PLC Programming for Chemical Plants Training Course

Professional Development Training Course Outline

Category	General Training	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today’s rapidly evolving industrial landscape, PLC (Programmable Logic Controller) programming has become the backbone of chemical plant automation. PLC Programming for Chemical Plants Training Course provides a deep dive into the integration of smart control systems, SCADA, and industrial IoT for optimizing plant operations. Participants will gain hands-on experience in real-time process automation, fault diagnosis, and safety compliance, equipping them to drive operational efficiency, predictive maintenance, and digital transformation in chemical manufacturing environments.

Designed for engineers, technicians, and automation professionals, this training emphasizes practical PLC programming, advanced troubleshooting, and control logic optimization. Using simulators and live plant case studies, learners will master ladder logic, function block diagrams, and sequential control systems to enhance production reliability. By the end of the program, participants will be adept at implementing smart automation strategies, reducing downtime, and ensuring plant safety, making them highly valuable in the chemical, petrochemical, and process industries.

Programme Curriculum

PLC Programming for Chemical Plants Training Course

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Course Duration

5 days

Course Objectives

1. Master PLC programming fundamentals for chemical plant automation
2. Implement ladder logic and function block diagram techniques
3. Integrate SCADA systems with PLCs for real-time monitoring
4. Apply safety interlocks and emergency shutdown programming
5. Optimize process control loops for chemical reactions
6. Perform diagnostics and troubleshooting of PLC systems
7. Understand HMI design and operator interface strategies
8. Execute PID control and sequential process automation
9. Utilize Industrial IoT and cloud integration for predictive maintenance
10. Analyze process data and performance metrics
11. Implement redundancy and fail-safe PLC architectures
12. Gain hands-on experience with real-time chemical plant simulations
13. Develop smart automation solutions to improve productivity and reduce downtime

Target Audience

1. Chemical plant engineers
2. Instrumentation and control engineers
3. Process automation specialists
4. Electrical and electronics engineers
5. Maintenance technicians
6. SCADA system operators
7. Industrial automation consultants
8. Engineering students seeking industrial PLC expertise

Course Modules

Module 1: Introduction to PLCs in Chemical Plants

- Overview of PLCs and industrial automation
- Types of PLCs and architectures
- PLC hardware and I/O modules
- Communication protocols in chemical plants
- Case Study: PLC retrofitting in an existing chemical plant

Module 2: PLC Programming Fundamentals

- Ladder logic, function block, and structured text
- Basic programming commands and timers

- Counters and data handling
- Simulation of chemical processes
- Case Study: Batch mixing control using ladder logic

Module 3: SCADA Integration and HMI Design

- SCADA overview and architecture
- Designing operator interfaces
- Alarm and event management
- Data logging and trending
- Case Study: SCADA deployment for a distillation column

Module 4: Advanced Process Control (APC)

- PID control and loop tuning
- Feedforward and cascade control
- Sequential process control
- Troubleshooting control loops
- Case Study: Temperature and pressure control in reactors

Module 5: Safety and Emergency Shutdown Systems

- Safety instrumented systems (SIS) overview
- Emergency stop logic programming
- Interlocks and fail-safe design
- Risk assessment in chemical plants
- Case Study: Implementing ESD in a solvent processing unit

Module 6: Troubleshooting and Maintenance

- Fault diagnosis techniques
- PLC and sensor testing
- Preventive and predictive maintenance strategies
- Software and firmware updates
- Case Study: Reducing downtime in a continuous production line

Module 7: Industrial IoT and Data Analytics

- PLC connectivity to IoT platforms
- Real-time data acquisition and analytics
- Predictive maintenance and AI applications
- Cloud-based monitoring
- Case Study: IoT-driven optimization of chemical batch production

Module 8: Project Implementation and Optimization

- Designing complete PLC control solutions
- Integrating multi-unit processes
- Performance evaluation and optimization
- Documentation and reporting best practices
- Case Study: End-to-end automation of a small-scale chemical plant

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

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