



Project No.
2074

Date
2025

Doc. No.
EOTSS2074

Serial No
2074/2025

Rev.
00

Proj. dep.
Mechanical

EOTSS Doc. CODE :

EOTSS/Mechanical/2074-MECH/2025

المعهد الهندسي لخدمات التكنولوجيا والبرمجيات



Engineering office for Technology and Software Services

Fundamentals of Fire Protection Systems

Fundamentals of Fire Protection Systems

- Introduction**: Fire protection systems as an essential for safeguarding lives and property against fire.
- Description**: Covers basic detection, alarm, suppression, and containment systems design, installation, testing and maintenance.
- Objectives**:
 - Understand principles and system classifications.
 - Develop design and maintenance skills.
 - Ensure knowledge standards.
- Target Audience**:
 - Safety engineers.
 - Facility managers.
 - Construction professionals.
 - Fire Inspectors, and students.
- Materials**:
 - Introduction to fire protection systems.
- Description** (continued):
 - Core concepts and classifications, operation, of detection, alarm, and suppression.
 - Application of regulations.
 - Inspection, results, and maintenance procedures.
- What You Will Learn**:
 - Core concepts and classifications.
 - Operation of detection, alarm, & suppression.
 - Application of regulations, inspection, testing, and maintenance procedure.
 - Passive fire protection design and installation.
- Instruction methods**:
 - Lectures.
 - Demonstrations.
 - Workshops.
 - Group exercises.
- Learning Outcomes**:
 - Classify and describe systems.
 - Evaluate and apply measures of suppression and maintenance.
 - Conduct inspections and maintenance.
- Time Frame**: 20 hours (6 sessions, 4 hours each).
- Course Format**: In-person or blended.
 - Modular structure.
 - Final assessment.

Code: 2074-MECH

Main Branch: United building – E Shams –Front NBE , El Siouf _Alexandria

Tel: 01102060500-01144470856



الفرع الرئيسي : عمارات المتحدة – عمارة عين شمس – امام البنك الاهلي – السيوف- الاسكندرية

تليفون: 01102060500 - 01144470856

E-mail. adelramadan@eotss-academy.com
info@eotss-academy.com



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Introduction

Fire protection systems are vital components in safeguarding lives and property against fire hazards. This course introduces the fundamental concepts, types, operation, and maintenance of fire protection systems used in various settings, with a focus on both active and passive measures.

Description

The course covers the science and engineering behind fire protection, including detection, alarm, suppression, and containment systems. Learners will explore standards, system design, installation requirements, testing protocols, and maintenance strategies, emphasizing compliance with national and international codes.

Objectives

- To provide a thorough understanding of fire protection principles and system classifications
- To familiarize participants with the components and functioning of fire detection and suppression systems
- To develop skills in the design, operation, and maintenance of fire protection systems
- To ensure knowledge of regulatory standards and inspection procedures

Outlines in Details

1. Principles of Fire Protection

- Fire behavior and growth
- Risk assessment and mitigation strategies

2. Types of Fire Protection Systems

- Active (sprinklers, alarms, extinguishers)
- Passive (compartmentation, fire-resistant materials)

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3. Fire Detection and Alarm Systems

- Smoke, heat, flame detectors
- Notification devices and control panels

4. Fire Suppression Systems

- Water-based (sprinkler, deluge, mist)
- Gaseous and chemical suppression
- Portable extinguishers

5. Passive Fire Protection

- Fire barriers, doors, dampers
- Structural fireproofing

6. Codes, Standards, and Regulations

- NFPA, EN, ISO, local codes
- System certification and documentation

7. Design and Installation

- System layout and hydraulic calculations
- Installation best practices

8. Inspection, Testing, and Maintenance

- Routine checks, troubleshooting
- Documentation and compliance reporting

What You Will Learn

- Core concepts and classifications of fire protection systems

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- Operation of detection, alarm, and suppression equipment
- Application of regulatory codes and standards
- Inspection, testing, and maintenance procedures
- Design and installation principles for new and existing buildings

Target Audience

- Safety engineers and fire protection specialists
- Facility managers and building owners
- Construction professionals and architects
- Fire inspectors and code enforcement officers
- Students in fire safety or building services engineering

Materials

- Comprehensive course handbook and code excerpts
- System schematics and technical datasheets
- Case studies and interactive exercises
- Access to simulation software

Instruction Methods

- Lectures and technical presentations
- Demonstrations and virtual simulations
- Hands-on workshops (where applicable)
- Group discussions and compliance exercises

Time Frame

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- Duration: 20 hours (5 sessions, 4 hours each)

Course Format

- In-person or blended (online + practical)
- Modular structure for flexibility
- Final assessment and certification

Learning Outcomes

Upon completion, participants will:

- Classify and describe various fire protection systems
- Evaluate and apply detection, suppression, and passive measures
- Design and assess system layouts in accordance with standards
- Conduct routine inspections and maintenance for compliance

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