Hydrocarbon Processing Safety Training Course

Professional Development Training Course Outline

Category	General Training	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Hydrocarbon Processing Safety Training Course is designed to equip professionals with advanced competencies in oil & gas safety management, process hazard analysis (PHA), refinery risk control, and petrochemical operational integrity. As global energy demand grows, so does the need for robust process safety, explosion prevention, fire risk mitigation, and high-hazard industrial compliance systems. This training delivers critical knowledge on managing complex hydrocarbon environments including upstream, midstream, and downstream operations.

This course integrates modern frameworks such as OSHA Process Safety Management (PSM), HAZOP studies, LOPA (Layer of Protection Analysis), Bow-Tie risk analysis, and API safety standards to ensure participants can identify, assess, and control operational risks effectively. Learners will develop expertise in emergency response planning, hazardous material handling, refinery safety protocols, and sustainable operational safety culture, making them highly valuable in today’s competitive energy and petrochemical industries.

Programme Curriculum

Hydrocarbon Processing Safety Training Course

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Course Duration

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Course Objectives

1. Master Process Safety Management (PSM) in hydrocarbon industries
2. Apply HAZOP and risk assessment methodologies in refinery operations
3. Identify and control fire, explosion, and toxic release hazards
4. Understand oil & gas operational risk mitigation strategies
5. Implement API and OSHA safety compliance standards
6. Develop emergency response and crisis management plans
7. Conduct root cause failure analysis (RCFA) in incidents
8. Strengthen asset integrity and reliability management systems
9. Evaluate safety instrumentation and control systems (SIS)
10. Apply LOPA and Bow-Tie risk modeling techniques
11. Improve occupational health and industrial hygiene practices
12. Enhance pipeline and refinery safety inspection skills
13. Build a strong safety leadership and safety culture framework

Target Audience

1. Oil & gas engineers (process, mechanical, chemical)
2. Refinery and petrochemical plant operators
3. HSE (Health, Safety & Environment) professionals
4. Safety officers and compliance managers
5. Industrial maintenance and reliability engineers
6. Project managers in hydrocarbon industries
7. Emergency response and fire safety teams
8. Energy sector consultants and auditors

Course Modules

Module 1: Fundamentals of Hydrocarbon Safety Systems

- Overview of hydrocarbon value chain safety risks
- Properties of flammable and toxic hydrocarbons
- Industry accident statistics and lessons learned
- Introduction to safety lifecycle management
- Case Study: Texas City Refinery explosion analysis

Module 2: Process Safety Management (PSM) Framework

- OSHA PSM elements and implementation
- Management of change (MOC) systems

- Contractor safety management
- Mechanical integrity programs
- Case Study: BP Texas City refinery PSM failures

Module 3: Hazard Identification Techniques

- HAZID workshop methodologies
- HAZOP study structure and execution
- Guide words and deviation analysis
- Risk ranking and prioritization
- Case Study: Offshore platform HAZOP evaluation

Module 4: Risk Assessment & Quantitative Analysis

- LOPA methodology and safety layers
- Bow-Tie risk analysis modeling
- Fault Tree and Event Tree analysis
- Quantitative Risk Assessment (QRA) tools
- Case Study: LNG terminal risk modeling scenario

Module 5: Fire, Explosion & Gas Release Prevention

- Ignition sources and prevention techniques
- Gas detection and alarm systems
- Explosion protection systems
- Flammable limits and vapor cloud behavior
- Case Study: Piper Alpha disaster analysis

Module 6: Safety Instrumented Systems (SIS) & Control

- SIS architecture and lifecycle
- Safety Integrity Level (SIL) classification
- Emergency shutdown (ESD) systems
- Interlocks and fail-safe design
- Case Study: Refinery control system failure incident

Module 7: Emergency Response & Crisis Management

- Emergency planning and evacuation procedures
- Incident command system (ICS) structure
- Firefighting systems in hydrocarbon facilities
- Communication during industrial crises
- Case Study: Deepwater Horizon emergency response

Module 8: Environmental & Occupational Safety Compliance

- Environmental impact of hydrocarbon processing
- Waste management and emission control
- Occupational exposure limits (OELs)
- ISO 14001 & ISO 45001 compliance integration
- Case Study: Major refinery environmental audit failure

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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