

FIRE-2321: FIRE PROTECTION SYSTEMS

Cuyahoga Community College

Viewing: FIRE-2321 : Fire Protection Systems

Board of Trustees:

2012-03-22

Academic Term:

Summer 2020

Subject Code

FIRE - Fire Technology

Course Number:

2321

Title:

Fire Protection Systems

Catalog Description:

Provides information relating to the features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, water supply for fire protection and portable fire extinguishers.

Credit Hour(s):

2

Lecture Hour(s):

2

Requisites

Prerequisite and Corequisite

Departmental approval: Admission to or completion of Fire Academy.

Outcomes

Course Outcome(s):

Apply knowledge of design features and operation of various fire protection systems.

Objective(s):

1. Explain the benefits of fire protection systems in various types of structures.
2. Discuss the appropriate application of fire protection systems.
3. Explain the operation and appropriate application for the different types of portable fire protection systems.
4. Describe the basic elements of a public water supply system including sources, distribution networks, piping and hydrants.
5. Explain why water is a commonly used extinguishing agent.
6. Identify the different types and components of sprinkler, standpipe and foam systems.
7. Review residential and commercial sprinkler legislation.
8. Identify the different types of non-water based fire suppression systems.
9. Explain the basic components of a fire alarm system.
10. Identify the different types of detectors and explain how they detect fire.
11. Describe the hazards of smoke and list the four factors that can influence smoke movement in a building.

Methods of Evaluation:

1. Objective examination
2. Practical skills assessment

Course Content Outline:

1. I. Introduction to Fire Protection Systems
 - a. The role fire protection systems play in protecting the life, safety and welfare of the general public and firefighters
 - b. Overview of the different types of fire protection systems
 - c. The role of codes & standards in fire protection system design
2. Water Supply Systems for Fire Protection Systems
 - a. Sources of fire protection water supply
 - b. Distribution networks
 - c. Piping
 - d. Hydrants
 - e. Utility company interface with the fire department
3. Water-based fire suppression systems
 - a. Properties of water
 - i. Water as an effective extinguishing agent
 - ii. How water extinguishes fire
 - b. Sprinkler Systems
 - i. Types of systems & applications
 - ii. Types of sprinklers & applications
 - iii. Piping, valves, hangers & alarm devices
 - iv. Fire department operations in buildings with sprinkler systems
 - c. Residential sprinkler systems
 - d. Standpipe systems
 - i. Types & applications
 - ii. Fire department operations in buildings with standpipes
 - e. Foam systems
 - f. Water mist systems
 - g. Fire pumps
 - i. Types
 - ii. Components
 - iii. Operation
 - iv. Fire pump curves
4. Non-water-based fire suppression systems
 - a. Carbon dioxide systems
 - i. Applications
 - ii. Extinguishing properties
 - iii. System components
 - b. Halogenated systems
 - i. Halon 1301 and the environment
 - ii. Halon alternatives
 - iii. Extinguishing properties
 - iv. System components
 - c. Dry/Wet Chemical Extinguishing systems
 - i. Extinguishing properties
 - ii. Applications
 - iii. UL 300
5. Fire alarm systems
 - a. Components
 - b. Types of fire alarm systems
 - c. Detectors
 - i. Smoke
 - ii. Heat
 - iii. Flame
 - d. Audible/visual devices
 - e. Alarm monitoring
 - f. Testing & maintenance of fire alarm systems
6. Smoke management systems
 - a. Hazards of smoke
 - b. Smoke movement in buildings

- c. Types of smoke management systems
 - d. Firefighter operations in buildings with smoke management systems
7. Portable fire extinguishers
- a. Types & applications
 - b. Selection
 - c. Placement
 - d. Maintenance
 - e. Portable fire extinguisher operations

Resources

Cote, Arthur. *Operation of Fire Protection Systems*. 2nd. NFPA, 2003.

IFSTA. *Fire Protection Suppression Systems*. 4th ed. Huntington, CA: IFSTA, 2011.

IFSTA. *Fire Protection Suppression Systems Manual*. 4th ed. Huntington, CA: IFSTA, 2006.

Bruni, Joseph. *Occupational Health Safety for Fire Service with Resource Central Student Access Card*. Upper Saddle River, NJ: Prentice Hall, 2011.

Mahoney, Eugen. *Fire Suppression Practices Procedures*. 2nd ed. Upper Saddle River, NJ: Prentice Hall, 2007.

Instructional Services

OAN Number:

Career Technical Assurance Guide CTFF003 (4 of 5 courses, all must be taken)

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Key: 1972