Fire and Life Safety Requirements

Course Plan

Course Details

Certification: Fire Inspector 2

CTS Guide: Fire Inspector 2 Certification Training Standards Guide (2014)

Description: This course provides students with a basic knowledge of fire and life safety requirements related to the roles and responsibilities of a Fire Inspector 2 including occupancy classification, egress elements, emergency plans and procedures, occupant loads, building construction and fire growth potential.

Designed For: The certified Fire Inspector 1 advancing to the Fire Inspector 2 classification

Prerequisites: Fire Inspector 2A: Fire Prevention Administration

Standard: Complete all activities and formative tests.

Complete all summative tests with a minimum score of 80%.

Hours: Lecture: 16:30

Activities: 5:30

Testing: 02:00

Hours (Total): 24:00

Maximum Class Size: 30

Instructor Level: Primary Instructor

Instructor/Student Ratio: 1:30

Restrictions: None

SFT Designation: CFSTES

Required Resources

Instructor Resources

To teach this course, instructors need:

- California Building Code
  (International Code Council, current edition)
- California Code of Regulations (CCR) Title 19
  (Office of Administrative Law, https://oal.ca.gov/)
- California Fire Code
  (International Code Council, current edition)

Reference manual options:

- *Fire Inspection and Code Enforcement Instructor Resource Kit*
  (IFSTA, 8th edition)

  Or the combination of the following:

- *Fire Inspector: Principles and Practice*
  (International Association of Fire Chiefs, Revised Enhanced 1st edition, Jones & Bartlett Learning, ISBN: 9781284137743)
- *Fire Inspector: Principles and Practice Instructor's ToolKit* CD-ROM
  (International Association of Fire Chiefs, Cdr edition, Jones & Bartlett Learning, ISBN: 9781284095654)

Online Instructor Resources

The following instructor resources are available online at https://osfm.fire.ca.gov/divisions/state-fire-training/cfstes-professional-certification/:

- Activity 5-1: Maximum Occupant Load
- Course plan
- Website

Student Resources

To participate in this course, students need:

- California Fire Code
  (International Code Council, current edition)

Reference manual options:

- *Fire Inspection and Code Enforcement*
  (IFSTA, 8th edition, ISBN: 9780879396053)

  Or

- *Fire Inspector: Principles and Practice*
  (International Association of Fire Chiefs, Revised Enhanced 1st edition, ISBN: 9780763798574)

Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic, a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, resources, evaluation methods, and participation requirements in the course syllabus.

Enabling Learning Objectives

1. Identify facility requirements
    - Restroom locations
    - Food locations
    - Smoking locations
    - Emergency procedures
2. Identify classroom requirements
    - Start and end times
    - Breaks
    - Electronic device policies
    - Special needs and accommodations
    - Other requirements as applicable
3. Review course syllabus
    - Course objectives
    - Calendar of events
    - Course requirements
    - Student evaluation process
    - Assignments
    - Activities
    - Required student resources
    - Class participation requirements

Discussion Questions

1. What is a formative test? What is a summative test?

Activities

1. To be determined by the instructor.

Topic 1-2: Fire Marshal Certification Process

Terminal Learning Objective

At the end of this topic, a student will be able to identify different levels in the Fire Marshal certification track, the courses and requirements for Fire Inspector 2 certification, and be able to describe the capstone task book and testing process.

Enabling Learning Objectives

1. Identify the different levels of certification in the Fire Inspctor certification track
    - Fire Inspector 1

- Fire Inspector 2

2. Identify the other Fire Prevention certification tracks
   - Plans Examiner
   - Fire Marshal
3. Identify the courses required for Fire Inspector 2
   - Fire Inspector 2A: Fire Prevention Administration
   - Fire Inspector 2B: Fire and Life Safety Requirements
   - Fire Inspector 2C: Fire and Life Safety Systems and Equipment Inspections
   - Fire Inspector 2D: Hazardous Materials, Operations, and Processes
4. Identify any other requirements for Fire Inspector 2
5. Describe the capstone task book process
   - Complete all prerequisites and course work
   - Submit application and fees to request capstone task book
     - Must be employed by a California Fire Agency as a Fire Inspector
   - Complete all job performance requirements included in the task book
   - Must have identified evaluator verify individual task completion via signature
   - Must have Fire Chief or authorized representative verify task book completion via signature
6. Describe the capstone testing process
   - Complete coursework
   - Schedule online capstone test
   - Schedule skills evaluation test

Discussion Questions

1. How many levels are there in the Fire Marshal certification track? What are they?

Activities

1. To be determined by the instructor.

Unit 2: Occupancy Classification

Topic 2-1: Classifying the Occupancy of a Building

Terminal Learning Objective

At the end of this topic, the student, given a set of plans, specifications, and a description of a building, will be able to classify the occupancy of a building in accordance with applicable codes and standards and jurisdictional policies.

