



COURSE SYLLABUS

Course: Fire Inspector 1D: Fireworks and Explosives CFSTES
Hours: 16:00 (14:00 = instruction / 2:00 = testing)
Designed For: The entry-level inspector
Description: Upon completion of this course the student will have an introductory knowledge of the laws and regulations related to fireworks and explosives; fireworks classifications, licenses and permits, and seizure; retail sales of safe and sane fireworks; proximate fireworks and special effects; public fireworks displays; model rockets; and the required licenses and permits for explosive devices.
Prerequisites: Fire Inspector 1A: Fire Inspector Fundamentals
Passing Criteria: 80%
Certification: Fire Inspector I
Class Size: 30
Restrictions: None

REQUIRED STUDENT MATERIALS	EDITION	PUBLISHER
<ul style="list-style-type: none"> California Code of Regulations (CCR) Title 19 	current	Online: www.oal.ca.gov/publications.htm Print: Barclays (www.west.thompson.com)
<ul style="list-style-type: none"> <i>Laws and Regulations for Transportation, Use and Storage of Fireworks in California</i> 	current	Office of the State Fire Marshal
REQUIRED INSTRUCTOR MATERIALS	EDITION	PUBLISHER
<ul style="list-style-type: none"> California Code of Regulations (CCR) Title 19 	current	Online: www.oal.ca.gov/publications.htm Print: Barclays (www.west.thompson.com)
<ul style="list-style-type: none"> <i>Laws and Regulations for Transportation, Use and Storage of Fireworks in California</i> 	current	Office of the State Fire Marshal
<ul style="list-style-type: none"> NFPA 1123 	current	National Fire Protection Association (NFPA)
<ul style="list-style-type: none"> NFPA 1126 	current	National Fire Protection Association (NFPA)
<ul style="list-style-type: none"> Physical examples of different fireworks and explosives (by video or live demonstration) 		

FIRE INSPECTOR 1D: FIREWORKS AND EXPLOSIVES COURSE SYLLABUS

Course Objectives: to provide the student with...

- An introduction to laws and regulations related to fireworks and explosives
- An introduction to fireworks classifications, licenses and permits and seizure
- An introduction to retail sales of safe and sane fireworks, proximate fireworks and special effects, public fireworks displays and model rockets
- An introduction to explosives and their required licenses and permits

Course Content..... 16:00

Unit 1: Introduction

Topic 1: Orientation and Administration0:30

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to

Enabling Learning Objectives (ELO):

- Identify the requirements of the facility that is hosting the program
- Will complete all required paperwork for State Fire Training and the organization that is hosting the class.

Discussion Questions

- To be determined by instructor

Activities

- Complete State Fire Paperwork and Organizational paperwork

Evaluation: Formative Test, Summative Test

Unit 2: Laws and Regulations (CTS: 4-1)

Topic 1: Laws and Regulations 1:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe California Health and Safety Code and California Fire Code and identify other California codes and regulations as they pertain to fireworks and explosives, and describe the federal Department of Transportation's responsibility for transporting fireworks and explosives.

Enabling Learning Objectives (ELO):

1. Describe California Health and Safety Code sections 12552 and 12553
2. Describe CFC chapter 33
 - Note reference to CCR Title 19
3. Identify regulations pertaining to fireworks, including:
 - CCR, Title 19, chapter 6
4. Identify regulations pertaining to explosives, including:
 - CCR, Title 19, chapter 10
5. Describe the U.S. Department of Transportation's (CFR Title 49) responsibility for regulating the transportation of fireworks and explosives

Discussion Questions

1. Which chapter of CCR Title 19 deals with explosives?
2. Which chapter of CCR Title 19 deals with fireworks?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Unit 3: Fireworks (CTS: 4-1)

Topic 1: Classifications 0:30

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to identify various classifications of fireworks.

Enabling Learning Objectives (ELO):

1. Identify various classifications of fireworks, including:
 - Dangerous
 - Safe and sane
 - Agriculture and wildlife
 - Model rocket motor
 - Emergency signaling devices
 - Exempt
 - Party popper
 - Snap caps and snappers
 - High power rocket motors

Discussion Questions

1. What are considered safe and sane fireworks?
2. Are safe and sane fireworks approved for use statewide?
3. When might someone use an agriculture/wildlife firework?

Activities

1. Activity 3-1: Fireworks Classifications

Evaluation: Formative Test, Summative Test

Topic 2: Licenses and Permits 2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe licenses required for fireworks, jurisdictional authority for safe and sane fireworks, permit application requirements, how to verify deficiencies, and be able to identify the State Fire Marshal seal of registration.

