

Course No. 1157

SCADA Systems Training Course

INSTRUMENTATION & CONTROL
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The SCADA Systems Training Course is a comprehensive professional development program designed to provide engineers, technicians, and industrial professionals with the knowledge and practical skills required to design, operate, monitor, maintain, and optimize Supervisory Control and Data Acquisition (SCADA) systems. As industries continue to embrace digital transformation, industrial automation, and smart infrastructure, SCADA systems have become essential for real-time process monitoring, centralized control, operational visibility, and data-driven decision-making across critical industrial facilities.

This course delivers a thorough understanding of SCADA architecture, communication networks, human-machine interface design, data acquisition, alarm management, historical data analysis, and system integration with industrial automation platforms. Participants will gain practical knowledge of how SCADA systems interact with field devices, programmable controllers, sensors, instrumentation, and enterprise systems to improve operational performance, increase reliability, and support efficient plant management.

Organizations operating in oil and gas, petrochemicals, power generation, utilities, manufacturing, water and wastewater treatment, transportation, mining, and other industrial sectors depend on SCADA systems to monitor critical assets, optimize production, reduce downtime, improve safety, and enhance operational efficiency. This SCADA Systems Training Course equips participants with industry best practices for implementing, maintaining, and improving SCADA solutions that support business continuity and operational excellence.

Combining engineering principles with practical applications, real-world case studies, and hands-on exercises, this course enables participants to strengthen their technical competencies while supporting organizational objectives related to automation, asset performance, predictive maintenance, operational resilience, and continuous improvement. By the end of the program, participants will be prepared to contribute effectively to SCADA implementation, operation, troubleshooting, and system optimization projects.

Objectives

- Analyze the architecture and operational principles of SCADA systems throughout the course.
- Develop practical skills for configuring and operating industrial SCADA applications.
- Evaluate SCADA system components, communication infrastructure, and control strategies.
- Apply best practices for data acquisition, monitoring, visualization, and process control.
- Design effective human-machine interface screens that improve operational awareness.
- Improve alarm management strategies to enhance operational safety and response efficiency.
- Strengthen troubleshooting capabilities for identifying and resolving SCADA system faults.
- Implement secure and reliable communication between SCADA systems and field devices.
- Assess SCADA system performance using operational data and diagnostic tools.
- Align SCADA implementation with industrial automation, cybersecurity, operational reliability, and business objectives.

Who Should Attend

This SCADA Systems Training Course is designed for automation engineers, control engineers, electrical engineers, instrumentation engineers, process engineers, maintenance engineers, systems engineers, commissioning engineers, project engineers, industrial network specialists, and technical professionals responsible for designing, operating, maintaining, or supporting SCADA environments. It is equally valuable for automation technicians, instrumentation technicians, electrical technicians, maintenance personnel, and industrial control specialists seeking to expand their expertise in supervisory control systems.

The course is also intended for maintenance managers, operations managers, engineering managers, production managers, plant managers, technical supervisors, reliability managers, digital transformation leaders, automation consultants, project managers, and decision makers responsible for improving operational efficiency, industrial automation, asset reliability, and centralized process monitoring.

Professionals working within government entities, ministries, public utilities, oil and gas companies, power generation facilities, water treatment plants, manufacturing organizations, mining operations, transportation infrastructure, engineering contractors, and large industrial enterprises will gain practical knowledge that supports digital operations, intelligent monitoring, improved process

control, and sustainable operational performance.

Learning Outcomes

- By the end of this SCADA Systems Training Course, participants will be able to:
- Explain the architecture, components, and operational principles of SCADA systems.
- Configure SCADA applications for industrial monitoring and supervisory control.
- Design effective human-machine interface screens for operational visualization.
- Integrate SCADA systems with field devices, industrial controllers, and communication networks.
- Configure alarm management, event logging, and historical data collection functions.
- Diagnose and resolve communication, software, and system performance issues.
- Apply best practices for SCADA system maintenance, reliability, and lifecycle management.
- Evaluate operational data to improve system efficiency and decision-making.
- Implement cybersecurity considerations that support secure industrial control environments.
- Develop practical strategies for optimizing SCADA performance across industrial facilities.

Course Outline

DAY 01

Fundamentals of SCADA Systems and Industrial Automation

- Introduction to SCADA systems and industrial automation
- SCADA architecture, system components, and operational principles
- Field devices, sensors, instrumentation, and industrial controllers
- Data acquisition concepts and real-time process monitoring

PRACTICAL APPLICATION

Exploring SCADA architecture and system configuration

DAY 02

SCADA Configuration and Human-Machine Interface Development

- SCADA software configuration and project structure
- Human-machine interface design principles
- Process visualization, graphics development, and navigation
- Tag configuration, data acquisition, and process variables

PRACTICAL APPLICATION

Designing and configuring a SCADA operator interface

DAY 03

Communication Networks and System Integration

- Industrial communication protocols and network architecture
- Integration of SCADA systems with programmable controllers and field devices
- Alarm management, event handling, and historical data collection
- Data logging, reporting, and performance monitoring

PRACTICAL APPLICATION

Configuring communications and integrating industrial devices

DAY 04

Troubleshooting, Maintenance, and Cybersecurity

- SCADA system diagnostics and troubleshooting methodologies
- Identifying communication failures, software faults, and operational issues
- Preventive maintenance and system reliability improvement
- Cybersecurity fundamentals for industrial control systems

PRACTICAL APPLICATION

Troubleshooting simulated SCADA system failures and implementing corrective actions

DAY 05

Performance Optimization and Operational Excellence

- SCADA performance assessment and system optimization strategies
- Operational analytics and data-driven decision-making
- Best practices for documentation, system upgrades, backup, and recovery
- Lifecycle management of SCADA systems and continuous improvement

FINAL WORKSHOP

Design, configure, troubleshoot, optimize, and present a complete SCADA solution with an implementation plan that enhances operational performance, system reliability, process visibility, and long-term maintainability within an industrial environment.

Register or Request More Information

Course page: <https://quest-training.com/courses/scada-systems-training-course>

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