AMERICAN GLOBAL INSTITUTE FOR PRIVATE TRAINING

External Training Course

Beyond Risk: Engineering Safer Systems, Projects & Operations

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From 20 Oct. To 24 Oct. 2025
From 17 Nov. To 21 Nov. 2025
From 15 Dec. To 19 Dec. 2025

Crowne Plaza Zürich by IHG Hotel
Zurich, Switzerland

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External Training Course:

Beyond Risk: Engineering Safer Systems, Projects & Operations

From 20 Oct. To 24 Oct. 2025 **Fees: 1950 KD**
From 17 Nov. To 21 Nov. 2025 **Fees: 1950 KD**
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Course Introduction

This advanced training course equips professionals with in-depth knowledge, practical tools, and proven methodologies for identifying, analyzing, and managing risks across systems, projects, and operations. By addressing hazards and uncertainties, participants will learn how to apply industry-leading techniques to reduce vulnerabilities, optimize safety, and ensure long-term operational resilience. Through real-world case studies, interactive exercises, and group projects, the program moves participants beyond theory into practice, empowering them to create safer and more reliable systems.

Course Objectives

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

- Understand and apply advanced risk assessment definitions, concepts, & frameworks.
- Recognize and evaluate uncertainties and hazards across operations and projects.
- Apply modern hazard identification techniques (HAZOP, FMEA, Bow-Tie, etc.).
- Conduct both qualitative and quantitative risk analyses.
- Design and implement risk control, avoidance, mitigation, and transfer strategies.
- Develop comprehensive risk management plans aligned with organizational goals.
- Build resilient, safe, and sustainable operations through proactive risk leadership.

Target Audience

This course is designed for:

- Professional Engineers (mechanical, electrical, process, safety, civil, industrial).
- Project Managers and Operations Leaders.
- Senior Maintenance and Reliability Engineers.
- Safety, Risk, and Compliance Specialists.
- Facility, Plant, and Network Managers.
- Executives and Decision-Makers overseeing critical infrastructure.

Key Outcomes

Participants completing the course will:

- Gain advanced capability in risk assessment and management methodologies.
- Enhance their ability to reduce incidents, failures, and downtime.
- Improve decision-making with structured risk evaluation tools.
- Strengthen organizational safety culture and compliance readiness.
- Be able to design robust, future-proof risk management strategies.

Training Methodology

Expert-led interactive lectures.

Real-world industry case studies.

Group discussions and brainstorming.

Simulation-based exercises and workshops.

Capstone project for practical application.

Organizational Impact

Reduced incidents, downtime, and failures.

Improved regulatory compliance and audit readiness.

Stronger safety culture across teams.

More reliable and sustainable operations.

Increased stakeholder confidence.

Personal Impact

Master advanced risk assessment and control techniques.

Gain confidence in handling complex risks.

Improve leadership and decision-making under uncertainty.

Enhance career profile with recognized expertise.

Earn certification in advanced risk management.

Course Content & Outline

Day 1 – Risk Foundations & Core Concepts

Introduction & Key Definitions

- Defining risk, hazard, uncertainty, and exposure.
- Standards: ISO 31000, IEC 61511, OSHA frameworks.
- Why shared terminology is critical for communication.

Risks and Uncertainties

- Types: operational, technical, environmental, financial, human.
- The role of uncertainty in decision-making.
- Tools for analyzing uncertainty (scenario planning, sensitivity).

Why Risk Assessment Matters

- Strategic necessity: protecting people, assets, and operations.
- Reducing downtime, costs, and liability.
- Case studies of failures from poor risk management.

The Risk Management Lifecycle

- Full cycle: identify → analyze → control → monitor → review.
- Proactive vs. reactive strategies.
- Integrating lifecycle risk into organizational planning.

Day 2 – Hazard Identification Excellence

Hazard Identification Process

- Step-by-step approach: preparation, spotting, documenting.
- Lifecycle hazards: design, operation, maintenance, decommissioning.

