



**El Camino College**  
**COURSE OUTLINE OF RECORD – Official**

<b>Course Acronym:</b>	FTEC
<b>Course Number:</b>	20
<b>Descriptive Title:</b>	Fire Protection Equipment and Systems
<b>Division:</b>	Health Sciences and Athletics
<b>Department:</b>	Fire and Emergency Technology
<b>Course Disciplines:</b>	Fire Technology
<b>Catalog Description:</b>	This course addresses the design features 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.
<b>Prerequisite:</b>	
<b>Co-requisite:</b>	
<b>Recommended Preparation:</b>	Eligibility for English 1A
<b>Enrollment Limitation:</b>	
<b>Hours Lecture (per week):</b>	3
<b>Hours Laboratory (per week):</b>	0
<b>Outside Study Hours:</b>	6
<b>Total Course Hours:</b>	54
<b>Course Units:</b>	3
<b>Grading Method:</b>	Letter Grade only
<b>Credit Status:</b>	Credit, degree applicable
<b>Transfer CSU:</b>	Yes
<b>Effective Date:</b>	03/20/1995
<b>Transfer UC:</b>	No
<b>Effective Date:</b>	
<b>General Education:</b>	
<b>ECC</b>	
<b>Term:</b>	
<b>Other:</b>	
<b>CSU GE:</b>	
<b>Term:</b>	
<b>Other:</b>	
<b>IGETC:</b>	
<b>Term:</b>	
<b>Other:</b>	

<p><b>Student Learning Outcomes:</b></p>	<p><b>SLO #1 Sprinkler Systems</b></p> <p>The student will be able to identify a minimum of four types of sprinkler systems.</p> <p><b>SLO #2 Fire Extinguishers</b></p> <p>The student will be able to identify different types of fire extinguishers and their components.</p> <p><b>SLO #3 Fire Detection and Alarm Systems</b></p> <p>The student will be able to identify different types of fire detection and alarm systems.</p>
<p><b>Course Objectives:</b></p>	<ol style="list-style-type: none"> <li>1. Describe organizations that provide information or service to fire protection systems.</li> <li>2. Define types, classifications and effectiveness ratings of fire extinguishers.</li> <li>3. Compare and contrast smoke and fire movement in various types of construction and the relationship to systems and equipment.</li> <li>4. Evaluate placement, installation and test requirements for fire extinguishers.</li> <li>5. List types, components, and operation of fire protection systems and equipment for special hazards.</li> <li>6. Identify water supply requirements, distribution systems and testing for public and private fire protection. Explain the application of hydraulic theory for fire protection.</li> <li>7. List types, components and operation of automatic and special sprinkler systems.</li> <li>8. List types of standpipe systems and water supply requirements.</li> <li>9. Compare and contrast detection, alarm and supervisory devices and systems.</li> <li>10. Compare and contrast heat and smoke control devices and hardware.</li> </ol>
<p><b>Major Topics:</b></p>	<p><b>I. FIRE CAUSE AND EFFECT OVERVIEW (10 hours, lecture)</b></p> <p>A. Hazards of materials</p> <p>B. Building construction</p> <p>C. Heat and smoke control</p> <p><b>II. PORTABLE FIRE EXTINGUISHERS (10 hours, lecture)</b></p> <p>A. Description and classification</p> <p>B. Effectiveness ratings</p> <p>C. Distribution and installation</p> <p>D. Types, application, operation, inspection and maintenance</p> <p><b>III. CHARACTERISTICS OF PROTECTION SYSTEMS AND EQUIPMENT FOR SPECIAL HAZARDS (5 hours, lecture)</b></p> <p>A. General arrangement and equipment for special hazards</p> <p>B. Carbon dioxide systems</p>

- C. Dry chemical systems
- D. Foam: protein, Aqueous Film Forming Foam (AFFF), Class "A"
- E. Emulsifiers and chemical surfactant
- F. Water spray system
- G. Inert gas blanketing
- H. Halogenated hydrocarbon agent systems
- I. Explosion suppression systems
- J. Engineered and pre-engineered systems

**IV. PUBLIC AND PRIVATE WATER SUPPLIES, EQUIPMENT AND SERVICES FOR FIRE PROTECTION (5 hours, lecture)**

- A. Elementary principles of hydraulics
- B. Water supplies for community fire protection
- C. Fire protection requirement, public/ private water systems
- D. Water supply testing fundamentals

