



Health, Safety and Environment

Hazard and Operability (HAZOP) Studies

Course Introduction

The HAZOP Study training course provides a comprehensive understanding of the Hazard and Operability (HAZOP) study methodology, essential for ensuring safety and risk management in process industries. Over five days, participants will delve into basic concepts of hazards and risks, explore various hazard types, and learn preliminary hazard and consequence analysis techniques. The course covers HAZOP standards and legal requirements, including those set by OSHA and the UK HSE, and addresses different types of HAZOP studies for both greenfield and brownfield projects. Practical sessions focus on managing HAZOP teams, conducting studies, and documenting findings, while also reviewing advanced hazard evaluation techniques such as FMEA and FTA

Target Audience

- Process Engineers
- Safety Engineers
- Chemical Engineers
- Mechanical Engineers
- Operations Managers
- Plant Managers
- Project Managers
- Health, Safety, and Environment (HSE) Managers and Coordinators
- Risk Assessment Specialists
- Compliance Officers
- Regulatory Affairs Specialists
- Safety Consultants

Learning Objectives

- Understand the fundamental concepts of hazards, risks, and risk assessment in industrial processes.
- Learn the different types of hazards, including fire, explosion, and toxic materials, and their potential consequences.
- Acquire the skills to perform preliminary hazard analysis and consequence analysis to evaluate risk.
- Gain knowledge of HAZOP standards, legal requirements, and different types of HAZOP studies.
- Develop the ability to manage HAZOP teams, conduct effective HAZOP studies, and utilize various hazard evaluation techniques

Course Outline

- **DAY 01**

- Basic Concepts and Introduction to Risk Assessment:**

- AI in historical setting and combinatorial technologies
 - Introduction to AI, concepts, narrow and general AI
 - Different types of AI
 - AI - sense, reason, act
 - The thinking in AI: Machine learning
 - Advanced Analytics vs Artificial Intelligence
 - Looking back, now, forward
 - 4 types of data analytics
 - Analytics value chain
 - Algorithms but without technical jargon
 - Supervised learning
 - Unsupervised learning
 - Reinforcement learning
 - Data as fuel for AI
 - Structured and unstructured data
 - The 5 V's of data

- Data governance
- The data engineering platform
- Just enough to understand the data architecture
- Big data reference architecture
- 3 categories of data usage
- Integrating risk assessment within risk management
- Semi-quantitative risk assessment techniques
- Risk assessment framework – the role of HAZOP

• Day 02

HAZOP Types, Standards & Legal Requirements:

- Review of basic HAZOP skills
- HAZOP Standards
- HAZOP Standards
- HAZOP as legal requirement
- The Seveso Directives
- HAZOP-OSHA
- HAZOP-UK HSE
- Types of HAZOP
- Greenfield HAZOPs
- Concept HAZOP
- Basic Design HAZOP
- Detailed HAZOP
- Commissioning HAZOP
- Brownfield HAZOP
- CHAZOP

• Day 03

Managing HAZOPs:

- Why is managing HAZOPs so important?
- Management Support
- HAZOP Team composition and roles and
- HAZOP Consultants
- Role of HAZOP Leader
- Role of HAZOP Secretary
- Role of HAZOP team members
- Team Skill Level

- HAZOP Documentation
- Auditing a HAZOP

• Day 04

HAZOP Protocols and Methodology:

- Information needed for HAZOP
- Stages of HAZOP Study
- Initial meeting
- Introduction
- Terms of reference
- Scope of the review
- HAZOP timetable
- General conduct of the review
- Report preparation
- Mechanism for follow-up and review

• Day 05

Overview of Hazard Evaluation:

- Process hazards
- Hazard identification
- Predictive hazard evaluation
- Hazard evaluation study
- Preliminary hazard analysis (PHA)
- What-if analysis
- FMEA: Failure mode and effect analysis
- FTA: Fault tree analysis
- Event tree analysis
- HAZOP Applications, Case Studies, and Worked Examples

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
May 26, 2025	May 30, 2025	5 days	4950.00 \$	Austria - Vienna

FROM	TO	DURATION	FEES	LOCATION
Sept. 22, 2025	Sept. 26, 2025	5 days	4250.00 \$	UAE - Abu Dhabi
Dec. 22, 2025	Dec. 26, 2025	5 days	4250.00 \$	UAE - Dubai