Hazard Identification Techniques

- HAZID, HAZOP, FMEA, What-If, Checklists, Fault/Event Tree Analysis.
- Strengths and limitations of each method.

Human, Technical & Environmental Hazards

- Human error and reliability analysis.
- Technical risks (design flaws, equipment failures).
- Environmental risks and natural hazards.
- How risks interconnect across domains.

Practical Workshop

- Applying hazard identification to real scenarios.
- Group hazard mapping & presentations.
- Instructor feedback on findings.

Day 3 – Risk Analysis & Evaluation

Principles of Risk Analysis

- Objectives: prioritization and quantification.
- Qualitative vs. quantitative analysis.
- Probability, severity, and exposure assessment.

Methods of Risk Analysis

- Semi-quantitative scoring, risk matrices.
- Bow-Tie Analysis, Monte Carlo Simulation.
- Probabilistic Risk Assessment (fault tree, event tree, Bayesian).

Evaluating Risks Systematically

- Ranking and prioritization.
- Sensitivity analysis for critical variables.
- ALARP and cost-benefit analysis.

Hands-On Activity

- Conducting a step-by-step risk analysis.
- Applying both qualitative and quantitative methods.
- Identifying top risks and justifying conclusions.

Day 4 – Risk Control & Reduction

Risk Control Strategies

- Hierarchy of controls: elimination → substitution → engineering → admin → PPE.
- Active vs. passive safeguards.
- Safety Integrity Levels (SIL).

Optimizing Risk Reduction Measures

- Balancing cost-effectiveness and safety.
- Avoiding over-engineering and duplication.
- Benchmarking against global best practices.

Risk Avoidance

- Identifying and eliminating non-essential risks.
- Redesigning processes to remove hazards.
- Project-level decisions: when to walk away.

Applied Group Exercise

- Designing a risk control plan for a high-risk scenario.
- Presenting and defending solutions.
- Feedback session to highlight best practices.

Day 5 – Mitigation, Transfer & Risk Planning

Risk Mitigation Strategies

- Reducing likelihood: redundancy, monitoring, preventive maintenance.
- Reducing severity: containment, emergency procedures, isolation.
- Crisis management and business continuity.

Risk Transfer Mechanisms

- Insurance strategies.
- Contracts and outsourcing models.
- Joint ventures and partnerships.
- Recognizing untransferable risks.

Developing a Risk Management Plan

- Structure: responsibilities, resources, tools, reporting.
- Alignment with corporate strategy and compliance.
- Monitoring, auditing, and continuous improvement.

Capstone Group Project

- Designing a full risk management plan.
- Integrating hazard ID, analysis, control, mitigation, transfer.
- Peer review and final instructor evaluation.

Course Agenda:

(1st Day) Agenda

8.30	9.00	Opening Remarks (30 Min.).
9.00	11.30	DISCUSS COURSE OBJECTIVES: • Risk Foundations & Core Concepts. • Hazard Identification Excellence. • Risk Analysis & Evaluation. • Risk Control & Reduction. • Mitigation, Transfer & Risk Planning.
11.30	12.00	Coffee Break
12.00	14.00	**Risk Foundations & Core Concepts** • **Introduction & Key Definitions** ✓ Defining risk, hazard, uncertainty, and exposure. ✓ Standards: ISO 31000, IEC 61511, OSHA frameworks. ✓ Why shared terminology is critical for communication. • **Risks and Uncertainties** ✓ Types: operational, technical, environmental, financial, human. ✓ The role of uncertainty in decision-making. ✓ Tools for analyzing uncertainty (scenario planning, sensitivity). • **Why Risk Assessment Matters** ✓ Strategic necessity: protecting people, assets, and operations. ✓ Reducing downtime, costs, and liability. ✓ Case studies of failures from poor risk management. • **The Risk Management Lifecycle** ✓ Full cycle: identify → analyze → control → monitor → review. ✓ Proactive vs. reactive strategies. ✓ Integrating lifecycle risk into organizational planning.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

