



Confined-Space Rescue Awareness

Course Plan

Course Details

Description: This course provides awareness-level instruction in identifying a permit and nonpermit required confined space, the hazards associated with confined spaces, state regulations and industry standards, incident management, communications, and equipment requirements. This course does not qualify participants to make permit-required entries.

Designed For: Emergency responders

Authority: Cal-OSHA CCR Title 8 Article 108 § 5157

NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017)

NFPA 1670 Standard on Operations and Training for Technical Search and Rescue Incidents (2017)

Prerequisites: None

Corequisites: None

Standard: Complete all activities and formative tests.

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

Hours: Lecture: 6:05

Activities: 1:55

Hours (Total): 8:00

Maximum Class Size: 60

Instructor Level: Trained to the confined-space operations or technician level

Instructor/Student Ratio: 1:60

Restrictions: None

SFT Designation: FSTEP

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Required Resources

Instructor Resources

To teach this course, instructors need:

- Cal-OSHA CCR Title 8 Article 108 § 5157
- NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017)
- NFPA 1670 Standard on Operations and Training for Technical Search and Rescue Incidents (2017)
- Worker Deaths in Confined Spaces: A Summary of NIOSH Surveillance and Investigative Findings, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institute for Occupational Safety and Health, 1994.
- The Confined Space Guide, California Department of Industrial Relations, 2012.
- Department of Transportation Emergency Response Guidebook (DOT ERG)
- Policies and procedures of the authority having jurisdiction

To teach this course, instructors may choose to use:

- Confined Space Entry and Rescue Manual, 2013, CMC Rescue, Inc.
- Training for Hazardous Materials Response: Confined Space Rescue (IAFF)
- Manufacturers' videos, manuals, and directions for equipment use

Online Instructor Resources

The following instructor resources are available online at

<http://osfm.fire.ca.gov/training/resources>:

- Cal-OSHA CCR Title 8 Article 108 § 5157
- NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017)
- NFPA 1670 Standard on Operations and Training for Technical Search and Rescue Incidents (2017)
- Worker Deaths in Confined Spaces: A Summary of NIOSH Surveillance and Investigative Findings, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institute for Occupational Safety and Health, 1994. (PDF available at: <https://www.cdc.gov/niosh/docs/94-103/pdfs/94-103.pdf>)

Student Resources

To participate in this course, students need:

- Any textbook(s) required by the instructor

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Facilities, Equipment, and Personnel

The following facilities, equipment, or personnel are required to deliver this course:

Equipment

- AV equipment

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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. To be determined by the instructor

Activities

1. To be determined by the instructor

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Unit 2: Overview of Confined Spaces

Topic 2-1: Identifying Regulations and Standards

Terminal Learning Objective

At the end of this topic, given applicable regulations and standards, a student will be able to identify the regulations and industry standards relating to confined-space incidents.

Enabling Learning Objectives

1. Describe the difference between a regulation or law and a standard
 - Titles
 - Codes
 - Regulations
 - Laws
 - Acts
 - Guidelines
 - Standards
2. Identify the applicable industry regulations
3. Identify the applicable industry standards

Discussion Questions

1. Which are mandatory, laws or standards? Which are recommended?

Activities

1. The instructor must create an activity directing students to differentiate between laws and standards.

Instructor Resources

1. The instructor should refer to Cal-OSHA CCR Title 8 Article 108 § 5157, NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017), and NFPA 1670 Standard on Operations and Training for Technical Search and Rescue Incidents (2017), at minimum.

Topic 2-2: Describing the History and Dangers of Confined-Space Incidents

Terminal Learning Objective

At the end of this topic, given reports and industry standards, a student will be able to describe the history behind the dangers of confined spaces and describe the industry-recognized levels of training.

Enabling Learning Objectives

1. Identify historical reports and dangers
 - Worker Deaths in Confined Spaces
 - Most deaths were “would-be rescuers”
 - Current confined-space related death statistics
2. Recognize confined space rescue training levels
 - Awareness
 - Operations (no longer offered in California)

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- Technician

Discussion Questions

1. Who was the most likely to get injured in the 1994 report?
2. What is the difference between the awareness and technician levels of training?

Activities

1. The instructor must present case studies.

Instructor Notes

1. The instructor should refer to: Worker Deaths in Confined Spaces: A Summary of NIOSH Surveillance and Investigative Findings, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institute for Occupational Safety and Health, 1994.
2. The instructor should refer to: The Confined Space Guide, California Department of Industrial Relations, 2012.