Enabling Learning Objectives

1. Describe types of plan views and system plans
   - Site plan
   - Floor plan
   - Elevation
   - Sectional
   - Detailed

- System plan

2. Describe the systematic plan review process
   - Building size
   - Occupancy classification
   - Occupant load
   - Means of egress
   - Exit capacity
   - Building compartmentation
3. Describe how to identify an occupancy classification from a set of plans
4. Identify applicable codes, standards, and regulations
5. Discuss how operational features may impact occupancy classification
6. Identify fire hazards presented by various occupancies
7. Read plans to determine occupancy classification

Discussion Questions

1. What are the different types of plan views?
2. What types of operational features may change an occupancy classification?

Activities

1. Using a set of plans, identify each plan view and its purpose.
2. Using a set of plans, identify the occupancy classification and means of egress for a building.

CTS Guide Reference: CTS 4-1

Topic 2-2: Classifying Occupancy in a Mixed-Use Building

Terminal Learning Objective

At the end of this topic, a student, given a description of a building's uses, will be able to identify the occupancy classification of a mixed-use building in accordance with applicable codes and standards.

Enabling Learning Objectives

1. Describe the occupancy classification, applicable codes and standards, operational features, and fire hazards presented by various occupancies
2. Interpret code requirements and recognize building uses that fall into each occupancy classification

Discussion Questions

1. How would you determine the occupancy classifications within a mixed-use building?

Activities

1. Using a set of plans for a mixed-use building, identify the different occupancy classifications.

CTS Guide Reference: CTS 3-2

Unit 3: Egress Elements

Topic 3-1: Verifying Means of Egress Elements

Terminal Learning Objective

At the end of this topic, a student, given a floor plan of a building or portion of a building, will be able to verify the provision of means of egress elements; identify and check elements against applicable codes and standards; and identify, document, and report deficiencies in accordance with applicable codes and standards and jurisdictional policies.

Enabling Learning Objectives

1. Identify applicable codes and standards adopted by the jurisdiction
2. Describe the standard symbols used in plans to denote means of egress
3. Discuss field verification practices used to confirm appropriate egress elements
4. Research codes and standards to verify means of egress elements

Discussion Questions

1. What are some of the standard symbols used in plans to denote means of egress?
2. During a field inspection, how should appropriate egress elements be verified?

Activities

1. Using a floor plan of a building or portion of a building, identify means of egress elements, check to ensure compliance with applicable codes and standards, and document any egress deficiencies noted.

CTS Guide Reference: CTS 4-5

Topic 3-2: Analyzing Egress Elements

Terminal Learning Objective

At the end of this topic, a student, given observations made during a field inspection, will be able to analyze the egress elements of a building or portion of a building to verify the provision and location of egress elements in accordance with applicable codes and standards and identify, document, and report deficiencies in accordance with jurisdictional policies.

Enabling Learning Objectives

1. Describe acceptable means of egress devices
2. Calculate egress requirements
3. Make decisions related to the adequacy of egress

Discussion Questions

1. What does California Fire Code identify as acceptable means of egress devices?

Activities

1. Using observations made during a field inspection, analyze the provision and location of egress elements and document deficiencies as necessary.

CTS Guide Reference: CTS 3-5

Topic 3-3: Proposing Correction for Egress Deficiencies

Terminal Learning Objective

At the end of this topic, a student, given a list of means of egress deficiencies in a building and the proposed correction, will be able to evaluate each deficiency and its proposed correction for compliance with applicable codes and standards, and identify, document, and report deficiencies in accordance with jurisdictional policies.

