30 MHz Dual Trace Oscilloscope Model HM 203G, Make : Scientific |
| 5. | D.C Speed control MAKE: TECHNO |
| 6. | DC Motor control Module |
| 7. | Digital PID Controller MAKE: EMSYS |
| 8. | Digital Oscilloscope 2ch,Scientific sm-502,50MHZ |
| 9. | Effect of P,PD,PI and PID contorller on the second order system training kit MAKE: Techno |
| 10. | Lag – lead compensation trainer kit MAKE:TECHNO |
| 11. | Lead – lag compensation trainer kit MAKE: EMSYS |
| 12. | Potentiometric.Error detector MAKE: Techano |
| 13. | Microprocessor based programmable Logic Controller. MAKE: Lab tech |

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| 14. | Programmable Logic Controller |
| 15. | P,PI,PID Control trainer Kit MAKE: EMSYS |
| 16. | Realy control system MAKE: Techno |
| 17. | Stepper motor study unit a) stepper study unit&stepper motor |
| 18. | b) 8085 Microprocessor kit with software in eprom MAKE: Techno |
| 19. | Simulation of transfer functionusing op- amplifier trainer kit MAKE;Techno |
| 20. | Effcet of feedback dc servo motor trainer kit |
| 21. | Synchro Transmitter & Receiver Pair MAKE: HEM |
| 22. | Time response of a second order system trainer kit (Lss) MAKE; Techno |
| 23. | Transfer function of DC motor trainer kit MAKE;Techno |
| 24. | Temperture controller using PID trainer kit MAKE;Techno |
| 25. | Temperature control Module |

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