Las Positas College
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Course Outline for FST 55

FIRE PROTECTION EQUIPMENT AND SYSTEMS

Effective: Fall 2018

I. CATALOG DESCRIPTION:
FST 55 — FIRE PROTECTION EQUIPMENT AND SYSTEMS — 3.00 units

This course provides information relating to the features of design, and operations of fire alarm systems, water-based suppression systems, special hazard fire suppression systems and water supply for fire protection. Smoke and Thermal detection systems, Installation, testing and maintenance of automatic or manual protection systems and water supply for sprinkler and standpipe systems and portable fire extinguishers.

3.00 Units Lecture

Grading Methods:
Letter Grade

Discipline:
- Fire Technology

	MIN
Lecture Hours:	54.00
Expected Outside of Class Hours:	108.00
Total Hours:	162.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

IV. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

A. Identify and describe various types of fire protection systems
B. Describe the basic elements of a public water supply system as it relates to fire protection
C. Explain the benefits of fire protection systems in various types of structures
D. Describe the basic elements of a public water supply system including sources, distribution networks, piping and hydrants.
E. Explain why water is a commonly used extinguishing agent
F. Identify the different types and components of sprinkler, standpipe and foam systems
G. Identify the different types and components of sprinkler, standpipe and foam systems
H. Identify residential and commercial sprinkler NFPA Standards and legislation
I. Identify the different types of non-water based fire suppression systems
J. Explain the basic components of a fire alarm system
K. Identify the different types of smoke and thermal detectors and explain how they detect fire
L. Describe the hazards of smoke and list the four factors that can influence smoke movement in a building
M. Identify the operation and appropriate application for the different types of portable fire protection systems
N. Describe organizations that provide information or service to fire protection systems

V. CONTENT:
A. Introduction to Fire Protection Systems
B. Water Supply Systems for Fire Protection Systems
    1. Types of Fire Hydrants
    2. Testing Underground Supply to Hydrants
    3. Hydrant Distribution Grids
    4. Sources of Water
C. Water-Based Fire Suppression System
    1. Requirements and distribution of standpipe systems
    2. Types of standpipe systems and water supply requirements
    3. Types, components, and operations of automatic sprinklers
    4. Inspections and Testing
    5. Detection and alarm control devices and systems for sprinklers
D. Fire Alarm Systems
    1. Smoke and fire movement in various types of construction and the relationships to systems and equipment
    2. Different types and functions of smoke detectors
    3. Different types and functions of thermal detectors

4. Different types of special or unique detectors
    a. UV Detector
    b. Gas Sensing Detector
    c. Linear Beam Detector

E. Smoke Management Systems
1. HVAC Systems
2. Pressurization Systems
3. Air Management Movement Systems
4. Smoke Evacuation Systems

F. Portable Fire Extinguishers
1. Types, classifications and effectiveness ratings of fire extinguishers
2. Utilization, testing, and inspection criteria
3. Different suppression agents and basic fire chemistry

G. Organizations that provide information or service to fire protection systems
H. Regulatory oversite and NFPA Standards to Protection Systems both fixed and Portable

VI. METHODS OF INSTRUCTION:

A. **Discussion** - Engage students to identify demonstrated components and their functions after instruction
B. **Field Trips** - On Campus Field Trip to look at different protection and detection system designs and installation around various campus occupancies along with closer look at individualized components and their interaction with each other.
C. **Lecture** - Can be guided with Professional Power Points
D. **Observation and Demonstration** - Demonstration using Props and Equipment for portable fire extinguishers, hydrant supply, various components of sprinkler systems and special protection and fire alarm detection systems
E. **Audio-visual Activity** - Video's and Computer Demonstrations with Power Points

VII. TYPICAL ASSIGNMENTS:

A. Students in a group will lists types along with components and operation of a specific sprinkler system
B. Essay demonstrating knowledge of a standpipe system and how it can be used
C. Reading assignments
1. Sample assignment: Read Chapter 2

VIII. EVALUATION:

A. **Methods**

1. Exams/Tests
2. Quizzes
3. Field Trips
4. Group Projects
5. Class Participation

B. **Frequency**

1. Quizzes: Bi-Weekly
2. One Mid-Term
3. One Final Exam
4. One on campus field trip
5. One group project
6. Daily class participation

IX. TYPICAL TEXTS:

1. Cagnon, Robert. *Design of Special Hazard and Fire Alarm Systems.* 2nd ed., Delmar Publishing, 2017.
2. IFSTA. *Fire Detection and Suppresion Systems.* 5th ed., IFSTA, 2016.
3. Jones, Jr., Maurice. *Fire Protection Systems.* 2nd ed., Jones and Bartlett Learning, 2016.

X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. LPC Fire Program Uniform