

Course Outline of Record

1. Course Code: FIRE-003
2.
  - a. Long Course Title: Fire Protection Systems
  - b. Short Course Title: FIRE PROTECTION SYS
3.
  - a. Catalog Course Description:  
 This course provides information relating to the features of design and operation of fire detection and alarm systems, heat and smoke control systems, special protection and sprinkler systems, water supply for fire protection, and portable fire extinguishers. This course is designated as Fire 3 by the California State Board of Fire Services and the State Fire Marshal as part of the core curriculum. This course meets the Fire and Emergency Service Higher Education (FESHE) model curriculum for an Associate Degree as recognized by the National Fire Academy.  
 (C-ID FIRE 120X)
  - b. Class Schedule Course Description:  
 This course provides information relating to the features of design and operation of fire detection and alarm systems, heat and smoke control systems, special protection and sprinkler systems, water supply for fire protection, and portable fire extinguishers.
  - c. Semester Cycle (if applicable): n/a
  - d. Name of Approved Program(s):
    - FIRE TECHNOLOGY AS Degree and Transfer Preparation
    - FIRE TECHNOLOGY Certificate of Achievement
    - FIRE TECHNOLOGY AS Degree for Employment Preparation
4. Total Units: 3.00      Total Semester Hrs: 54.00  
 Lecture Units: 3      Semester Lecture Hrs: 54.00  
 Lab Units: 0      Semester Lab Hrs: 0  
 Class Size Maximum: 30      Allow Audit: No  
 Repeatability No Repeats Allowed  
 Justification 0
5. Prerequisite or Corequisite Courses or Advisories:  
*Course with requisite(s) and/or advisory is required to complete Content Review Matrix (CCForm1-A)*  
 Advisory: ENG 061
6. Textbooks, Required Reading or Software: (List in APA or MLA format.)
  - a. IFSTA. (2011). Fire Detection and Suppression Systems (4th/e). IFSTA/Fire Protection Publication. ISBN: 978-0-87939-3  
 College Level: Yes  
 Flesch-Kincaid reading level: *N/A*
  - b. Jones, Maurice, A (2015). Fire Protection Systems (2nd/e). Burlington, MA Jones & Bartlett. ISBN: 9781284035377  
 College Level: Yes  
 Flesch-Kincaid reading level: *N/A*
7. Entrance Skills: *Before entering the course students must be able:*  
**Advisory Skills:**

a.

Write organized summaries and responses to readings.

- ENG 061 - Use theses to organize paragraphs into coherent analyses.
- ENG 061 - Demonstrate the ability to think critically and express ideas using various patterns of development.
- ENG 061 - Recognize features of style such as purpose, audience and tone integrate these elements into academic and

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professional writing.

- ENG 061 - Demonstrate the ability to use research skills including library resources such as books, periodicals, electronic databases and online resources such as the internet.
- ENG 061 - Demonstrate the ability to read and respond in writing beyond the literal interpretation of the text.
- ENG 061 - Utilize a handbook to properly cite and document source material in MLA format.

## 8. Course Content and Scope:

### Lecture:

1. Introduction to Fire Protection Systems
  1. The Role Fire Protection Systems Play in Protecting the Life, Safety and Welfare of the General Public and Firefighters
  2. Overview of the Different Types of Fire Protection System
  3. The Role of Codes & Standards in Fire Protection System Design
2. Water Supply Systems for Fire Protection Systems
  1. Sources of Fire Protection Water Supply
  2. Distribution Networks
  3. Piping
  4. Hydrants
  5. Utility Company Interface with the Fire Department
3. Water-Based Fire Suppression Systems
  1. Properties of Water
    1. Water as an Effective Extinguishing Agent
    2. How Water Extinguishes Fire
  2. Sprinkler Systems
    1. Types of Systems & Applications
    2. Types of Sprinklers & Applications
    3. Piping, Valves, Hangers & Alarm Devices
    4. Fire Department Operations in Buildings with Sprinkler Systems
  3. Residential Sprinkler Systems
  4. Standpipe Systems
    1. Types & Applications
    2. Fire Department Operations in Buildings with Standpipes
  5. Foam Systems
  6. Water Mist Systems
  7. Fire Pumps
    1. Types
    2. Components
    3. Operation
    4. Fire Pump Curves
4. Non-Water-Based Fire Suppression Systems
  1. Carbon Dioxide Systems
    1. Applications
    2. Extinguishing Properties
    3. System Components
  2. Halogenated Systems
    1. Halon 1301 and the Environment
    2. Halon Alternatives
    3. Extinguishing Properties
    4. System Components
  3. Dry/Wet Chemical Extinguishing Systems
    1. Extinguishing Properties
    2. Applications
    3. UL 300
5. Fire Alarm Systems
  1. Components
  2. Types of Fire Alarm Systems
  3. Detectors
    1. Smoke

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2. Heat
3. Flame
4. Audible/Visual Devices E. Alarm Monitoring
5. Audible/Visual Devices E. Alarm Monitoring
6. Smoke Management Systems
  1. Hazards of Smoke
  2. Smoke Movement in Buildings
  3. Types of Smoke Management Systems
  4. Firefighter Operations in Buildings with Smoke Management Systems
7. Portable Fire Extinguishers
  1. Types & Applications
  2. Selection
  3. Placement
  4. Maintenance
  5. Portable Fire Extinguisher Operations

Lab: (if the "Lab Hours" is greater than zero this is required)

### 9. Course Student Learning Outcomes:

1.  
Describe the basic elements of public water supply systems as they relate to fire protection.
2.  
Identify and describe various types and uses of fire protection systems.
3.  
Explain the operation features of fire detection and alarm systems.