Enabling Learning Objectives

1. Identify applicable codes and standards adopted by the jurisdiction
2. Describe impact of occupancy requirements on egress deficiencies
3. Describe means of egress requirements for a building or portion of a building
4. Read and analyze plans and performance-based reports
5. Interpret codes and standards related to egress deficiencies and make decisions regarding correction

Discussion Questions

1. What are some common egress violations?

Activities

1. To be determined by the instructor.

CTS Guide Reference: CTS 3-14

Unit 4: Emergency Plans and Procedures

Topic 4-1: Recommending Criteria for Developing Emergency Plans and Procedures

Terminal Learning Objective

At the end of this topic, a student, given a description of a building and its use, will be able to recommend criteria for developing emergency planning and procedures in accordance with applicable codes and standards and jurisdictional policies.

Enabling Learning Objectives

1. Identify applicable codes and standards adopted by the jurisdiction
2. Identify occupancies that require emergency evacuation plans
3. Discuss the purpose, use, and applicability of evacuation plans
4. Identify information sources and recommend criteria for emergency evacuation plans
    - California Fire Code
    - CCR Title 19
    - NFPA 101
    - Joint Commission on Accreditation of Hospitals (hospitals only)
5. Describe human behavior during fires and other emergencies
6. Read emergency plans and reports
7. Evaluate emergency planning and procedures, including:
    - Emergency shutdown systems
    - Lock-down procedures

- Other egress procedures

8. Recognize problems with emergency plans and procedures

Discussion Questions

1. What is the role of an AHJ in the development of an evacuation plan?
2. What are some acceptable locations for an evacuation area?

Activities

1. Evaluate a sample evacuation plan.

CTS Guide Reference: CTS 3-18

Topic 4-2: Evaluating Emergency Planning and Preparedness Procedures

Terminal Learning Objective

At the end of this topic, a student, given existing or proposed plans and procedures and applicable codes and standards, will be able to evaluate emergency planning and preparedness procedures to determine compliance.

Enabling Learning Objectives

1. Describe the occupancy requirements for emergency evacuation plans
2. Describe fire safety programs for crowd control
3. Identify the roles of agencies and individuals in implementation and development of emergency plans
4. Describe how to evaluate emergency planning and preparedness procedures to determine applicability to the facility
5. Compare submitted plans and procedures with applicable codes and standards adopted by the jurisdiction

Discussion Questions

1. What types of occupancy require an emergency evacuation plan?
2. What type of occupancy would "shelter in place" be applicable?

Activities

1. To be determined by the instructor.

CTS Guide Reference: CTS 3-7

Unit 5: Occupant Loads

Topic 5-1: Computing Maximum Allowable Occupancy Loads

Terminal Learning Objective

At the end of this topic, a student, given a floor plan of a building or portion of a building, will be able to compute the maximum allowable occupant load of a building or portion of the building in accordance with applicable codes and standards and jurisdictional policies.

Enabling Learning Objectives

1. Describe how to calculate occupant loads for an occupancy and building use
2. Identify codes, requirements, and regulations
3. Discuss how operational features such as fixed seating impact occupant load
4. Identify fire hazards presented by various occupancies

5. Calculate accurate occupant loads
6. Identify occupancy factors related to various occupancy classifications
7. Use measuring tools, including a calculator, to compute maximum allowable occupancy loads

Discussion Questions

1. How does fixed seating impact occupant load?
2. What are the different types of fire hazards presented by various occupancies?

Activities

1. Activity 5-1: Maximum Occupant Load

CTS Guide Reference: CTS 4-2

Topic 5-2: Computing the Maximum Occupant Load of a Multi-Use Building

Terminal Learning Objective

At the end of this topic, a student, given field observations or a description of a building's uses, will be able to compute the maximum allowable occupant load of a multi-use building in accordance with applicable codes and standards.

Enabling Learning Objectives

1. Describe how to calculate occupant loads for an occupancy and for building use
2. Describe code requirements, regulations, operational features, and fire hazards presented by various occupancies
3. Calculate occupant loads
4. Identify occupancy factors related to various occupancy classifications
5. Use measuring tools, including a calculator, to compute the maximum allowable occupant load of a multi-use building

Discussion Questions

1. When computing occupant load, what types of information need to be considered?
2. Can you allow the number of occupants to exceed the maximum occupant load?

