

 2 MONTHS | 8 WEEKS

INDUSTRIAL AUTOMATION (PLC) TRAINING

Theory & Hands-On Practical



Course Objective

Learn to wire, configure, program, and troubleshoot PLC systems and integrate basic HMI screens.



CLASSES:

Monday and Tuesday
2:00 PM – 6:00 PM



Start Date:

16th Nov, 2026



Venue:

Electrical Machine Lab, Department of
Electrical Engineering and Technology,
Iqbal Block, New Campus GCUF

COURSE OUTLINE

01



PLC Basics & Automation Overview

- Industrial automation and relay logic
- PLC architecture and I/O
- Memory mapping and scan cycle
- Programming software

02



Hardware Wiring & Configuration

- Sourcing vs. sinking I/O
- Digital & analog I/O modules
- Wiring sensors, switches & contactors
- Hardware setup & communication

03



Ladder Logic (Parts 1 & 2)

- NO & NC contacts
- Output coils & latches
- Interlocking & holding circuits
- Motor control logic (DOL starters)

04



Timers, Counters & Practical Projects

- TON, TOF & retentive timers
- Cascading timers
- Up/Down counters (CTU, CTD)
- Traffic light & conveyor projects

05



Intermediate Instructions

- Math operations (ADD, SUB, MUL, DIV)
- Comparison instructions (EQU, NEQ, GRT, LES)
- MOVE blocks
- Shift registers & sequencers

06



Analog Signals & Process Control

- 0–10 V & 4–20 mA loops
- Scaling & unscaling data
- PID control concepts
- Tank level / temperature simulation

07



HMI Integration & Networking

- HMI design & navigation
- Linking tags to PLC memory
- Screens, buttons, indicators & alarms
- (EtherNet/IP, Modbus)

08



Troubleshooting, Documentation & Final Project

- Fault finding & online monitoring
- Program backup & documentation
- Safety practices
- Final system integration project
- Feedback & Certification

IN COLLABORATION WITH

