

POWER SYSTEMS CONTROL & INSTRUMENTATION FUNDAMENTALS

"Building foundational skills in power system control, instrumentation, and monitoring for efficient energy management"

Schedule

Date	Venue	Fees (Face-to-Face)
17 - 19 May 2026	Riyadh, KSA	USD 2495 per delegate

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

Introduction

Effective control and instrumentation are the backbone of reliable power system operations. Understanding the fundamental principles of control, measurement, and monitoring is critical for engineers and technical staff involved in power generation, transmission, and distribution.

This 3-day intensive training equips participants with practical knowledge and skills in power systems control and instrumentation. Through theory, case studies, and hands-on exercises, participants will learn about control system architectures, instrumentation technologies, monitoring techniques, and operational best practices for power systems.

Objectives

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

- Understand the fundamentals of power systems control and instrumentation
- Identify key control and monitoring devices and their applications
- Apply principles of measurement and data acquisition in power systems
- Implement control strategies for system stability and reliability
- Analyze system performance and troubleshoot operational issues
- Integrate instrumentation and control knowledge into operational planning
- Enhance skills for safe and efficient power system management

Why Attend

- Gain foundational knowledge in power systems control and instrumentation
- Improve ability to monitor, control, and optimize system performance
- Learn practical techniques for troubleshooting and operational efficiency
- Apply real-world best practices in power generation and distribution
- Enhance technical competence for career growth in the energy sector

Target Audience

This program is designed for:

- Electrical engineers and instrumentation engineers
- Operations and maintenance personnel in power systems
- Control system engineers and technicians
- Supervisors and managers in energy and utilities sectors
- Professionals involved in monitoring, protection, and control of power systems

Individual Benefits

Key competencies that will be developed include:

- Understanding control system principles and instrumentation fundamentals
- Skills in monitoring, measurement, and data analysis
- Ability to apply control strategies for system optimization
- Knowledge of troubleshooting and operational problem-solving
- Enhanced confidence in managing power systems safely and efficiently

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved operational efficiency and reliability of power systems
- Enhanced system monitoring and control capabilities
- Reduced risk of operational failures and downtime
- Better integration of instrumentation and control into organizational processes
- Strengthened technical capacity of teams in energy management

Instructional Methodology

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

- Strategy Briefings - Fundamentals of power system control and instrumentation
- Case Studies - Operational challenges and best practices
- Workshops - Hands-on exercises for monitoring, measurement, and control
- Peer Exchange - Group discussions on lessons learned and practical solutions
- Tools - Diagrams, templates, and practical guides for instrumentation and control

Course Outline

Detailed 3-Day Course Outline

Training Hours: 9:00 AM – 3:30 PM Daily Format: 3–4 Learning Modules | Coffee breaks included

Day 1: Fundamentals of Power Systems Control

Module 1: Introduction to Power System Control (09:00 – 10:30)

- Overview of power systems and control principles
- Roles and responsibilities in system operations

Module 2: Control System Architectures (10:45 – 12:15)

- Centralized vs. decentralized control
- SCADA and automation systems

Module 3: Measurement and Data Acquisition (01:00 – 02:15)

- Instrumentation devices, sensors, and transducers
- Data collection and processing

Module 4: Workshop – Control System Basics (02:30 – 03:30)

- Hands-on exercises in measurement and monitoring

Day 2: Instrumentation Fundamentals

Module 1: Instrumentation Technologies (09:00 – 10:30)

- Types of instruments and their applications
- Signal processing and interfacing

Module 2: Monitoring and Protection Systems (10:45 – 12:15)

- Protection relays and monitoring techniques
- System reliability and fault detection

Module 3: Operational Best Practices (01:00 – 02:15)

- Optimizing performance using instrumentation data
- Troubleshooting common issues

Module 4: Workshop – Instrumentation Simulation (02:30 – 03:30)

- Hands-on exercises with instrumentation and monitoring tools

Day 3: Integration and Optimization

Module 1: Control Strategies for System Stability (09:00 – 10:30)

- Techniques for load balancing and voltage control
- Real-time control considerations

Module 2: Performance Analysis and Troubleshooting (10:45 – 12:15)

- Identifying operational issues using control data
- Corrective actions and preventive measures

Module 3: Integration of Control and Instrumentation (01:00 – 02:15)

- Best practices for system integration
- Knowledge transfer for operational teams

Module 4: Workshop – Action Plan (02:30 – 03:30)

- Practical exercises for system optimization
- Group discussion and review

Certification

Participants will receive a Certificate of Completion in Power Systems Control & Instrumentation Fundamentals, validating their expertise in foundational principles, monitoring, and control of power systems for efficient and reliable energy management.

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

© Material published by MAWA Events shown here is copyrighted. All rights reserved. Any unauthorized copying, distribution, use, dissemination, downloading, storing (in any medium), transmission, reproduction or reliance in whole or any part of this course outline is prohibited and will constitute an infringement of copyright.