Activities

1. Using a set of plans for a multi-use building, compute the maximum allowable occupant load.

CTS Guide Reference: CTS 3-1

Topic 5-3: Assessing Alternative Methods to Adjust Occupant Loads

Terminal Learning Objective

At the end of this topic, a student, given a description of an area, building, or portion of a building and its intended use, will be able to assess alternative methods to adjust occupant loads to keep the occupant load in accordance with applicable codes and standards.

Enabling Learning Objectives

1. Identify applicable codes and standards adopted by the jurisdiction
2. Discuss occupancy requirements for adjusting occupant loads
3. Describe impact of egress requirements on alternative methods to adjust occupant loads

4. Describe how to evaluate evacuation plan procedures related to adjusted occupant loads
5. Read plans and reports, interpret codes and standards, and make decisions related to adjusting occupant loads
6. Analyze performance-based reports

Discussion Questions

1. List alternative methods that can be used to allow for the adjustment of an occupant load.
2. How do evacuation plans impact occupant load?

Activities

1. Using a description of an area, building, or portion of a building and its intended use, evaluate occupant load and recommend alternative methods to adjust occupant load.

CTS Guide Reference: CTS 3-13

Unit 6: Building Construction

Topic 6-1: Verifying Building Construction and Construction Type

Terminal Learning Objective

At the end of this topic, a student, given an approved set of plans, specifications, and construction features, will be able to evaluate a building's area, height, occupancy classification, and construction type to verify the building is in accordance with approved plans and applicable codes and standards.

Enabling Learning Objectives

1. Describe how to evaluate a building's area, height, and occupancy classification
2. Describe building construction with an emphasis on fire-rated construction
3. Identify approved construction methods and materials related to fire safety
4. Describe the concept of performance-based versus prescriptive design, including:
   - Materials testing
   - Technical analysis
   - Human-factor studies
   - Fire protection engineering principles
5. Describe how to evaluate and analyze construction methods and assemblies for fire rating using test results and manufacturer specifications, including:
   - Design/listing criteria, such as:
     - ASTM E119
     - ASTM E84
     - UL 5555
     - SFM 12-7A-2
6. Identify characteristics of each type of building construction and occupancy classification

Discussion Questions

1. What is performance-based design?
2. What are the construction characteristics of a Type II building?

3. What types of materials would be used in the construction of a Type I building?

Activities

1. To be determined by the instructor.

CTS Guide Reference: CTS 3-3 and 4-6

Topic 6-2: Evaluating Construction Type of an Addition or Remodel

Terminal Learning Objective

At the end of this topic, a student, given a description of a building and its use, will be able to evaluate the construction type required for an addition or remodeling project based on applicable codes and standards, and identify, document, and report deficiencies in accordance with jurisdictional policies.

Enabling Learning Objectives

1. Identify policies, procedures, and applicable codes and standards adopted by the jurisdiction
2. Describe the impact of occupancy requirements on construction type
3. Describe construction methods
4. Describe building construction features required in a wildland urban interface environment, including:
   - Ignition-resistant construction
   - Roofing
   - Vents
   - Exterior coverings
   - Exterior doors and windows
   - Decking
   - Ancillary structures
5. Recognize problems with the construction type of an addition or remodel project
6. Read reports and plans as necessary to evaluate construction type
7. Describe the procedures for resolving deficiencies, including:
   - Identifying deficiencies
   - Referencing applicable codes and standards
   - Documenting deficiencies
   - Reporting a summary of deficiencies
   - Verifying corrective actions
   - Identifying alternate methods and materials for compliance

Discussion Questions

1. Why do structures in the wildland urban interface environment require different construction features?
2. How do you resolve deficiences identified in plan review?

Activities

1. Given pictures of structures in a wildland urban interface, identify compliant and non-compliant construction features.

CTS Guide Reference: CTS 3-15

Unit 7: Fire Growth Potential

Topic 7-1: Determining Fire Growth Potential

Terminal Learning Objective

At the end of this topic, a student, given field observations or plans, will be able to determine fire growth potential in a building or space by evaluating the contents, interior finishes and construction elements for compliance, and to identify, document, and correct deficiencies in accordance with applicable codes and standards and jurisdictional policies.