Enabling Learning Objectives (ELO):

1. Describe the eight types of licenses required for fireworks (CCR, Title 19, section 981.5)

2. Identify the State Fire Marshal seal of registration
 - California State Fire Marshal has approved seals (see CCR, Title 19)
 - Each seal includes
 - Fireworks classification (at the top)
 - Manufacturer (at the bottom)
3. Describe jurisdictional authority for safe and sane fireworks
 - Permitted by State Fire Marshal
 - Can be regulated or prohibited by local authority ordinance
4. Identify permit types for:
 - Public display
 - Model rockets
 - Special effects
 - Retail sales
5. Describe local permit application requirements for public display and special effects, including:
 - Display date and time
 - Shell size and quantity
 - Fallout area diagram
 - Worker's compensation insurance
 - Liability insurance
 - State Fire Marshal's license
 - Name of company providing product
 - Identifications of all assistants
 - Shipping and U.S. Department of Transportation permit verification
6. Describe how to verify deficiencies, including:
 - Observation and documentation
 - Reporting
 - Resolving or referring

Discussion Questions

1. When can someone use safe and sane fireworks?
2. Who can operate a public display of fireworks?
3. What is considered close proximity?
4. Can you discharge fireworks inside a building?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Topic 3: Retail Sale of Safe and Sane Fireworks 1:30

Terminal Learning Objective (TLO): At the end of this topic, the student will be able carry out a required safety inspection of a safe and sane fireworks retail stand.

Enabling Learning Objectives (ELO):

1. Describe the required safety inspection of fireworks stands, including:
 - Requirements contained in CCR, Title 19
 - Associated permits
 - Electrical permit
 - State Fire Marshal retail sales permit
 - AHJ permit
 - Electrical power sources
 - Verification of age of sellers
 - Prohibition of alcohol and narcotics
 - No smoking
 - Booth construction type and location
 - Onsite fire extinguishers
 - Exiting
2. Describe storage requirements for retail fireworks stands, including:
 - CFR, Title 49, part 173, subpart C

- CCR, Title 13, chapter 6, article 3

Discussion Questions

1. When (dates and times) can someone sell safe and sane fireworks in California?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Topic 4: Proximate Fireworks/Special Effects3:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe proximate fireworks and special effects and the physical hazards, storage requirements, licensing, and requirements related to proximate fireworks/special effects displays.

Enabling Learning Objectives (ELO):

1. Describe proximate fireworks and special effects
 - A situation where the audience is within 70 feet of the device (based on NFPA 1123)
 - This topic does not include buildings and facilities used for motion picture, television and commercial production
2. Describe the requirements for special effects displays, including:
 - Operator permits and licensing
 - Orientation meeting on the design and shooting of the event
 - Mixing
3. Describe physical hazards, including:
 - Fire
 - Explosion
 - Smoke
 - Bright light
4. Describe storage requirements, including:
 - Magazines
 - Ready boxes
5. Describe licensing, including:
 - Special effects first class
 - Theatrical
6. Describe types of devices, including:
 - Airbursts
 - Binary material
 - Comets
 - Concussion effects
 - Flame bars
 - Flash powder/flash pot
 - Gerbs/foundations
 - Lance
 - Line rockets
 - Mines
 - Saxons
 - Waterfalls
 - Wheels
7. Describe general requirements, including:
 - Separate the audience from the firing device by a minimum of 15 feet or twice the fallout radius of the device, whichever is greater (NFPA 1126, section 8.4.1)
 - Do not propel projectiles or debris that damage overhead properties, equipments, ceilings or walls of the performance site (NFPA 1126, section 8.6.2)
 - Glowing or flaming decries cannot be within 10 feet of the audience (NFPA 1126, section 8.4.3)
 - Provide shielding when pyrotechnics are placed on or come in contact with a performer's body (NFPA 1126, section 8.2.2.3.1)
 - Only fire pyrotechnics when the shooting site is in clear view of the pyrotechnic operator or an assistant in direct communication with the operator (NFPA 1126, section 8.3.5.1)

- Do not secure pyrotechnics (NFPA 1126, section 8.5.6)
 - Have readily accessible fire extinguishers while loading, preparing for firing, or firing pyrotechnics (NFPA 1126, section 8.1.1)
 - Place an extinguisher on each opposing side of the pyrotechnic performance location (NFPA 1126, section 8.1.1.2)
 - Design pyrotechnic devices' placement and wiring to minimize the possibility of damage by performers and personnel (NFPA 1126, section 8.6.4)
 - Provide separate, lockable rooms or facilities in which to prepare pyrotechnic materials (NFPA 1126, section 8.1.3)
 - Pyrotechnic devices and materials used indoors must be specifically manufactured and marked for indoor use by the manufacturer (NFPA 1126, section 8.2.1.2)
 - Pyrotechnics intended for indoor use can be used outdoors (NFPA 1126, Appendix section A.7.1(4))
 - Provide a fire watch at all times when fixed fire detection systems are intentionally taken out of operation (NFPA 1126, Appendix section A.8.1.6(3))
8. Describe specific requirements for various types of pyrotechnics, including:
- Fallout spheres
 - Distance from audience and other structures
 - Distance from overhead objects such as curtains, beams, etc.
 - Items projecting into the space of the sphere
 - Musicians, actors, or other participants within the sphere while device is fired

Discussion Questions

1. What are the greatest concerns related to special effects shoots?
2. When should local authorities prohibit a special effects shoot?
3. What is the role of a fire safety officer at a special effects shoot?
4. What training is available to qualify an inspector to properly oversee a special effects event?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Topic 5: Public Display3:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe the requirements for public display permits as well as firing methods, mortars and aerial shells, site location requirements, safety tools and equipment, personal protective equipment, post display procedures and storage requirements for public fireworks displays.

