**MAWA EVENTS**

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

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# EQUIPMENT OPERATION, MAINTENANCE, CALIBRATION & TROUBLESHOOTING FOR IC

*"Ensure Precision and Uptime with Expert Handling of Instrumentation & Control Equipment."*

## Schedule

| Venue | Fees |
|---|---|
| In-House | ASK FOR THE QUOTATION |

► **Available delivery methods:** In-House Training

## Introduction

Instrumentation and Control (I&C) systems form the brain and senses of modern industrial operations. This advanced, practical course empowers engineers, technicians, and plant operators to confidently operate, maintain, calibrate, and troubleshoot various I&C equipment including sensors, transmitters, PLCs, control valves, analyzers, and loop systems. Learn to keep your automation systems safe, compliant, and running at peak performance.

## Objectives

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

- Understand the function and structure of I&C systems
- Operate and monitor process instrumentation safely and effectively
- Perform preventive and corrective maintenance procedures
- Calibrate pressure, temperature, flow, and level instruments
- Diagnose faults in I&C components and loops
- Use documentation (P&IDs, loop drawings) and test equipment accurately

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## Why Attend

This course helps professionals avoid costly shutdowns and maintain the integrity of process control systems by equipping them with essential hands-on knowledge for managing I&C devices efficiently.

## Target Audience

- Instrumentation Technicians and Engineers
- Maintenance Engineers
- Electrical & Automation Technicians
- Control Room Operators
- QA/QC & Compliance Inspectors
- Plant & Process Engineers

## Individual Benefits

- Improve job confidence and operational precision
- Develop troubleshooting and diagnostic skills
- Enhance qualification for control system and maintenance roles
- Learn how to prevent failures and maintain compliance

## Organizational Benefits

- Minimize downtime from I&C-related faults
- Extend the life of high-cost equipment
- Increase process efficiency and product quality
- Ensure safer and more compliant plant operations

## Instructional Methodology

- Instructor-led training with real-world case studies
- Practical calibration and troubleshooting labs
- Interactive group work and diagnostics simulations
- Visual aids: wiring diagrams, loop sheets, manuals

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## Course Outline

DETAILED 5-DAY COURSE OUTLINE (Customizable)

Training Hours: 07:30 AM – 03:30 PM

Daily Format: 3–4 Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

**DAY 1 – FUNDAMENTALS OF I&C SYSTEMS**

**Module 1:** Overview of Instrumentation & Control Architecture (07:30 – 09:30)

**Module 2:** Signal Types (Analog, Digital) & Communication Protocols (09:45 – 11:15)

**Module 3:** P&IDs, Loop Diagrams, and Instrument Tagging (11:30 – 01:00)

**Module 4:** Hands-On: Instrument Identification and Safety (02:00 – 03:30)

**DAY 2 – EQUIPMENT OPERATION & FIELD INSTRUMENTS**

**Module 1:** Pressure, Temperature, Flow, and Level Instruments (07:30 – 09:30)

**Module 2:** Sensors, Transmitters, and Control Valves in Practice (09:45 – 11:15)

**Module 3:** Control Loops: Open vs. Closed Loop Operation (11:30 – 01:00)

**Module 4:** Field Operation: Setup and Commissioning (02:00 – 03:30)

**DAY 3 – CALIBRATION TECHNIQUES & TOOLS**

**Module 1:** Calibration Theory and Standards (07:30 – 09:30)

**Module 2:** Pressure and Temperature Instrument Calibration (09:45 – 11:15)

**Module 3:** Flow and Level Calibration Procedures (11:30 – 01:00)

**Module 4:** Hands-On: Using Calibrators, Simulators & Certificates (02:00 – 03:30)

**DAY 4 – MAINTENANCE PRACTICES & FAILURE PREVENTION**

**Module 1:** Preventive Maintenance for I&C Equipment (07:30 – 09:30)

**Module 2:** Troubleshooting Techniques (Loop Checks, Signal Tracing) (09:45 – 11:15)

**Module 3:** Control Panel Checks & PLC Diagnostics (11:30 – 01:00)

**Module 4:** Hands-On Maintenance Simulations (02:00 – 03:30)

**DAY 5 – SYSTEM INTEGRATION & ADVANCED TROUBLESHOOTING**

**Module 1:** I&C Interfaces with PLC/SCADA/DCS (07:30 – 09:30)

**Module 2:** Root Cause Analysis of Instrumentation Failures (09:45 – 11:15)

**Module 3:** Emergency Fault Handling and Repair Protocols (11:30 – 01:00)

**Module 4:** Final Troubleshooting Challenge + Wrap-Up & Certification (02:00 – 03:30)

## Certification

Participants will receive a **Certificate of Competence in I&C Equipment Operation, Maintenance, Calibration & Troubleshooting**, aligned with international best practices (ISA/IEC/ISO).

## 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.

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

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