

Course Details

Awareness

Course Plan

CTS Guide:	Confined Space Rescue Operations/Technician (2021)			
Description:	This course provides the skills and knowledge needed for the awareness- level confined space rescue technician to support an operations- or technician-level incident including sizing up an incident, identifying and isolating hazards, initiating a search in areas immediately adjacent to a confined space, communicating with victims, and performing nonentry rescue. This course does not qualify participants to make permit-required entries.			
Designed For:	Personnel preparing to pursue technical rescue certification (pending) and all emergency personnel with confined spaces within their jurisdiction			
Prerequisites:	IS-100, IS-200, IS-700, IS-800 (FEMA)*			
Standard:	Attend and participate in all course sections			
	Successful completion of all skills identified on the Training Record.			
Hours (Total):	8 hours			
	(6.5 lecture / 1.5 application)			
Maximum Class Size: 50				
Instructor Level:	SFT Registered Confined Space Rescue Awareness Instructor			

Instructor/Student Ratio: 1:50 (lecture)

Restrictions: See Equipment, Facilities, and Personnel requirements

SFT Designation: FSTEP

* Courses taught by outside agencies often change names and numbers. Students should enroll in the most current version of any course, even if the course name or number has changed.

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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 (physical or digital access to current edition)
- NFPA 1670: Standard on Operations and Training for Technical Search and Rescue Incidents (physical or digital access to current edition)
- AHJ policies and procedures

To teach this course, instructors may choose to use:

- Confined Space Entry and Rescue Manual (CMC Rescue, Inc., revised 2nd edition, ISBN: 978-0-96183-374-9)
- Manufacturer videos, manuals, and directions for equipment use

Online Instructor Resources

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

• Not applicable

Student Resources

To participate in this course, students need:

• Any textbook(s) required by the instructor

Facilities, Equipment, and Personnel

Facilities

The following facilities are required to deliver this course:

- Standard learning environment or facility, which may include:
 - Writing board or paper easel chart
 - Markers, erasers
 - Amplification devices
 - Projector and screen
 - Laptop or tablet with presentation or other viewing software
 - Internet access with appropriate broadband capabilities

Time Table

Segment	Lecture	Application	Unit Total
Unit 1: Introduction			
Topic 1-1: Orientation and Administration		0.0	
Unit 1 Totals	0.5	0.0	0.5
Unit 2: Overview			
Topic 2-1: Identifying Regulations and Standards	0.5	0.0	
Topic 2-2: Describing Lessons Learned	0.5	0.0	
Topic 2-3: Defining a Confined Space	0.25	0.0	
Topic 2-4: Defining a Permit-Required Confined	0.25	0.0	
Topic 2-5: Describing the Required Positions and Elements of an Entry Permit	0.5	0.25	
Unit 2 Totals	2.0	0.25	2.25
Unit 3: Confined Space Incidents			
Topic 3-1: Supporting an Operations- or Technician- Level Incident	0.5	0.0	
Topic 3-2: Sizing Up a Confined Space Rescue Incident	0.5	0.0	
Topic 3-3: Recognizing the Need for Technical Rescue Resources	0.5	0.25	
Topic 3-4: Identifying Hazards	0.5	0.0	
Topic 3-5: Initiating Isolation Procedures	0.5	0.25	
Topic 3-6: Initiating a Search an Areas Immediately Adjacent to a Confined Space	0.5	0.25	
Topic 3-7: Communicating with Victim(s)	0.5	0.0	
Topic 3-8: Performing Nonentry Rescue	0.5	0.5	
Unit 3 Totals	4.0	1.25	5.25
Formative Assessments			
Determined by AHJ or educational institution	0.0	0.0	0.0
Summative Assessment			
Determined by AHJ or educational institution	0.0	0.0	0.0
Course Totals	6.5	1.5	8.0

Time Table Key

- 1. The Time Table documents the amount of time required to deliver the content included in the course plan.
- Time is documented using the quarter system: 15 min. = .25 / 30 min. = .50 / 45 min. = .75 / 60 min. = 1.0.
- 3. The Course Totals do not reflect time for lunch (1 hour) or breaks (10 minutes per every 50 minutes of instruction or assessment). It is the instructor's responsibility to add this time based on the course delivery schedule.
- 4. Application (activities, skills exercises, and formative testing) time will vary depending on the number of students enrolled. The Application time documented is based on the maximum class size identified in the Course Details section.
- 5. Summative Assessments are determined and scheduled by the authority having jurisdiction. These are not the written or psychomotor State Fire Training certification exams. These are in-class assessments to evaluate student progress and calculate course grades.

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, skills exercises, 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. Determined by instructor

Application

1. Have students complete all required registration forms.

Unit 2: Overview

Topic 2-1: Identifying Regulations and Standards

Terminal Learning Objective

At the end of this topic a student, given applicable regulations and standards, will be able to identify and apply confined space regulations and standards during confined space rescue incidents and operations.

Enabling Learning Objectives

- 1. Describe the difference between a regulation or law and a standard
 - Regulation or law (requirement)
 - o Titles
 - \circ Codes
 - Regulations
 - o Laws
 - o Acts
 - Standards (guidance)
 - \circ Guidelines
 - Standards
 - \circ Policies
 - Procedures
 - Best practices
- 2. Identify applicable industry regulations
 - Federal
 - Code of Federal Regulations, Permit-Required Confined Spaces, 26 CFR 1901.146
 - State
 - California Code of Regulations, General Industry Safety Orders, Title 8, Article 108, Sections 5156, 5157, 5158
- 3. Identify applicable industry standards
 - Professional organizations
 - NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (current edition)
 - NFPA 1670: Standard on Operations and Training for Technical Search and Rescue Incidents (current edition)
 - AHJ
 - Policies and procedures

Discussion Questions

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

Application

1. Given a collection of documents, have students identify which are mandatory and which are guidance.

Instructor Resources 1. None CTS Guide Reference: None

Topic 2-2: Describing Lessons Learned

Terminal Learning Objective

At the end of this topic a student, given reports and industry standards, will be able to describe historical confined space rescue incidents and identify risks to rescuers,

bystanders, and victims so that lessons learned can be applied to future rescue incidents.