Topic 2-3: Defining and Recognizing a Confined Space

Terminal Learning Objective

At the end of this topic, a student, given Cal-OSHA CCR Title 8 Article 108 § 5157, will be able to define and recognize a confined space.

Enabling Learning Objectives

1. Recognize the space is large enough and so configured that an employee can bodily enter and perform assigned work
2. Recognize the space has limited or restricted means for entry or exit; for example:
 - Tanks
 - Vessels
 - Silos
 - Storage Bins
 - Hoppers
 - Vaults
 - Pits
3. Recognize the space is not designed for continuous employee occupancy

Discussion Questions

1. What kinds of confined spaces might you encounter in your authority having jurisdiction (AHJ)?

Activities

1. To be determined by the instructor

Instructor Notes

1. Ensure that students can recognize a confined space.

Topic 2-4: Defining and Recognizing a Permit-Required Confined Space

Terminal Learning Objective

At the end of this topic, a student, given Cal-OSHA CCR Title 8 Article 108 § 5157,

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will be able to define and recognize a permit-required confined space.

Enabling Learning Objectives

1. Recognize a confined space that contains or has a potential to contain a hazardous atmosphere
2. Recognize a confined space that contains a material that has the potential for engulfing an entrant
3. Recognize a confined space that has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section
4. Recognize a confined space that contains any other recognized serious safety or health hazard

Discussion Questions

1. What is the difference between a confined space and a permit-required confined space?
2. To be permit required, does a space need to be confined?
3. What kinds of permit-required confined spaces might you encounter in your AHJ?

Activities

1. To be determined by the instructor

Instructor Notes

1. Ensure that students can recognize a permit-required confined space.
2. Instructor should refer to Cal-OSHA CCR Title 8 Article 108 § 5157 for definitions.

Unit 3: Confined-Space Incidents

Topic 3-1: Recognizing Hazards

Terminal Learning Objective

At the end of this topic, a student, given a confined-space incident, will be able to recognize and identify all incident hazards.

Enabling Learning Objectives

1. Identify all incident hazards
2. List types and nature of confined-space hazards
 - Atmospheric hazards
 - Modified oxygen
 - Flammability/airborne combustible dust
 - Toxicity
 - Engulfment hazards
 - Finely divided solids
 - Liquids
 - Physical/mechanical hazards
 - Environmental hazards
 - Corrosive hazards
 - Biological hazards
 - Psychological hazards

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3. List types and use of technical references
 - Department of Transportation Emergency Response Guidebook (DOT ERG)
 - Safety Data Sheets (SDS)
 - Other site work permits (including site-specific entry permits)

Discussion Questions

1. What hazards might you encounter in different industries?
2. What are the different characteristics of various kinds of confined spaces found in your AHJ?
3. How can a hazard inside the confined space become a hazard in the area adjacent to a permit-required confined space?
4. What are the signs, symptoms, and behavioral effects of exposure to these atmospheric hazards?
5. How would these hazards affect you as a first responder?

Activities

1. To be determined by the instructor

Instructor Notes

1. Instructor should refer to Cal-OSHA CCR Title 8 Article 108 § 5157.
2. Instructor should refer to NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017), paragraph 7.1.2.
3. Instructor should refer to Confined Space Entry and Rescue Manual.

Topic 3-2: Isolating Hazards and Minimizing Risks

Terminal Learning Objective

At the end of this topic, a student, given scene control barriers and personal protective equipment (PPE), will be able to initiate isolation procedures, considering hazard isolation and minimizing risks to rescuers and victims.

Enabling Learning Objectives

1. Describe isolation terminology, methods, equipment, and implementation
 - Lockout/tag out
 - Energy control (gravity, electricity, mechanical, etc.)
2. Place scene control
 - Establish control zones
 - Atmospheric monitoring
 - Ventilation
3. Identify common types of rescuer and victim risk
4. Describe risk/benefit analysis methods and practices
5. Assess victim survival profile (risk/benefit)

Discussion Questions

1. What are the various isolation procedures?
2. Why is atmospheric monitoring performed?
3. Why is there a need for ventilation?

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Activities

1. Instructor must create an activity giving students visual cues and having them identify different types of isolation, monitoring, and ventilation techniques.