Enabling Learning Objectives

1. Describe flame spread and smoke development ratings of:
   - Contents
   - Interior finishes
   - Building construction elements
   - Decorations
   - Decorative materials
   - Furnishings
2. Describe factors related to fire growth potential:
   - Heat content of the materials involved
   - Exposed surface area
   - Material height and array
   - Continuity of combustible materials within a space
   - Ceiling height
   - Ventilation or openness of the space
3. Describe factors related to the fire growth potential of high piled combustible storage
4. Describe how to determine compliance of and communicate deficiencies in building contents, interior finish, and construction elements
5. Describe how to identify, document, verify, and report or resolve deficiencies
6. Discuss safe housekeeping practices
7. Interpret codes and standards
8. Recognize hazardous conditions and make decisions regarding corrections

Discussion Questions

1. What are some factors that help determine fuel load?
2. What impact would open windows have on a fire?
3. How does ceiling height/shape impact fire growth?
4. What is high piled combustible storage?

Activities

1. Given a set of NIST (National Institute of Standards and Technology) fire reports, discuss different factors that impact fires.

CTS Guide Reference: CTS 3-10

Time Table

Segment	Lecture Time	Activity Time	Total Unit Time
Unit 1: Introduction			
Topic 1-1: Orientation and Administration			
Lecture	00:30		
Activity 1-1: To be determined by instructor		00:00	
Topic 1-2: Fire Marshal Certification Process			
Lecture	00:30		
Activity 1-2: To be determined by instructor		00:00	
Unit 1 Totals	**1:00**	**00:00**	**1:00**
Unit 2: Occupancy Classification			
Topic 2-1: Classifying the Occupancy of a Building			
Lecture	2:00		
Activity 2-1: See suggested activities		00:30	
Topic 2-2: Classifying Occupancy in a Mixed-Use Building			
Lecture	00:30		
Activity 2-2: See suggested activity		00:30	
Unit 2 Totals	**2:30**	**1:00**	**4:00**
Unit 3: Egress Elements			
Topic 3-1: Verifying Means of Egress Elements			
Lecture	1:00		
Activity 3-1: See suggested activity		00:30	
Topic 3-2: Analyzing Egress Elements			
Lecture	00:30		
Activity 3-2: See suggested activity		00:30	
Topic 3-3: Proposing Correction for Egress Deficiencies			
Lecture	1:00		
Activity 3-3: To be determined by instructor		00:00	
Unit 3 Totals	**2:30**	**1:00**	**3:30**
Unit 4: Emergency Plans and Procedures			
Topic 4-1: Recommending Criteria for Developing Emergency Plans and Procedures			
Lecture	2:00		

Segment	Lecture Time	Activity Time	Total Unit Time
Activity 4-1: See suggested activity		00:30	
Topic 4-2: Evaluating Emergency Planning and Preparedness Procedures			
Lecture	1:00		
Activity 4-2: To be determined by instructor		00:00	
Unit 4 Totals	**3:00**	**00:30**	**3:30**
Unit 5: Occupant Loads			
Topic 5-1: Computing Maximum Allowable Occupancy Loads			
Lecture	1:30		
Activity 5-1: Maximum Occupant Load		00:30	
Topic 5-2: Computing the Maximum Occupant Load of a Multi-Use Building			
Lecture	00:30		
Activity 5-2: See suggested activity		00:30	
Topic 5-3: Assessing Alternative Methods to Adjust Occupant Loads			
Lecture	1:00		
Activity 5-3: See suggested activity		00:30	
Unit 3 Totals	**3:00**	**1:30**	**4:30**
Unit 6: Building Construction			
Topic 6-1: Verifying Building Construction and Construction Type			
Lecture	1:30		
Activity 6-1: To be determined by instructor		00:00	
Topic 6-2: Evaluating Construction Type of an Addition or Remodel			
Lecture	1:00		
Activity 6-2: See suggested activity		00:30	
Unit 6 Totals	**2:00**	**00:30**	**2:30**
Unit 7: Fire Growth Potential			
Topic 7-1: Determining Fire Growth Potential			
Lecture	2:30		
Activity 7-1: See suggested activity		1:00	
Unit 7 Totals	**2:30**	**1:00**	**3:30**
Lecture, Activity, and Unit Totals:	**16:30**	**5:30**	**22:00**

Course Totals

Segment Type	Time
Total Lecture Time (LT)	16:30
Total Activity Time (AT)	5:30
Total Testing Time (TT)	2:00
Total Course Time	**24:00**