

Prepared by the Department of Social Sciences, Behavioral Sciences, and Human Services

Date of Departmental Approval: February 12, 2013

Date approved by Curriculum and Programs: February 13, 2013

Effective: Fall 2013

1. **Course Number:** FSC152
Course Title: Fire Protection Systems
2. **Description:** (replaces FSC102) This course 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.
3. **Student Learning Outcomes:** (instructional objectives, intellectual skills)
Upon successful completion of this course, students are able to do the following.
 - Identify and describe various types and uses of fire protection systems
 - Explain the benefits of fire protection systems in various types of structures
 - Describe the basic elements of a public water supply system including sources, distribution networks, piping and hydrants
 - Explain why water is a commonly used extinguishing agent
 - Identify the different types and components of sprinkler, standpipe and foam systems
 - Review residential and commercial sprinkler system legislation
 - Identify the different types of non-water based fire suppression systems
 - Explain the basic components of a fire alarm system
 - Identify the different types of detectors and explain how they detect fire
 - Describe the hazards of smoke and list the four factors that can influence smoke movement in buildings
 - Discuss the appropriate application of fire protection systems
 - Explain the operation and appropriate application for the different types of portable fire protection systems
4. **Credits:** 3 credits
5. **Satisfies General Education Requirement:** No
6. **Co-requisite:** FSC150/FSC100
7. **Semester Offered:** Varies
8. **Suggested General Guidelines for Evaluation:** Exams, quizzes, and class projects
9. **General Topical Outline:**
 - I. Introduction to Fire Protection Systems
 - A. The role of fire protection systems in protecting the life, safety and welfare of the general public and firefighters
 - B. Overview of different types of fire protection systems
 - C. The role of codes and standards in fire protection system designs
 - II. 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 fire departments
 - III. Water-Based Fire Protection Systems
 - A. Properties of water
 1. Water as an effective extinguishing agent
 2. How water extinguishes fires

- B. Sprinkler Systems
 - 1. Types of systems and applications
 - 2. Types of sprinklers and applications
 - 3. Piping, valves, hangers, and alarm devices
 - 4. Fire department operations in buildings with sprinkler systems
- C. Residential Sprinkler Systems
- D. Standpipe Systems
 - 1. Types and applications
 - 2. Fire department operations in buildings with standpipes
- E. Foam Systems
- F. Water Mist Systems
- G. Fire Pumps
 - 1. Types
 - 2. Components
 - 3. Operation
 - 4. Fire Pump Curves
- IV. Non-Water Based Fire Suppression Systems
 - A. Carbon Dioxide Systems
 - 1. Applications
 - 2. Extinguishing
 - 3. Systems Components
 - B. Halogenated Systems
 - 1. Halon 1301 and the environment
 - 2. Halon alternatives
 - 3. Extinguishing properties
 - 4. System components
 - C. Dry/Wet Chemical Extinguishing Systems
 - 1. Extinguishing properties
 - 2. Applications
 - 3. UL 300
- V. Fire Alarm Systems
 - A. Components
 - B. Types of Fire Alarm Systems
 - C. Detectors
 - 1. Smoke
 - 2. Heat
 - 3. Flame
 - D. Audible/Visual Devices
 - E. Alarm Monitoring
 - F. Testing and Maintenance of Fire Alarm systems
- VI. 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
- VII. Portable Fire Extinguishers
 - A. Types and Applications
 - B. Selection
 - C. Placement
 - D. Maintenance
 - E. Portable Fire Extinguisher Operation