Instructor Notes

1. Instructor should refer to NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017), paragraph 7.1.2
2. Depending on the class participants, the instructor may choose to refer to The Rule of 1300 in Training for Hazardous Materials Response: Confined Space Rescue (IAFF).

Topic 3-3: Recognizing the Need for Support Resources and Managing Resources

Terminal Learning Objective

At the end of this topic, a student, given a specific type of rescue incident, a student will be able to recognize the need for confined space support resources, managing a resource cache, providing scene lighting for the tasks to be undertaken, managing environmental concerns, facilitating personnel rehabilitation, and so that the support operation facilitates rescue operational objectives.

Enabling Learning Objectives

1. Manage personnel rotations
2. Recognize the need for decontamination
3. Describe equipment organization and tracking methods (NIMS or ICS)
4. Track equipment inventory
5. Designate rehab areas
6. Determine rehab criteria
7. Identify structures for shelter and thermal protection
8. Identify lighting resources

Discussion Questions

1. What are some examples of additional resources for a confined-space incident?
2. Considering the number of involved resources, what would be the logistical concerns of managing the incident location?

Activities

1. To be determined by the instructor.

Instructor Notes

None

Topic 3-4: Ensuring Resource Application Fits Requirements

Terminal Learning Objective

At the end of this topic, a student, given personal protective equipment (PPE), requisite equipment, and available specialized resources, will ensure resource application fits the operational requirements and take into account rescue time constraints.

Enabling Learning Objectives

1. Define equipment types and their use

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- PPE, including chemical protective clothing
 - Respiratory protection
 - Harnesses
 - Communications equipment
 - High-point anchor
 - Retrieval systems
 - Monitoring devices
 - Ventilation
2. Identify operational requirement concerns
 - Awareness
 - Operations
 - Technician

Discussion Questions

1. What are the different types of:
 - PPE
 - Respiratory protection
 - Harnesses
 - Communications equipment
 - High-point anchor
 - Retrieval systems
 - Monitoring devices
 - Ventilation
2. To what level do personnel need to be trained in order to conduct an entry rescue?

Activities

1. To be determined by the instructor.

Instructor Notes

1. Instructor should refer to NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017), paragraph 7.1.2.

Topic 3-5: Recognizing the Need for Technical Rescue Resources

Terminal Learning Objective

At the end of this topic, a student, given incident information, a means of communication, resources, tactical worksheets, personnel accountability protocol, applicable references, and standard operating procedures, will be able to recognize the need for technical rescue resources at an incident, using references, accounting for personnel, deploying necessary resources to achieve desired objectives, documenting incident actions, coordinating rescue efforts, establishing the command structure, communicating and monitoring task assignments, and ensuring actions are consistent with applicable regulations.

Enabling Learning Objectives

1. Describe implementation of incident management system
2. Describe tactical worksheet application, completion, and purpose

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3. Describe accountability protocols of the AHJ
4. Describe documentation methods and requirements
5. Define availability, capabilities, and limitations of rescuers and other resources
6. Describe types of tasks and assignment responsibilities
7. Review policies and procedures of the AHJ
8. Identify technical references related to the type of rescue incident
9. Evaluate incident information
10. Match resource types and deployment methods to operational needs
11. Manage incident communications to meet operational needs
 - Communications requirements, methods, and means
 - Communication challenges

Discussion Questions

1. What are the entry policies of your AHJ?
2. What are some examples of tactical worksheets?
3. What are some examples of communication challenges at a confined-space incident?

Activities

1. The instructor should create an activity directing students to review a tactical worksheet.

Instructor Notes

None

Topic 3-6: Initiating Search

Terminal Learning Objective

At the end of this topic, a student, given hazard-specific PPE, equipment pertinent to search mission, a confined space incident location, and victim investigative information, will be able to initiate a search in areas immediately adjacent to the space, establishing search parameters, establishing the victim profile, questioning the entry and exit of all people either involved in the search or already within the search area and updating the information and relayed it to command, matching the personnel assignments with personnel expertise, locating all victims in the areas adjacent to the space as quickly as possible, managing applicable technical rescue concerns, minimizing risks to searchers, and accounting for all searchers.

Enabling Learning Objectives

1. Describe local policies, procedures, and regulations
2. Describe how to operate in the environment surrounding the confined space access area
3. Describe how to enter, maneuver in, and exit the areas adjacent to the confined space incident
4. Describe emergency evaluation procedures for when conditions become untenable

Discussion Questions

1. What areas can you not enter to search at an awareness level?
2. What information should be gathered as part of establishing a victim profile?

