

LAPT

LONDON ACADEMY OF PROFESSIONAL TRAINING

CERTIFICATE

ISO 13849OCS — Safety of Machinery Safety-Related Control Parts

ISO Certification Programme



LAPT — London Academy of Professional Training

Address 85 Great Portland Street, W1W 7LT, London, United Kingdom

Email info@lapt.org

Telephone +44 7513 283044

Web lapt.org

Reference SSR-OCS-13849OCS • ISO Security Safety & Risk

UKPRN 10067351 • Registered in England and Wales, company 4984798

AT A GLANCE

REFERENCE	SSR-OCS-13849OCS
AWARD	Certificate
ASSESSMENT	430 marks — 258 to pass (60%)
PREREQUISITES	None
VALIDITY	Lifetime
AWARDING BODY	LAPT — London Academy of Professional Training

CURRICULUM

1

Compliance and Audit Practices

5 chapters · 30 classes 45 marks

• 1 Understanding Compliance Frameworks for ISO 13849 — 6 classes

› 1.1 Define Key Compliance Terminology for ISO 13849

› 1.2 Identify the Main Components of the ISO 13849 Compliance Framework

› 1.3 Compare ISO 13849 with Other Safety Standards and Frameworks

› 1.4 Explain the Importance of Risk Assessment in ISO 13849 Compliance

› 1.5 Discuss Roles and Responsibilities in Audit Practices for ISO 13849

› 1.6 Develop an Action Plan for Implementing ISO 13849 Compliance Measures

• 2 Risk Assessment and Mitigation Strategies — 6 classes

› 2.1 Identify Key Principles of Risk Assessment

› 2.2 Analyze Machinery Risks Using ISO 13849 Guidelines

› 2.3 Evaluate Control System Designs for Safety-Related Control Parts

› 2.4 Develop Effective Mitigation Strategies for Identified Risks

› 2.5 Implement Audit Practices for Continuous Safety Improvement

› 2.6 Review Case Studies on Successful Risk Mitigation in Machinery

• 3 Audit Practices for ISO Compliance — 6 classes

› 3.1 Identify Key Requirements for ISO 13849 Compliance

› 3.2 Assess Current Audit Practices Against ISO Standards

› 3.3 Develop an Audit Checklist for Safety-Related Control Parts

› 3.4 Conduct a Mock Audit for Machinery Safety Compliance

› 3.5 Analyze Audit Findings and Determine Corrective Actions

› 3.6 Implement Continuous Improvement Strategies in Audit Practices

• 4 Documenting and Reporting Compliance Findings — 6 classes

› 4.1 Identify Key Compliance Documentation Requirements

› 4.2 Analyze Effective Reporting Techniques for Compliance Findings

› 4.3 Develop a Standard Template for Compliance Reporting

› 4.4 Evaluate Audit Findings Against Established Compliance Criteria

› 4.5 Communicate Compliance Findings to Stakeholders Effectively

› 4.6 Implement Continuous Improvement Strategies for Compliance Reporting

• 5 Continuous Improvement in Safety Management Systems — 6 classes

› 5.1 Identify Key Components of Safety Management Systems

› 5.2 Analyze Existing Compliance Practices in Safety Management

› 5.3 Implement Continuous Improvement Techniques for Safety Systems

› 5.4 Evaluate the Effectiveness of Current Safety Measures

› 5.5 Develop Action Plans for Addressing Safety Compliance Gaps

› 5.6 Communicate Continuous Improvement Strategies to Stakeholders

• 1 Understanding Safety-Related Control Parts in Machinery — 6

classes

- › 1.1 Define Safety-Related Control Parts in Machinery
- › 1.2 Identify Key Components of Safety Functions
- › 1.3 Explain the Importance of Risk Assessment in Control Parts
- › 1.4 Analyze Standards and Regulations Relevant to Control Parts
- › 1.5 Evaluate Safety Functions in Real-World Machinery Scenarios
- › 1.6 Implement Best Practices for Designing Safety-Related Control Parts

