Fire Protection Systems Design Training Course

Professional Development Training Course Outline

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

Course Introduction

Fire Protection Systems Design Training Course is designed to equip learners with industry-relevant competencies, code compliance expertise, and modern fire safety engineering principles aligned with global standards such as NFPA, ISO, and local building regulations. Participants will gain deep insights into active and passive fire protection systems, risk assessment, fire dynamics, hydraulic calculations, and integrated building safety design.

In today’s rapidly evolving construction and industrial sectors, demand for certified fire protection specialists is rising due to stricter safety regulations and increased awareness of disaster resilience. This course integrates practical engineering applications, digital design tools, BIM integration, and real-world case studies to ensure participants can confidently design, analyze, and implement high-performance fire protection systems across residential, commercial, and industrial environments.

Programme Curriculum

Fire Protection Systems Design Training Course

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Course Duration

5 days

Course Objectives

1. Master Fire Protection Engineering Design Principles
2. Understand NFPA Standards & International Fire Codes Compliance
3. Apply Fire Risk Assessment & Hazard Analysis Techniques
4. Design Sprinkler, Hydrant, and Suppression Systems
5. Develop Smoke Management and Ventilation Strategies
6. Perform Hydraulic Calculations for Fire Systems
7. Integrate Fire Alarm & Detection System Technologies
8. Use AutoCAD & BIM for Fire Safety Design Modeling
9. Implement Passive Fire Protection Systems in Buildings
10. Evaluate Industrial Fire Safety and Explosion Risks
11. Conduct Evacuation Planning & Life Safety Analysis
12. Apply Sustainability in Fire Protection Engineering
13. Gain Professional Certification Readiness & Industry Competence

Target Audience

1. Mechanical & Electrical Engineers
2. Fire Safety Engineers & Consultants
3. Building Services Designers
4. Architects & Construction Professionals
5. Facility & Maintenance Managers
6. Oil, Gas & Industrial Safety Officers
7. Civil Engineering Students & Graduates
8. HSE (Health, Safety & Environment) Professionals

Course Modules

Module 1: Fundamentals of Fire Protection Engineering

- Fire science and combustion principles
- Fire behavior in different environments
- Introduction to fire protection systems
- Regulatory frameworks (NFPA, ISO)
- Fire protection system classification
- **Case Study:** High-rise residential fire incident analysis and system failure review

Module 2: Fire Detection and Alarm Systems

- Smoke, heat, and flame detectors
- Alarm control panel configuration
- Addressable vs conventional systems
- Emergency notification systems
- System zoning and integration

- **Case Study:** Hospital fire alarm system integration and response optimization

Module 3: Automatic Fire Suppression Systems

- Sprinkler system design principles
- Gas suppression systems (CO?, FM-200)
- Foam-based suppression systems
- Water mist technology applications
- System activation mechanisms
- **Case Study:** Data center fire suppression system design and protection strategy

Module 4: Fire Hydrant and Water Supply Systems

- External and internal hydrant systems
- Pump sizing and selection
- Water storage tank design
- Pressure and flow calculations
- Fire brigade connection systems
- **Case Study:** Industrial plant hydrant network failure investigation and redesign

Module 5: Smoke Control and Ventilation Systems

- Smoke movement dynamics
- Natural vs mechanical ventilation
- Stairwell pressurization systems
- Atrium smoke control design
- Exhaust and extraction systems
- **Case Study:** Shopping mall smoke management during emergency evacuation

Module 6: Fire Risk Assessment & Hazard Analysis

- Risk identification methodologies
- Fire load calculation techniques
- Probability and impact analysis
- Quantitative risk assessment tools
- Safety integrity levels
- **Case Study:** Oil refinery fire risk assessment and mitigation plan

Module 7: Passive Fire Protection Systems

- Fire-rated walls, doors, and barriers
- Compartmentation strategies
- Structural fire resistance design
- Fire stopping systems
- Intumescent coatings and materials
- **Case Study:** Airport terminal passive fire protection compliance audit

Module 8: Integrated Fire Safety Design & BIM Applications

- Fire system coordination with MEP design
- BIM-based fire modeling techniques
- Clash detection and optimization

- Emergency evacuation simulation
- Digital twin applications in fire safety
- **Case Study:** Smart city high-rise building BIM fire safety integration project

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

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

Register Online Now

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