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Activities

1. The instructor must create an activity directing students to examine a visual aid and identify areas that can be searched within their level of training (awareness).

Instructor Notes

1. Ensure that for ELO #3, the student understands that they are only authorized to be in areas adjacent to the confined space, not within the confined space.

Topic 3-7: Establishing and Communicating Victim Survival Profile

Terminal Learning Objective

At the end of this topic, a student, given a clear environment and a confined space, will be able to communicate with victim(s), establishing victim communication when possible and documenting information relative to patient condition and conveying the information to incoming confined-space rescue resources.

Enabling Learning Objectives

1. Describe how to use information acquired for initial victim assessment
2. Select communication methods that are effective from the outside to the inside of a confined space
3. Identify how to establish communication with the victim
4. Describe methods for documentation and transfer of victim information

Discussion Questions

1. What forms of communication should you use to assess the victim's survival profile?
2. What information should you gather from the victim to convey to incoming resources?

Activities

1. The instructor must create an activity in which the students determine survival profile based on:
 - Visual assessment
 - Verbal communications
 - Hazard assessment conducted in Topic 3-1

Instructor Notes

1. This terminal learning objective applies to nonentry methods of victim communication only. Awareness-level personnel cannot enter a space for rescue.

Topic 3-8: Evaluating and Performing of Nonentry Rescue

Terminal Learning Objective

At the end of this topic, a student, given PPE; an anchored retrieval system attached to a victim located inside a confined space with a clear interior; safety, communication, and operational protocols; and a confined space rescue tool kit, will be able to perform nonentry rescue, operating the retrieval system to extract the victim, protecting the rescuer from fall hazards when working near unprotected edges, establishing and maintaining victim

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communication, managing the victim through the portal, and initiating patient care on extraction

Enabling Learning Objectives

1. Describe principles of operation for retrieval equipment
2. Describe the use of nonentry rescue (retrieval) systems and equipment
3. Describe PPE and methods for fall prevention
4. Describe safety, communication, medical, and operational protocols and how to implement them
5. Describe methods for assuring victim passage through the portal without obstruction

Discussion Questions

1. What are the different types of rescue? (self-rescue, nonentry rescue, and entry rescue)
2. What are some examples of a nonentry rescue?
3. What are some risks associated with a nonentry rescue?

Activities

1. The instructor must create an activity using audio-visual training aids that demonstrate nonentry retrieval systems. Retrieval includes the operation of common nonentry retrieval systems. Examples include simple winch and block devices used in conjunction with tripods, quadpods, or other manufactured portable anchor systems. A nonentry retrieval can simply involve operating the crank on a winch/ tripod system where anchors and protection systems are already in place (NFPA 1670 [2017] Standard on Operations and Training for Technical Search and Rescue Incidents, A.7.2.4[5].)

Instructor Notes

1. It is critical that the instructor ensure students understand the risks of nonentry rescue and the restrictions placed upon them by the policies and procedures of the AHJ.
2. The instructor may choose to use AV equipment for the activity or to actually have the students complete a manipulative activity. Completing a manipulative activity will require that the time allotted be adjusted and will require adjusting the instructor-to-student ratio.

Topic 3-9: Describing the Positions and Components of a Permit-Required Confined-Space Entry

Terminal Learning Objective

At the end of this topic, a student, given Cal-OSHA CCR Title 8 Article 108 § 5157, will be able to describe the mandatory positions and components of a permit-required confined-space entry.

Enabling Learning Objectives

1. Describe the duties and responsibilities of
 - Authorized entrant
 - Attendant
 - Entry supervisor
2. Describe the mandatory components of a permit-required confined space entry
 - Training

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- Equipment
- Standard operating procedures of the AHJ
- Entry permit
- Energy control
- Provision for rescuer standby
- Atmospheric monitoring
- Retrieval line
- Appropriate harness
- Mechanical device (5 feet or greater)
- Communications

Discussion Questions

1. What are the mandatory components of a confined-space entry permit?

Activities

1. The instructor must create an activity directing students to review an entry permit.

Instructor Notes

1. The instructor must review the most current version of Cal-OSHA CCR Title 8 Article 108 § 5157 and any other applicable regulations.

