MAWA EVENTS

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

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DESIGN CRITERIA IN INSTRUMENTATION ENGINEERING

"Master the Principles, Standards, and Best Practices for Designing Reliable and Efficient Instrumentation Systems."

Schedule

Venue (In-house)	Fees
At Your Organization Premises	Ask For The Quotation

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

Introduction

Instrumentation engineering plays a vital role in ensuring process efficiency, safety, and reliability in industrial operations. Designing an instrumentation system requires careful consideration of process requirements, control philosophy, equipment selection, and compliance with international standards.

This course provides a comprehensive understanding of the key design criteria used in modern instrumentation systems across industries such as oil & gas, petrochemical, power generation, and manufacturing. Participants will gain insight into how to select instruments, design control loops, specify transmitters, and prepare documentation that meets both functional and safety requirements.

Through a combination of theory and practical case studies, participants will learn to design instrumentation systems that ensure process accuracy, operational integrity, and long-term maintainability.

Objectives

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

- Understand the fundamental design principles of instrumentation systems
- Define design criteria for various process measurements (flow, pressure, temperature, level, etc.)
- Apply international standards and best practices (ISA, IEC, ISO) in design documentation
- Select suitable instruments based on process and environmental conditions
- Design and specify control loops, interlocks, and safety systems
- Prepare instrument index, datasheets, and specification sheets
- Integrate instrumentation with control and automation systems
- Evaluate system reliability, safety, and maintainability during design

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Why Attend

Instrumentation design errors can lead to costly project delays, operational inefficiencies, and safety risks. This course equips engineers and designers with the technical knowledge and practical skills to create designs that are safe, efficient, and compliant with industrial standards.

By mastering instrumentation design criteria, participants will be able to make informed design decisions, improve system reliability, and enhance overall plant performance.

Target Audience

This course is ideal for:

- Instrumentation and Control Engineers
- Design Engineers and Project Engineers
- Maintenance and Reliability Engineers
- Process and Electrical Engineers involved in instrumentation design
- Engineering Consultants and Technical Supervisors
- Professionals seeking to enhance their understanding of instrumentation systems design

Individual Benefits

- Develop a solid understanding of instrumentation design principles
- Learn to prepare accurate design documentation and specifications
- Improve ability to select and integrate instruments effectively
- Strengthen skills in applying international codes and standards
- Gain confidence in handling complex design and project requirements

Organizational Benefits

- Improve design accuracy and reduce costly engineering rework
- Enhance plant safety, performance, and reliability
- Ensure compliance with international engineering standards
- Foster better collaboration between process, electrical, and control teams
- Build in-house capability for instrumentation design and documentation

Instructional Methodology

The course will be delivered through a blend of theory, practical exercises, and real-world case studies using:

- Interactive presentations and expert-led discussions
- Hands-on design workshops and problem-solving sessions
- Instrument selection and specification exercises
- Industry-based examples and design templates
- Continuous assessment and Q&A sessions

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Course Outline

Module 1: Introduction to Instrumentation Design Principles

Module 2: Process Measurement Fundamentals and Signal Types

Module 3: Design Criteria for Flow, Level, Pressure, and Temperature Measurement

Module 4: Instrument Selection and Specification Techniques

Module 5: Instrument Index, Datasheets, and Bill of Materials

Module 6: Control Loops, Interlocks, and Safety Systems Design

Module 7: Application of ISA, IEC, and ISO Standards in Design

Module 8: Control Room and Field Layout Design Considerations

Module 9: System Integration with DCS/PLC/SCADA

Module 10: Documentation, Testing, and Design Review Procedures

Certification

Upon successful completion, participants will be awarded a Certificate in Design Criteria in Instrumentation Engineering, recognizing their expertise in designing and documenting reliable, standards-compliant instrumentation systems for industrial applications.

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**