### 10. Course Objectives: *Upon completion of this course, students will be able to:*

- a. Describe the basic elements of a public water supply system including: sources, distribution networks, piping and hydrants.
- b. Explain why water is a commonly used extinguishing agent.
- c. Identify the different types and components of sprinkler, standpipe and foam systems.
- d. Review residential and commercial sprinkler legislation.
- e. Identify the different types of non-water based fire suppression systems.
- f. Explain the basic components of a fire alarm system.
- g. Identify the different types of detectors and explain how they detect fire.
- h. Describe the hazards of smoke and list the four factors that can influence smoke movement in a building.
- i. Discuss the appropriate application of fire protection systems.
- j. Explain the operation and appropriate application for the different types of portable fire protection systems.
- k. Classify fire extinguishment methods, fire department concerns regarding sprinkle system installation, operation, maintenance, inspection, special hazards, and fixed and portable fire protection systems.

### 11. Methods of Instruction: *(Integration: Elements should validate parallel course outline elements)*

- a. Demonstration, Repetition/Practice
- b. Discussion
- c. Distance Education
- d. Individualized Study
- e. Lecture
- f. Participation

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## g. Technology-based instruction

12. Assignments: *(List samples of specific activities/assignments students are expected to complete both in and outside of class.)*

In Class Hours: 54.00

Outside Class Hours: 108.00

### a. In-class Assignments

1. Participation
2. Observation
3. Group discussions/online required postings
4. Practice skills
5. Reading of handouts and student manual

### b. Out-of-class Assignments

1. Read text and handouts
2. Library assignments for research
3. Prepare oral/video based presentation of projects
4. Prepare term project

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*

- College level or pre-collegiate essays  
Essays
- Written homework
- Term or research papers
- Self-paced testing
- Presentations/student demonstration observations  
In class or video based presentations
- Self/peer assessment and portfolio evaluation  
Peer evaluations and required postings
- True/false/multiple choice examinations
- Mid-term and final evaluations  
Quizzes, mid-term and finals
- Student participation/contribution
- Oral and practical examination  
Oral/video based presentation of project

14. Methods of Evaluating: Additional Assessment Information:

15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*

PO - Career and Technical Education

Fulfill the requirements for an entry- level position in their field.

Apply critical thinking skills to execute daily duties in their area of employment.

Apply critical thinking skills to research, evaluate, analyze, and synthesize information.

Display the skills and aptitude necessary to pass certification exams in their field.

Exhibit effective written, oral communication and interpersonal skills.

Transfer to a higher level learning institution

IO - Personal and Professional Development

Demonstrate an understanding of ethical issues to make sound judgments and decisions.

16. Comparable Transfer Course

University System	Campus	Course Number	Course Title	Catalog Year
CSU	CSU Los Angeles		Equipment and Systems	2013-14

17. Special Materials and/or Equipment Required of Students:

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18. Materials Fees:  Required Material?

<b>Material or Item</b>	<b>Cost Per Unit</b>	<b>Total Cost</b>
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19. Provide Reasons for the Substantial Modifications or New Course:

Changing English advisory

20. a. Cross-Listed Course (*Enter Course Code*): *N/A*  
 b. Replacement Course (*Enter original Course Code*): *N/A*

21. Grading Method (*choose one*): Letter Grade Only

22. MIS Course Data Elements

- a. Course Control Number [CB00]: CCC000248458
- b. T.O.P. Code [CB03]: 213300.00 - Fire Technology
- c. Credit Status [CB04]: D - Credit - Degree Applicable
- d. Course Transfer Status [CB05]: B = Transfer CSU
- e. Basic Skills Status [CB08]: 2N = Not basic skills course
- f. Vocational Status [CB09]: Possibly Occupational
- g. Course Classification [CB11]: Y - Credit Course
- h. Special Class Status [CB13]: N - Not Special
- i. Course CAN Code [CB14]: *N/A*
- j. Course Prior to College Level [CB21]: Y = Not Applicable
- k. Course Noncredit Category [CB22]: Y - Not Applicable
- l. Funding Agency Category [CB23]: Y = Not Applicable
- m. Program Status [CB24]: 1 = Program Applicable

Name of Approved Program (*if program-applicable*): FIRE TECHNOLOGY,FIRE TECHNOLOGY,FIRE TECHNOLOGY

*Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)*

23. Enrollment - Estimate Enrollment

First Year: 0  
 Third Year: 0

24. Resources - Faculty - Discipline and Other Qualifications:

- a. Sufficient Faculty Resources: Yes
- b. If No, list number of FTE needed to offer this course: *N/A*

25. Additional Equipment and/or Supplies Needed and Source of Funding.

*N/A*

26. Additional Construction or Modification of Existing Classroom Space Needed. (*Explain:*)

*N/A*

27. FOR NEW OR SUBSTANTIALLY MODIFIED COURSES

Library and/or Learning Resources Present in the Collection are Sufficient to Meet the Need of the Students Enrolled in the Course: Yes

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28. Originator Allen Scott Ventura Origination Date 10/19/17