• 2 ISO 13849: An Overview of Safety Standards and Principles — 6

classes

- › 2.1 Explore the Fundamental Concepts of ISO 13849
- › 2.2 Identify Key Safety Standards and Their Importance
- › 2.3 Examine Safety-Related Control Parts and Their Functions
- › 2.4 Analyze the Principles of Safety Functions in Machinery
- › 2.5 Evaluate the Risk Assessment Process in ISO 13849
- › 2.6 Apply ISO 13849 Standards to Real-World Scenarios

• 3 Risk Assessment and Safety Function Identification — 6 classes

- › 3.1 Identify Risks Associated with Machinery Operations
- › 3.2 Analyze Potential Hazards in Control Systems
- › 3.3 Determine Safety Functions for Risk Mitigation
- › 3.4 Evaluate Control Parts for Safety Requirements
- › 3.5 Develop a Risk Assessment Matrix for Machinery
- › 3.6 Implement Safety Functions in Control System Design

• 4 Designing Safety-Related Control Systems — 6 classes

- › 4.1 Identify Safety-Related Control Parts in Machinery
- › 4.2 Analyze the Functions of Safety-Related Control Systems
- › 4.3 Assess Risk Factors in Control System Design
- › 4.4 Design Simple Safety-Related Control Circuits
- › 4.5 Evaluate the Reliability of Safety Function Implementations
- › 4.6 Implement Safety-Related Control Systems in Real-World Scenarios

• 5 Testing and Validation of Safety Functions in Control Parts — 6

classes

- › 5.1 Identify Key Safety Functions in Control Parts
- › 5.2 Explore Testing Methods for Safety-Related Control Parts
- › 5.3 Analyze Common Failure Modes in Safety Functions
- › 5.4 Demonstrate Validation Techniques for Safety Functions
- › 5.5 Evaluate Risk Assessment Procedures for Control Parts
- › 5.6 Develop a Testing Schedule for Safety Functions

• 1 Understanding the Fundamentals of Machinery Safety Standards

— 6 classes

- › 1.1 Define Key Concepts in Machinery Safety
- › 1.2 Identify the Purpose of ISO 13849 Standards
- › 1.3 Explore the Structure of ISO 13849 Documentation
- › 1.4 Understand Risk Assessment in Machinery Safety
- › 1.5 Analyze the Role of Control Systems in Safety
- › 1.6 Apply ISO 13849 Principles to Safety-Related Control Parts

• 2 Key Components of ISO 13849: Performance Level and Categories — 6 classes

- › 2.1 Define Performance Levels in ISO 13849
- › 2.2 Explore Categories and their Importance in Safety
- › 2.3 Analyze the Relationship Between Performance Levels and Categories
- › 2.4 Identify Key Components in Safety-Related Control Systems
- › 2.5 Evaluate Real-World Applications of Performance Levels
- › 2.6 Design a Simple Safety Control System Using Categories

• 3 Risk Assessment and Safety Analysis Methods in ISO 13849 — 6

classes

- › 3.1 Identify Hazards in Machinery Operations
- › 3.2 Evaluate Risks Associated with Machinery Safety
- › 3.3 Apply the Hierarchy of Control Measures
- › 3.4 Conduct a Safety Requirement Specification Analysis
- › 3.5 Analyze Safety-Related Control System Performance Levels
- › 3.6 Develop Action Plans for Safety Improvements

• 4 Design and Validation of Safety-Related Control Systems — 6

classes

- › 4.1 Define Key Concepts in Safety-Related Control Systems
- › 4.2 Identify Requirements for Machinery Safety in ISO 13849
- › 4.3 Analyze Risk Assessment Processes for Control Systems
- › 4.4 Develop Safety Functions Based on Risk Assessment Findings
- › 4.5 Evaluate Design Principles for Safety-Related Control Parts
- › 4.6 Conduct Validation Tests for Safety-Related Control Systems

