



PLC PROGRAMMING

Programming & development

Course Curriculum

Basic – 60 Hours



PLC PROGRAMMING

Module 1 : Introduction to PLCs(Programmable Logic Controller)

Definition and purpose of PLCs

Basic components and architecture of PLCs

Module 2 : Installing PLC Software

Environmental Setup

Module 3 : Digital Logic Fundamentals

Number systems: Binary, hexadecimal

Logic gates: AND, OR, NOT

Boolean algebra basics



Module 4 : Basics of Ladder Logic

Introduction to ladder logic diagrams (LLD)

Symbolic representation of relay logic

Basic ladder logic programming principles

Module 5 : Input and Output Devices

Types of input devices

Types of output devices

Connection and wiring of I/O devices



Module 6 : Counters

Up and Down Counters

Module 7 : Simple Programs

Simple programming

Wiring and connecting simple circuits

Module 8 : Advanced Ladder Logic

Branching and parallel circuits

Subroutines and function blocks

Module 9 : Advanced Timer and Counter

Retentive timers

Cascade and dual counters

Using timers and counters in real-world applications



Module 10 : Analog Input and Output

Introduction to analog signals

Configuring analog input and output modules

Module 11: Communication Protocols

Networking PLCs

Introduction to Industrial communication protocols

Module 12: Advanced Programming Languages



Structured Text (ST)

Sequential Function Chart (SFC)

Instruction List (IL)

Module 13: PID Controls

Introduction to proportional, integral, and derivative control

Implementing PID control in PLC programs

Module 14: Motion Control

Basics of motion control systems

Programming motion control in PLCs

Module 15: Communication Protocols

Networking PLCs

Introduction to Industrial communication protocols

Module 16: Safety and Redundancy

Introduction to safety PLCs

Redundancy and fault-tolerant systems

Module 17: Industrial Applications and Case Studies

Real-world applications of PLCs in industry

Analyzing and discussing case studies