MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

Phone: +601116373203 | **Email:** info@mawaevents.net

PLC PROGRAMMING TRAINING

"Mastering Programmable Logic Controllers for Efficient Industrial Automation and Control Systems"

Schedule

Date	Venue	Fees (Face-to-Face)
21 – 25 Sep 2026	Dubai, UAE	USD 3495 per delegate

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

Programmable Logic Controllers (PLCs) are at the heart of industrial automation systems, providing reliable, flexible control in manufacturing, processing, and infrastructure operations. This intensive 5-day **PLC Programming Training** course equips participants with the theoretical foundation and practical hands-on experience needed to design, program, troubleshoot, and maintain PLC-based control systems.

Participants will explore PLC hardware architecture, ladder logic programming, input/output interfacing, and real-time control strategies using widely adopted PLC platforms. This course is ideal for professionals seeking to upgrade their skills in industrial automation and control engineering.

Objectives

By the end of this course, participants will be able to:

- Understand PLC architecture, hardware components, and system integration.
- Develop and troubleshoot ladder logic and structured text programs.
- Interface PLCs with input/output devices, sensors, and actuators.
- Use timers, counters, data handling, and sequencing in logic programming.
- Connect PLCs to HMIs and SCADA systems for monitoring and control.
- Implement best practices for industrial automation and safety compliance.

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Why Attend

- Gain in-demand skills in PLC programming and troubleshooting.
- Enhance your qualifications in industrial automation and controls.
- Learn through hands-on exercises using real or simulated PLCs.
- Improve system reliability, efficiency, and uptime through expert-level understanding.
- Prepare for career advancement in electrical, automation, and control engineering roles.

Target Audience

This program is designed for:

- Automation and control engineers
- Maintenance technicians and electricians
- Instrumentation engineers
- Electrical and electronics engineers
- Technical professionals involved in process control systems

Individual Benefits

Key competencies that will be developed include:

- Practical skills in ladder logic and real-time control applications
- Troubleshooting and diagnostics for PLC systems
- Integration of PLCs with industrial networks and HMIs
- Configuration and programming of input/output modules
- Enhanced decision-making in control system design and upgrades

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved productivity and operational efficiency
- Reduced equipment downtime through proactive troubleshooting
- Enhanced system reliability and safety compliance
- Standardized practices in programming and system documentation
- Greater in-house expertise reducing reliance on external contractors

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- **Strategy Briefings** – In-depth exploration of PLC principles, platforms, and industrial applications
- **Case Studies** – Review of automation project success stories and failure analysis
- **Workshops** – Hands-on PLC programming, simulation, and real-world exercises
- **Peer Exchange** – Group discussions and collaborative troubleshooting
- **Tools** – Access to software simulators, programming templates, and logic design checklists

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Course Outline

Training Hours: 7:30 AM – 3:30 PM **Daily Format:** 3–4 Learning Modules | Coffee Breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Introduction to PLC Systems and Architecture Module 1: Overview of PLC Systems (07:30 – 09:30)

- What is a PLC and its role in automation
- Comparison with relay-based systems
- Typical applications in industry

Module 2: PLC Hardware and Components (09:45 – 11:15)

- Power supplies, CPUs, memory, I/O modules
- Wiring and signal types (digital/analog)
- Communication ports and protocols

Module 3: Introduction to Ladder Logic (11:30 – 01:00)

- Boolean logic basics
- Symbols and ladder structure
- Logic flow and real-time behavior

Module 4: Hands-On Workshop – Basic Wiring and Configuration (02:00 – 03:30)

- Connecting inputs/outputs
- Configuring a basic PLC system
- Test run and troubleshooting

Day 2: Programming Techniques and Logic Control Module 1: Programming Environment and Tools (07:30 – 09:30)

- Overview of software platforms (e.g., Siemens, Allen-Bradley)
- Simulator vs live programming
- Uploading/downloading programs

Module 2: Advanced Ladder Logic Techniques (09:45 – 11:15)

- Timers, counters, and sequencers
- Arithmetic and comparison operations
- Data types and memory allocation

Module 3: Program Structuring and Documentation (11:30 – 01:00)

- Modular programming and structured blocks
- Commenting and labeling for clarity
- Backup and version control

Module 4: Workshop – Programming a Control Sequence (02:00 – 03:30)

- Building a multi-step process
- Logic testing and simulation
- Debugging and validation

Day 3: Process Control and Input/Output Management Module 1: Analog and Digital I/O (07:30 – 09:30)

- Sensors, switches, and actuators
- Analog signal scaling and conversion
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Input filtering and signal noise

Module 2: Interfacing with HMI/SCADA (09:45 – 11:15)

- Linking PLCs to human-machine interfaces
- Displaying variables, alarms, and trends
- SCADA integration overview

Module 3: Troubleshooting and Diagnostics (11:30 – 01:00)

- Diagnostic tools and software utilities
- Common faults and solutions
- Maintenance planning

Module 4: Workshop – Fault Simulation and Recovery (02:00 – 03:30)

- Simulating input/output failure
- Finding and correcting logic errors
- Generating diagnostic logs

Day 4: Communication & Networking Module 1: Industrial Communication Protocols (07:30 – 09:30)

- Modbus, Profibus, Ethernet/IP, DeviceNet
- Network topologies and hardware
- Addressing and configuration

Module 2: Remote Access and Control (09:45 – 11:15)

- Remote monitoring and updates
- Cybersecurity considerations
- Access control and safety features

Module 3: Workshop – Network Configuration (11:30 – 01:00)

- Setting up IP addresses
- Connecting to HMI/SCADA over Ethernet
- Troubleshooting network failures

Module 4: Review & Integration Exercises (02:00 – 03:30)

- Merging programs and multi-PLC communication
- Data exchange and logging
- Optimization for performance

Day 5: Application Development and Project Simulation Module 1: Application Planning and Design (07:30 – 09:30)

- Requirements gathering and flowcharts
- Safety and fail-safe considerations
- System documentation and specs

Module 2: Hands-On Final Project (09:45 – 11:15)

- Building a complete PLC program
- Testing against real-world scenarios
- Debugging and enhancements

Module 3: Project Presentation and Assessment (11:30 – 01:00)

Group project showcase

- Peer feedback and instructor evaluation
- Lessons learned

Module 4: Closing Review and Action Planning (02:00 – 03:30)

- Recap of key takeaways
- Setting goals for continued learning
- Final Q&A and feedback

Certification

Participants will receive a **Certificate of Completion in PLC Programming and Industrial Automation**, validating their hands-on competence in PLC configuration, programming, troubleshooting, and integration with industrial control systems.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation’s unique goals.

In-House / Customized Training Interested in running this course for your team? Please contact us:	TEL: **+601116373203**	EMAIL: **info@mawaevents.net**