(2nd Day) Agenda

9.00	11.30	**Hazard Identification Excellence** • **Hazard Identification Process** ✓ Step-by-step approach: preparation, spotting, documenting. ✓ Lifecycle hazards: design, operation, maintenance, decommissioning. • **Hazard Identification Techniques** ✓ HAZID, HAZOP, FMEA, What-If, Checklists, Fault/Event Tree Analysis. ✓ Strengths and limitations of each method.
11.30	12.00	Coffee Break
12.00	14.00	**Hazard Identification Excellence** • **Human, Technical & Environmental Hazards** ✓ Human error and reliability analysis. ✓ Technical risks (design flaws, equipment failures). ✓ Environmental risks and natural hazards. ✓ How risks interconnect across domains. • **Practical Workshop** ✓ Applying hazard identification to real scenarios. ✓ Group hazard mapping & presentations. ✓ Instructor feedback on findings.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

(3rd Day) Agenda

9.00	11.30	**Risk Analysis & Evaluation** • **Principles of Risk Analysis** ✓ Objectives: prioritization and quantification. ✓ Qualitative vs. quantitative analysis. ✓ Probability, severity, and exposure assessment. • **Methods of Risk Analysis** ✓ Semi-quantitative scoring, risk matrices. ✓ Bow-Tie Analysis, Monte Carlo Simulation. ✓ Probabilistic Risk Assessment (fault tree, event tree, Bayesian).
11.30	12.00	Coffee Break
12.00	14.00	**Risk Analysis & Evaluation** • **Evaluating Risks Systematically** ✓ Ranking and prioritization. ✓ Sensitivity analysis for critical variables. ✓ ALARP and cost-benefit analysis. • **Hands-On Activity** ✓ Conducting a step-by-step risk analysis. ✓ Applying both qualitative and quantitative methods. ✓ Identifying top risks and justifying conclusions.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

(4th Day) Agenda

9.00	11.30	**Risk Control & Reduction** • **Risk Control Strategies** ✓ Hierarchy of controls: elimination → substitution → engineering → admin → PPE. ✓ Active vs. passive safeguards. ✓ Safety Integrity Levels (SIL). • **Optimizing Risk Reduction Measures** ✓ Balancing cost-effectiveness and safety. ✓ Avoiding over-engineering and duplication. ✓ Benchmarking against global best practices.
11.30	12.00	Coffee Break
12.00	14.00	**Risk Control & Reduction** • **Risk Avoidance** ✓ Identifying and eliminating non-essential risks. ✓ Redesigning processes to remove hazards. ✓ Project-level decisions: when to walk away. • **Applied Group Exercise** ✓ Designing a risk control plan for a high-risk scenario. ✓ Presenting and defending solutions. • Feedback session to highlight best practices.
14.00	14.30	Questions and Discussion
14.30		Buffet Lunch

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(5th Day) Agenda

9.00	11.30	**Mitigation, Transfer & Risk Planning** • **Risk Mitigation Strategies** ✓ Reducing likelihood: redundancy, monitoring, preventive maintenance. ✓ Reducing severity: containment, emergency procedures, isolation. ✓ Crisis management and business continuity. • **Risk Transfer Mechanisms** ✓ Insurance strategies. ✓ Contracts and outsourcing models. ✓ Joint ventures and partnerships. ✓ Recognizing untransferable risks.
11.30	12.00	Coffee Break
12.00	14.00	**Mitigation, Transfer & Risk Planning** • **Developing a Risk Management Plan** ✓ Structure: responsibilities, resources, tools, reporting. ✓ Alignment with corporate strategy and compliance. ✓ Monitoring, auditing, and continuous improvement. • **Capstone Group Project** ✓ Designing a full risk management plan. ✓ Integrating hazard ID, analysis, control, mitigation, transfer. ✓ Peer review and final instructor evaluation.
14.00	14.30	Questions, Discussion & Conclusion Training Course.
14.30		Buffet Lunch