Topic 3-10: Terminating the Incident

Terminal Learning Objective

At the end of this topic, a student, given available tools, will be able to properly terminate the incident, including performing rehab, debriefing personnel, inventorying and inspecting equipment, and completing documentation.

Enabling Learning Objectives

1. Describe the documentation process
2. Describe debriefing personnel
 - Location and position of the victim
 - Surroundings where the victim was found
 - Specific problems encountered
 - Any additional information
3. Recognize the need to assign personnel to rehab
 - Postincident monitoring
 - Hydration
4. Identify considerations for critical incident stress debriefing for all involved personnel
5. Determine equipment considerations
 - Inventory
 - Accounting for damaged equipment
 - Cleaning, maintaining, logging, and restocking
6. Describe the process of securing the space until investigation is complete
7. Describe postincident analysis
8. Describe the process for canceling and filing/storing the entry permit

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9. Describe Cal OSHA notification requirements if death or serious injury occurred

Discussion Questions

1. Why are personnel rehab and critical incident stress debriefing important?
2. What types of documentation must be completed?
3. What are your AHJ's steps that must be taken in the event of an accident, injury, or death?
4. What are the Cal OSHA mandatory reporting requirements?

Activities

1. To be determined by the instructor

Instructor Notes

1. Instructor must review or provide examples of an after-action report.

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Time Table

Segment	Lecture Time	Activity Time	Total Unit Time
Unit 1: Introduction			
Topic 1-1: Orientation and Administration			
Lecture	0:30		
Activity 1-1: To be determined by instructor		0:00	
Unit 1 Totals	0:30	0:00	0:30
Unit 2: Overview of Confined Spaces			
Topic 2-1: Identifying Regulations and Standards			
Lecture	0:20		
Activity 2-1: Differentiating between laws and standards		0:10	
Topic 2-2: Describing the History and Dangers of Confined-Space Incidents			
Lecture	0:15		
Activity 2-2: Case studies		0:15	
Topic 2-3: Defining and Recognizing a Confined Space			
Lecture	0:15		
Activity 2-3: To be determined by instructor		0:00	
Topic 2-4: Defining and Recognizing a Permit-Required Confined Space			
Lecture	0:15		
Activity 2-4: To be determined by instructor		0:00	
Unit 2 Totals	1:05	0:25	1:30
Unit 3: Confined-Space Incidents			
Topic 3-1: Recognizing Hazards			
Lecture	0:45		
Activity 3-1: To be determined by the instructor		0:00	
Topic 3-2: Isolating Hazards and Minimizing Risks			
Lecture	0:30		

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Segment	Lecture Time	Activity Time	Total Unit Time
Activity 3-2: Identifying different types of isolation, monitoring, and ventilation techniques		0:15	
Topic 3-3: Recognizing the Need for Support Resources and Managing Resources			
Lecture	0:30		
Activity 3-3: To be determined by instructor		0:00	
Topic 3-4: Ensuring Resource Application Fits Requirements			
Lecture	0:30		
Activity 3-4: To be determined by instructor		0:00	
Topic 3-5: Recognizing the Need for Technical Rescue Resources			
Lecture	0:30		
Activity 3-5: Reviewing a tactical worksheet		0:15	
Topic 3-6: Initiating Search			
Lecture	0:15		
Activity 3-6: Identifying areas that can be searched within awareness level		0:15	
Topic 3-7: Establishing and Communicating Victim Survival Profile			
Lecture	0:15		
Activity 3-7: Determining survival profile		0:15	
Topic 3-8: Evaluating and Performing of Nonentry Rescue			
Lecture	0:30		
Activity 3-8: Demonstrating nonentry retrieval systems		0:15	
Topic 3-9: Describing the Positions and Components of a Permit-Required Confined-Space Entry			
Lecture	0:30		
Activity 3-9: Reviewing an entry permit		0:15	
Topic 3-10: Terminating the Incident			
Lecture	0:15		

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Segment	Lecture Time	Activity Time	Total Unit Time
Activity 3-10: To be determined by instructor			
Unit 3 Totals	4:30	1:30	6:00
Lecture, Activity, and Unit Totals:	6:05	1:55	8:00

Course Totals

Total Lecture Time (LT)	6:05
Total Activity Time (AT)	1:55
Total Testing Time (TT)	NA
Total Skill Exercise Time (ST)	NA
Total Course Time	8:00

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