Enabling Learning Objectives (ELO):

1. Describe the requirements for public display permits, including:
 - Licensed operator
 - Insurance
 - Local permit
2. Identify firing methods, including:
 - Electronic
 - Hand fired
3. Describe mortars and aerial shells, including:
 - Metal
 - Cardboard
 - Plastic
 - Well secured to prevent movement
 - Angled if necessary to permit proper trajectory and landing
 - Undamaged and in good condition
 - Properly sized for launch tube
 - Properly and completely loaded
4. Describe site location requirements, including:
 - Land vs. bodies of water (floating platforms, barges, etc.)
 - Map to plan location

- Not in close proximity to building, public, or a wildland urban interface environment (NFPA 1123)
 - Confirm wind and other environmental factors will not impact shoot
5. Describe safety tools and equipment, including:
 - Water fire extinguisher
 - Bucket to soak duds
 - Flashlight(s)
 6. Describe personal protective equipment, including:
 - Proper training and supervision
 - Helmet
 - Goggles
 - Gloves
 - Long sleeve flame-retardant jacket
 - Fire resistive long pants
 - Closed-toe boots or shoes
 7. Describe post display procedures (Title 19, section 1005), including:
 - Reports
 - Notifications
 - Unfired shells
 8. Describe storage requirements, including:
 - Vehicle/overnight storage
 - Day box or ready box during a reload shoot

Discussion Questions

1. What is considered an aerial display?
2. Where would you find the shell size as related to the mortar? (CCR, title 19, section 999)

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Topic 6: Model Rockets.....0:30

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe the physical hazards and requirements related to model rockets.

Enabling Learning Objectives (ELO):

1. Describe requirements for model rockets, including:
 - Storage and sales
 - Classifications and labeling
 - Standards and use
 - Site considerations
 - Minimum age
 - Operator requirements
 - Permit requirements
2. Describe physical hazards, including:
 - Potential for fire or explosion
 - Potential for trajectory injury
 - Proximity to structures and wildland urban interface environments

Discussion Questions

1. Which permits and licenses does the code require to shoot a model rocket?
2. Which classifications and labels does the code require for model rockets? (CCR, title 19 article 17)

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Topic 7: Seizure0:30

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to seize and dispose of fireworks.

Enabling Learning Objectives (ELO):

1. Describe procedures for seizing fireworks
 - As prescribed by local authority
 - Regulated under California laws and regulations
2. Describe procedures for disposing of fireworks

Discussion Questions

1. Who could enforce seizure operations within your jurisdiction?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Unit 4: Explosives (CTS: 4-1)

Topic 1: Administration..... 1:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to identify the fire department's role, hazards, classifications, storage requirements, and AHJ notification requirements as they related to explosives, as well as, ammunition and primers, smokeless powder and black sporting powder, and construction of a class I and class II magazine.

Enabling Learning Objectives (ELO):

1. Identify the fire department's role in regulating explosives, including:
 - Secondary to the sheriff's department in most jurisdictions
 - Some interaction with police department and sheriff department
2. Identify the hazards of explosives
3. Identify the classifications for explosives
4. Identify storage requirements for explosives
5. Identify AHJ notification requirements for explosives
6. Identify small arms ammunition and primers
7. Identify smokeless powder and black sporting powder
8. Identify construction of a class I and class II magazine

Discussion Questions

1. When does the code require a class I magazine for storage?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Topic 2: Licenses and Permits 0:30

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe general types of regulated explosives, required permits, and display and storage requirements for explosives.

Enabling Learning Objectives (ELO):

1. Describe the general types of regulated explosives, including:
 - Black powder
 - Smokeless powder
 - Dynamite
2. Describe the types of permits required for explosives, including those listed in:
 - California Fire Code
 - CCR, Title 19
3. Describe display and storage requirements for:
 - Smokeless powder
 - Black sporting powder

Discussion Questions

1. Where would you find permitting requirements for explosives? (CCR, Title 19, section 1565.1)
2. What does the code require regarding smokeless powder and black sporting powder retail displays? (CCR, Title 19, section 1574.6)

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Activity 3-1: Fireworks Classifications

Match each type of fireworks with the appropriate fireworks classification.

Fireworks Classifications

- Dangerous
- Safe and sane
- Agricultural/Wildlife
- Model rocket motor
- Emergency signaling device
- Exempt
- Party popper / Snap cap
- High power rocket motor

Type of Fireworks

Fireworks Classification

1. "Brick" of firecrackers	_____
2. Railroad fuse	_____
3. "Piccolo Pete" fountain	_____
4. Fourth of July sparkler	_____
5. Small cylindrical party favor with a pull cord	_____
6. Maritime signaling flare	_____
7. Type K rocket motor (2500 N-s force)	_____
8. "Bomb" used to frighten cows	_____
9. Small, paper-wrapped impact device	_____
10. Size 1/2A rocket motor	_____

Activity 3-1: Fireworks Classifications

Answer Key

Bill still needs to provide.

DRAFT