• 5 Implementing and Auditing ISO 13849 Compliance — 6 classes

- › 5.1 Understand the Key Principles of ISO 13849 Compliance
- › 5.2 Identify Safety-Related Control Parts in Machinery
- › 5.3 Develop a Risk Assessment for Machinery Safety
- › 5.4 Implement Control Systems According to ISO 13849 Standards
- › 5.5 Conduct Internal Audits for ISO 13849 Compliance
- › 5.6 Create an Action Plan for Non-Conformities in Safety Systems

• **1 Understanding ISO 13849: Scope and Objectives** — 6 classes

- › 1.1 Define the Scope of ISO 13849 for Machinery Safety
- › 1.2 Identify Key Objectives of ISO 13849 Implementation
- › 1.3 Explain the Importance of Safety-Related Control Parts
- › 1.4 Analyze the Relationship Between ISO 13849 and Risk Assessment
- › 1.5 Differentiate Between Performance Levels and Safety Categories
- › 1.6 Apply ISO 13849 Principles to Real-World Scenarios

• **2 Risk Assessment and Performance Level Determination** — 6 classes

- › 2.1 Identify Common Hazards in Machinery Operations
- › 2.2 Analyze Risk Factors Associated with Machinery Safety
- › 2.3 Evaluate Risk Assessment Methodologies for ISO 13849
- › 2.4 Determine Performance Levels Based on Risk Assessment
- › 2.5 Implement Control Measures to Mitigate Identified Risks
- › 2.6 Review Case Studies of Effective Risk Management in Machinery

• **3 Designing Safety-Related Control Systems** — 6 classes

- › 3.1 Identify Key Components of Safety-Related Control Systems
- › 3.2 Analyze Functional Safety Requirements for Machinery
- › 3.3 Evaluate Risk Assessment Techniques in Control Design
- › 3.4 Determine Safety Performance Levels (PL) and Categories
- › 3.5 Design Safety-Related Control Circuits Using ISO 13849 Guidelines
- › 3.6 Implement Testing and Validation Procedures for Control Systems

• **4 Verification and Validation of Control Systems** — 6 classes

- › 4.1 Understand the Importance of Verification and Validation in Control Systems
- › 4.2 Distinguish Between Verification and Validation Processes
- › 4.3 Identify Key ISO 13849 Requirements for Control Systems
- › 4.4 Explore Methods for Conducting Verification of Control System Design
- › 4.5 Implement Validation Strategies for Safety-Related Control Parts
- › 4.6 Assess Real-World Case Studies of Control System Verification and Validation

• **5 Practical Case Studies and Implementation Challenges** — 6 classes

- › 5.1 Analyze Real-World Case Studies of ISO 13849 Applications
- › 5.2 Identify Common Implementation Challenges in Safety-Related Control Parts
- › 5.3 Evaluate Risk Assessments for Machinery Safety Compliance
- › 5.4 Design Safety Control Systems Based on Practical Examples
- › 5.5 Implement ISO 13849 Standards in Industrial Settings
- › 5.6 Review and Revise Control System Designs for Enhanced Safety

• **1 Fundamentals of Risk Assessment in Occupational Safety** — 6 classes

- › 1.1 Define and Explain Risk Assessment Fundamentals
- › 1.2 Identify Key Components of Occupational Safety Risks
- › 1.3 Analyze the Hierarchy of Controls in Risk Management
- › 1.4 Evaluate Risk Assessment Methodologies and Tools
- › 1.5 Apply Risk Assessment Techniques to Real-World Scenarios
- › 1.6 Develop a Comprehensive Risk Management Plan

• **2 Identifying and Analyzing Risks in Machinery Operations** — 6 classes

- › 2.1 Define Key Terms in Machinery Risk Assessment
- › 2.2 Identify Common Risks in Machinery Operations
- › 2.3 Analyze the Potential Impact of Identified Risks
- › 2.4 Evaluate Control Measures for Risk Mitigation
- › 2.5 Prioritize Risks Using a Risk Matrix Methodology
- › 2.6 Develop a Risk Management Plan for Machinery Operations

