Course Objective

- To study the fundamentals of Data Acquisition system
- To teach the concept of PLC and the Programming using Ladder Diagram
- To understand the basics of DCS and communication standards

Course Outcomes

- Students will have the knowledge of data acquisition System
- Students will be able to write Programs using ladder diagrams
- Students will have the knowledge of DCS and communication standards

Unit I Review of Computers in Process Control
Data loggers – Data Acquisition Systems (DAS) – Direct Digital Control (DDC) – Supervisory Control and Data Acquisition Systems (SCADA) – sampling considerations – Functional block diagram of computer control systems

Unit II Programmable Logic Controller(PLC) Basics
Definition – overview of PLC systems- input/output modules- power supplies and isolators- General PLC programming procedures-programming on-off inputs/ outputs-Auxiliary commands and functions- PLC Basic Functions- register basics- timer functions- counter functions

Unit III PLC Intermediate Functions
PLC intermediate functions: Arithmetic functions - comparison functions - Skip and MCR functions - data move systems. PLC Advanced intermediate functions: Utilizing digital bits-sequencer functions- matrix functions- PLC Advanced functions: Alternate programming languages- analog PLC operation- networking of PLC- PID functions-PLC installation-troubleshooting and maintenance- Design of interlocks and alarms using PLC

Unit IV Introduction to (DCS)
Distributed Control Systems (DCS): Definition - Local Control Unit (LCU) architecture - LCU languages - LCU - Process interfacing issues - communication facilities - redundancy concept

Unit V: Communication standards

Text Books:
Reference Books: