

FIRE 0004 - FIRE PROTECTION EQUIPMENT AND SYSTEMS

Catalog Description

Advisory: Completion with grade of "C" or better or concurrent enrollment in FIRE 1

Hours: 54 lecture

Description: Provides information relating to the features of design and operation of fire alarm systems, water-based suppression systems, special hazard fire suppression systems, water supply for fire protection and portable fire extinguishers in accordance with local, state and national guidelines. (C-ID FIRE 120X) (CSU-with unit limitation)

Course Student Learning Outcomes

- CSLO #1: Differentiate types, components, and operation of fire protection systems and equipment.
- CSLO #2: Compare detection, alarm and supervisory devices and systems.
- CSLO #3: Differentiate and analyze types, classifications, and effectiveness ratings of fire extinguishers, their distribution, installation, and test requirements.
- CSLO #4: Distinguish state and federal laws relating to detection and suppression systems for residential and commercial applications.

Effective Term

Fall 2018

Course Type

Credit - Degree-applicable

Contact Hours

54

Outside of Class Hours

108

Total Student Learning Hours

162

Course Objectives

1. Identify and describe various types and uses of fire protection systems;
2. Describe the basic elements of a public water supply system as it relates to fire protection;
3. Explain the benefits of fire protection systems in various types of structures;
4. Describe the basic elements of a public water supply systems 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 the detect fire;
11. Describe the hazards of smoke and list the four factors that can influence smoke movement in a building;
12. Discuss the appropriate application of fire protection systems;
13. Explain the operation and appropriate application for the different types of portable fire protection systems.

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Classroom Discussions
 - Example: Following a lecture on Triangle Shirtwaist fire, students will actively engage in a discussion regarding how the tragedy could have been prevented. Students are evaluated based on their participation and the accuracy of their responses based on actual events.
- Objective Examinations
 - Example: Students will take a multiple choice test on the components of a wet pipe sprinkler systems from water delivery from a domestic water system to a standard sprinkler head. Standard grading. Example: What type of sprinkler head hangs down? A. Upright B. Pendent C. Sidewall D. None of the above
- Problem Solving Examinations
 - Example: Students will perform the calculations necessary to determine the required fire flow for a given occupancy taking into consideration construction type, allowable square footage and fire protection provisions. Pass/Fail Grading based on industry standards.
- Reports
 - Example: Students will complete a, minimum, 500 word essay on an assigned tragic fire incident. Students will be evaluated based on an instructor provided rubric.

Repeatable

No

Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. The instructor will lecture on how to develop a pre-fire plan for a business. Students will then work in groups to select a business, visit the business site and develop a pre-fire plan for the occupancy. The group will then present their plan to the class.
2. The instructor will lead a discussion explaining and defining a mass notification alert system. Students will be asked to provide examples of where and why such a system should be installed.

Distance Learning

1. The instructor will lecture on the purpose of several types of fire protection equipment and systems and how they relate to pre-incident planning. The student is expected to visit various buildings to identify, describe and document selected fire protection equipment and systems. Having a good understanding of the purpose of these systems is critical to future fire service personnel and is an important element of pre-incident planning. Select a minimum of ten (10) of the listed (provided by instructor) fire protection systems or equipment. Visit various buildings and identify your chosen systems or equipment. Document in the form of photographs. Prepare a PowerPoint presentation in which you will provide photographs to illustrate the systems and equipment you chose, as well as any related components such as controllers, valves, etc. Provide a detailed explanation of the purpose of the system or equipment and provide details of the specific building you visited, i.e., name of business, address, occupancy, operations, industrial process(es), etc. Assignment shall be submitted electronically via LMS.

- Classic Textbook?:
- OER Link:
- OER:

Other materials and-or supplies required of students that contribute to the cost of the course.

Typical Out of Class Assignments

Reading Assignments

1. Read case histories of failed fire protection systems and be prepared to discuss in class the deficiencies found and corrective actions taken to eliminate future failures. 2. Read the chapter on standpipe systems and when and where they shall be installed. Then complete the provided exercise performing calculations of fire flow and locating the fire department connection.

Writing, Problem Solving or Performance

1. Using a provided building occupancy, identify the proper smoke management system including where it should be installed and how it should be maintained. 2. Using a provided scenario and the mathematical calculations given in class, determine if a given water supply is adequate for fire sprinkler systems and hydrant flow for a proposed commercial development.

Other (Term projects, research papers, portfolios, etc.)

1. There will be a group term project consisting of the development of a pre fire plan for a business of their choice, approved by the instructor. The group will present their plan to the class.

Required Materials

- Fire Detection and Suppression Systems
 - Author: IFSTA
 - Publisher: Fire Protection Publications Oklahoma State University
 - Publication Date: 2011
 - Text Edition: 4th
 - Classic Textbook?:
 - OER Link:
 - OER:
- Fire Protection Systems
 - Author: A. Maurice Jones Jr.
 - Publisher: Jones and Bartlett Learning
 - Publication Date: 2015
 - Text Edition: 2nd