

Course No. 1516

Functional Safety Management Training Course

**PROCESS SAFETY & LOSS PREVENTION
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS**

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Functional Safety Management Training Course provides a comprehensive and practical framework for understanding, implementing, maintaining, and improving functional safety within industrial and process-based environments. The course focuses on the management principles, engineering practices, lifecycle activities, risk-based decision-making, and organizational controls required to ensure that safety-related systems perform their intended protective functions throughout their operational life.

Functional safety is a critical component of modern industrial risk management, particularly in environments where failures of control or protection systems can contribute to hazardous events. This course examines how organizations can establish structured functional safety management practices covering risk assessment, safety requirements, system design, implementation, verification, validation, operation, maintenance, modification, and eventual decommissioning.

The program provides a practical understanding of the functional safety lifecycle and the relationship between process hazards, risk reduction requirements, safety instrumented functions, safety instrumented systems, protection layers, and operational controls. Participants will explore how responsibilities, competencies, documentation, management procedures, and assurance activities contribute to the effective governance of functional safety.

The course also addresses safety integrity, performance monitoring, proof testing, bypass management, change management, incident learning, audit practices, and continuous improvement. Through industrial case studies, practical exercises, and structured workshops, participants will develop the ability to evaluate functional safety management arrangements, identify weaknesses, strengthen lifecycle controls, and support safer and more reliable industrial operations.

Objectives

- Analyze the principles, objectives, and organizational requirements of functional safety management during the course.
- Evaluate the functional safety lifecycle and identify management responsibilities at each stage.
- Assess process hazards, risk reduction requirements, and the role of independent protection layers in reducing operational risk.

- Apply structured principles for defining and managing safety requirements for safety-related systems.
- Evaluate safety instrumented functions and their relationship to process hazards and risk reduction objectives.
- Develop effective procedures for verification, validation, testing, maintenance, and management of functional safety systems.
- Assess competency, documentation, configuration management, and organizational responsibilities within a functional safety framework.
- Apply management of change principles to modifications affecting safety-related systems and functions.
- Evaluate functional safety performance using testing, monitoring, audit, incident investigation, and performance indicators.
- Develop an actionable functional safety management improvement plan aligned with operational risk, lifecycle requirements, and organizational objectives.

Who Should Attend

The Functional Safety Management Training Course is designed for professionals responsible for process safety, functional safety, instrumentation, control systems, engineering, operations, maintenance, reliability, risk management, and industrial project management. It is particularly relevant to functional safety engineers, process safety engineers, instrumentation and control engineers, automation specialists, electrical engineers, reliability professionals, maintenance engineers, operations engineers, and safety specialists involved in safety-related systems.

The course is also suitable for engineering managers, operations managers, maintenance managers, process safety managers, project managers, asset managers, risk managers, technical authorities, audit and assurance professionals, and senior decision makers. It is highly relevant to government entities, ministries, oil and gas organizations, petrochemical facilities, energy companies, utilities, manufacturing organizations, chemical processing facilities, and other industries where effective safety-related systems are essential to controlling operational risk.

Learning Outcomes

- Explain the principles and organizational importance of functional safety management.
- Describe the functional safety lifecycle and the management activities required throughout each phase.
- Analyze the relationship between hazards, risk, protection layers, safety functions, and risk reduction requirements.
- Identify the management responsibilities associated with safety instrumented systems and safety-related functions.
- Evaluate safety requirements and determine whether appropriate lifecycle controls are being applied.
- Assess verification, validation, proof testing, maintenance, and inspection activities for safety-related systems.
- Develop practical approaches for competency management, documentation, configuration control, and functional safety assurance.
- Apply management of change principles to modifications affecting safety functions and protective systems.
- Evaluate functional safety performance using audits, testing results, operational data, incidents, and performance indicators.
- Develop a practical functional safety management improvement roadmap for an industrial organization.

Course Outline

DAY 01

Fundamentals of Functional Safety Management

- Introduction to functional safety and its role in industrial risk management
- Relationship between functional safety, process safety, and operational risk
- Fundamental principles of risk reduction and protection
- Functional safety lifecycle concepts
- Roles and responsibilities within functional safety management
- Organizational governance and accountability
- Competency and independence requirements

DAY 01 — CONTINUED

- Functional safety policies, procedures, and documentation
- Safety-related systems and protective functions

PRACTICAL APPLICATION

Analyze a representative industrial facility and identify functional safety responsibilities, lifecycle stages, and key management controls

DAY 02

Risk Assessment and Safety Requirements Management

- Hazard identification and risk assessment principles
- Risk reduction strategies and protection layers
- Independent protection layers and risk control
- Safety Instrumented Functions and Safety Instrumented Systems
- Safety requirements specification
- Determining functional and safety requirements
- Safety integrity concepts and risk reduction objectives
- Allocation of safety functions
- Interfaces between process control and safety systems

PRACTICAL APPLICATION

Develop a simplified functional safety requirements framework for a selected industrial hazard scenario

DAY 03

Functional Safety Lifecycle, Verification, and Validation

- Functional safety lifecycle planning
- Safety-related system design and implementation
- Verification activities and independence
- Validation of safety functions
- Testing strategies and proof testing

DAY 03 — CONTINUED

- Inspection and maintenance requirements
- Bypass and override management
- Configuration management
- Documentation and traceability

PRACTICAL APPLICATION

Review a simulated safety-related system lifecycle and identify gaps in verification, validation, testing, documentation, and maintenance

DAY 04

Operations, Maintenance, Change Management, and Assurance

- Functional safety during operation
- Maintenance management for safety-related systems
- Proof test planning and execution
- Failure reporting and corrective action
- Management of change for safety-related systems
- Temporary modifications and bypass controls
- Competency management and personnel authorization
- Functional safety audits and assessments
- Incident investigation and organizational learning

PRACTICAL APPLICATION

Evaluate a functional safety change scenario and develop an appropriate change-control, testing, documentation, and approval process

DAY 05

Performance Management, Auditing, and Continuous Improvement

- Functional safety performance monitoring
- Safety system availability and reliability considerations

DAY 05 — CONTINUED

- Functional safety performance indicators
- Audit planning and assurance activities
- Identifying lifecycle weaknesses and management gaps
- Corrective and preventive action management
- Periodic assessment and review
- Lessons learned and continuous improvement
- Functional safety management reporting

FINAL WORKSHOP

Develop a complete functional safety management improvement plan covering governance, competency, risk management, lifecycle control, verification, validation, maintenance, change management, auditing, and performance monitoring

Register or Request More Information

Course page: <https://quest-training.com/courses/functional-safety-management-training-course>

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