**V. SPRINKLER PROTECTION (10 hours, lecture)**

- A. Types of sprinkler systems
  - 1. Wet pipe
  - 2. Dry pipe
  - 3. Preaction
  - 4. Combined dry pipe and preaction
  - 5. Deluge, high density, hydraulically designed systems
  - 6. Standard installation requirements
- B. Special hazards and installation conditions
- C. Exposure protection
- D. Plans review procedure
- E. Inspection and testing procedures
- F. Residential sprinkler systems

**VI. PROTECTIVE SIGNALING SYSTEMS (4 hours, lecture)**

- A. Auxiliary signaling systems
- B. Remote station systems
- C. Proprietary systems
- D. Emergency voice/alarm
- E. Communications systems
- F. Central station systems
- G. Types of signals
- H. Protective signaling system circuits
- I. Interfacing with municipal signaling systems

**VII. STANDPIPE SYSTEMS (5 hours, lecture)**

- A. Class I
- B. Class II
- C. Class III
- D. Combined systems

**VIII. HEAT AND SMOKE CONTROL SYSTEMS (5 hours, lecture)**

- A. Fire doors, windows and wall
- B. Fire shutters
- C. Smoke and fire dampers
- D. Curtain boards
- E. Smoke towers
- F. Mechanical roof vents

<b>Total Lecture Hours:</b>	54
<b>Total Laboratory Hours:</b>	0
<b>Total Hours:</b>	54
<b>Primary Method of Evaluation:</b>	1) Substantial writing assignments

<b>Typical Assignment Using Primary Method of Evaluation:</b>	After reading appropriate materials concerning portable fire extinguishers, prepare a three-page report that will list and assess the various types, ratings and operating procedures of the fire extinguisher. Submit report to the instructor.
<b>Critical Thinking Assignment 1:</b>	Analyze a fire protection system that demonstrates complete coverage of a residential occupancy with regards to any sprinkler, hood and duct assembly and special application protection. Prepare and submit a two-page written report on your findings to the instructor.
<b>Critical Thinking Assignment 2:</b>	Analyze and prepare a three-page written report on a fire protection system that demonstrates complete coverage of a commercial occupancy with regards to sprinkler, hood and duct assembly and special application protection. Submit report to the instructor.
<b>Other Evaluation Methods:</b>	Class Performance, Fieldwork, Homework Problems, Multiple Choice, Other Exams, Performance Exams, Quizzes, Reading Reports, Term or Other Papers, Written Homework
<b>Instructional Methods:</b>	Discussion, Field trips, Lecture, Multimedia presentations, Other (specify)
<b>If other:</b>	
<b>Work Outside of Class:</b>	Answer questions, Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting), Problem solving activity, Required reading, Skill practice, Study, Written work (such as essay/composition/report/analysis/research)
<b>If Other:</b>	
<b>Up-To-Date Representative Textbooks:</b>	International Fire Service Training Association, <u>FIRE DETECTION AND SUPPRESSION SYSTEMS</u> , 5th ed., International Fire Service Training Association, 2016. (Discipline Standard)
<b>Alternative Textbooks:</b>	
<b>Required Supplementary Readings:</b>	NATIONAL FIRE PROTECTION ASSOCIATION HANDBOOK by the National Fire Protection Association, 2008. (Discipline Standard) NATIONAL FIRE PROTECTION ASSOCIATION by the National Fire Protection Association, 2008. (Discipline Standard) CALIFORNIA CODE OF REGULATIONS - Title 19 - by Barclay, West, 2009. (Discipline Standard)
<b>Other Required Materials:</b>	
<b>Requisite:</b>	
<b>Category:</b>	
<b>Requisite course(s): List both prerequisites and corequisites in this box.</b>	
<b>Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).</b>	
<b>Requisite Skill:</b>	
<b>Requisite Skill and Matching Skill(s): Bold</b>	

the requisite skill(s). If applicable	
Requisite course:	
Requisite and Matching skill(s): <b>Bold the requisite skill. List the corresponding course objective under each skill(s).</b>	
Requisite Skill:	Eligibility for English 1A
Requisite Skill and Matching skill(s): <b>Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable</b>	<p><b>It is advised that students be able to read and effectively analyze college level texts, and be able to write a paper that persuasively proves an original thesis. A student's success in this course will be enhanced if they have these skills:</b></p> <p>Ability to read industry-related manuals on fire protection equipment.</p> <p>Ability to compose a three-page, college-level paper on specific subject matter.</p>
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Junius Murray
Date:	09/01/1994
Original Board Approval Date:	03/20/1995
Last Reviewed and/or Revised by:	Josh Boies
Date:	02/14/2023
Last Board Approval Date:	07/17/2023 effective FALL 2024