• **3 Evaluating Risk: Tools and Techniques** — 6 classes

- › 3.1 Identify Risk Factors Using SWOT Analysis
- › 3.2 Utilize Risk Matrix for Prioritizing Hazards
- › 3.3 Apply Fault Tree Analysis for Systematic Risk Evaluation
- › 3.4 Implement HAZOP Techniques for Identifying Process Risks
- › 3.5 Analyze Risk Control Measures with the ALARP Principle
- › 3.6 Develop Action Plans for Mitigating Identified Risks

• **4 Implementing Risk Controls and Safety Measures** — 6 classes

- › 4.1 Identify and Analyze Potential Hazards in Machinery
- › 4.2 Evaluate the Risk Level of Identified Hazards
- › 4.3 Develop and Select Appropriate Risk Control Measures
- › 4.4 Implement Risk Controls and Safety Measures Effectively
- › 4.5 Monitor and Review the Effectiveness of Safety Measures
- › 4.6 Document and Communicate Risk Control Procedures

• **5 Monitoring and Reviewing Risk Management Practices** — 6 classes

- › 5.1 Identify Key Components of Risk Management Practices
- › 5.2 Analyze Current Monitoring Techniques in Risk Management
- › 5.3 Evaluate Effectiveness of Existing Risk Control Measures
- › 5.4 Develop Criteria for Reviewing Risk Management Practices
- › 5.5 Implement Continuous Improvement Strategies for Risk Management
- › 5.6 Prepare a Comprehensive Risk Management Review Report

• 1 Understanding Safety Standards and Regulatory Frameworks — 6 classes

- › 1.1 Explore the Importance of Safety Standards in Machinery
- › 1.2 Identify Key ISO 13849 Components for Safety-Related Control Parts
- › 1.3 Analyze the Regulatory Frameworks Impacting Safety System Design
- › 1.4 Compare Different Safety Standard Certifications and Their Applications
- › 1.5 Assess Compliance Requirements for Machinery Safety Systems
- › 1.6 Develop Safety System Design Strategies Aligned with ISO 13849

• 2 Risk Assessment and Hazard Analysis Techniques — 6 classes

- › 2.1 Identify Hazards in Machinery Safety Systems
- › 2.2 Evaluate Risks Associated with Identified Hazards
- › 2.3 Analyze Hazardous Scenarios Using Assessment Techniques
- › 2.4 Prioritize Risks for Effective Control Measures
- › 2.5 Implement Control Measures for Risk Mitigation
- › 2.6 Review and Document Risk Assessment Outcomes

• 3 Safety Control System Architectures — 6 classes

- › 3.1 Define Key Concepts of Safety Control System Architectures
- › 3.2 Identify Components and Functions of Safety-Related Control Parts
- › 3.3 Analyze Safety System Architectures and Their Applications
- › 3.4 Evaluate Risks and Failures in Safety Control Systems
- › 3.5 Design a Basic Safety Control Architecture for Machinery
- › 3.6 Implement Best Practices for Safety System Verification and Validation

• 4 Design and Implementation of Safety Functions — 6 classes

- › 4.1 Identify Key Safety Functions in Machinery Design
- › 4.2 Analyze Risk Assessment Techniques for Safety Functions
- › 4.3 Define Safety Performance Levels and Their Requirements
- › 4.4 Design Safety-Related Control Parts Using ISO 13849 Standards
- › 4.5 Implement Testing Procedures for Safety Function Verification
- › 4.6 Evaluate Real-World Case Studies of Safety Function Failures

• 5 Verification, Validation, and Functional Safety Audits — 6 classes

- › 5.1 Understand the Importance of Verification in Safety System Design
- › 5.2 Differentiate Between Verification and Validation in Functional Safety
- › 5.3 Identify Key Steps in the Verification Process for Safety-Related Control Parts
- › 5.4 Explore Common Validation Techniques and Their Applications in Machinery Safety
- › 5.5 Conduct a Functional Safety Audit: Best Practices and Methodologies
- › 5.6 Develop an Action Plan to Address Findings from Safety Audits