Enabling Learning Objectives

- 1. Identify confined space rescue training levels
 - Awareness
 - Operations
 - Technician
- 2. Identify historical incidents and dangers
 - Historical and current injury and death statistics
 - Most deaths are "would-be rescuers"

Discussion Questions

- 1. Who was the most likely to be injured or killed in a rescue incident?
- 2. What is the difference between awareness and technician level training?

Application

1. Given case studies or confined space incident statistics and reports, have students identify common hazards, risks, and causes of injury and death.

Instructor Notes

- 1. ELO1: SFT teaches Operations and Technician together in Confined Space Rescue Operations/Technician (2021). All technicians have operations level training.
- 2. ELO2: Use the following resources to identify historical incidents
 - Worker Deaths in Confined Spaces: A Summary of NIOSH Surveillance and Investigative Findings (NIOSH)
 - Fatality Assessment and Control Evaluation (FACE) Program Investigations (NIOSH)
 - U.S. Department of Health and Human Services
 - U.S. Public Health Service
 - Centers for Disease Control and Prevention
 - <u>Confined Space Guide for General Industry</u>, California Department of Industrial Relations (2019)

CTS Guide Reference: None

Topic 2-3: Defining 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 a confined space in accordance with state standards.

Enabling Learning Objectives

- 1. Define the three requirements of a confined space (all three must be present)
 - Is large enough and so configured that an employee can bodily enter and perform assigned work
 - Has limited or restricted means for entry or exit
 - Is not designed for continuous employee occupancy
- 2. Identify examples of confined spaces
 - Tanks
 - Vessels
 - Silos
 - Storage Bins
 - Hoppers
 - Vaults
 - Pits

Discussion Questions

- 1. What is the definition of a confined space?
- 2. What confined spaces might you encounter in your AHJ

Application

1. Determined by instructor

Instructor Notes

- 1. None
- CTS Guide Reference: None

Topic 2-4: Defining 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,

will be able to define a permit-required confined space in accordance with state standards.

Enabling Learning Objectives

- 1. Define the conditions that indicate a permit-required confined space (any one of the four must be present)
 - Contains or has a potential to contain a hazardous atmosphere
 - Contains a material that has the potential for engulfing an entrant
 - 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
 - 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 permit-required confined spaces might you encounter in your AHJ?

Application

1. Determined by instructor

Instructor Notes

1. None

CTS Guide Reference: None

Topic 2-5: Describing the Required Positions and Elements of an Entry Permit

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. Identify the minimum requirements on a confined-space entry permit

Discussion Questions

- 1. What are the mandatory components of a confined space entry permit?
- 2. What is the minimum training required of an entry supervisor?

Application

1. Given a confined space incident and images, have students complete a sample confined space entry permit.

Instructor Notes

1. Permit requirements are documented in Cal-OSHA CCR Title 8 Article 108 § 5157 and any other applicable regulations.

CTS Guide Reference: None

Unit 3: Confined Space Incidents

Topic 3-1: Supporting an Operations- or Technician-Level Incident

Terminal Learning Objective

At the end of this topic a student, given an incident, an assignment, an incident action plan, and resources from the tool cache, will be able to support an operations- or technician-level incident so that the assignment is carried out, progress is reported to command, environmental concerns are managed, personnel rehabilitation is facilitated, and the incident action plan is supported.

Enabling Learning Objectives

- 1. Describe AHJ operational protocols
- 2. Describe how to support an incident
 - Hazard recognition
 - Incident management
 - PPE selection
 - Resource selection and use
 - Scene support requirements
- 3. Apply operational protocols
- 4. Function within an incident management system
- 5. Follow and implement an incident action plan
- 6. Report the task progress status to a supervisor or incident command

Discussion Questions

- 1. What are your AHJ's standard operating guidelines for confined space rescue?
- 2. What resources are available in your area?
- 3. What is appropriate PPE for size up?

Application

1. Determined by instructor

Instructor Notes

1. None

Topic 3-2: Sizing Up a Confined Space Rescue Incident

Terminal Learning Objective

At the end of this topic a student, given background information and applicable reference materials, will be able to size up a confined space rescue incident so that the scope of the rescue is determined, the number of victims is identified, the last reported location of all the victims is established, witnesses and reporting parties are identified and interviewed, resource needs are assessed, primary search parameters are identified, and information required to develop an initial incident action plan is obtained.

Enabling Learning Objectives

- 1. Identify types of reference materials and their uses
- 2. Identify availability, and capability of the resources
- 3. Identify elements of an incident action plan and related information
- 4. Describe the relationship of the size-up to the incident management system
- 5. Identify information gathering techniques and how that information is used in the sizeup process
- 6. Identify basic research criteria for confined space rescue incidents
- 7. Gather information
- 8. Use interview techniques
- 9. Relay information
- 10. Use information-gathering sources
- 11. Read technical reference materials

Discussion Questions

- 1. What are your agency's size-up considerations?
- 2. What trigger points should cause you to reassess an incident?

Application

1. Determined by Instructor

Instructor Notes

1. None

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

Terminal Learning Objective

At the end of this topic a student, given AHJ guidelines, will be able to recognize the need for technical rescue resources at an operations- or technician-level incident so that the need for additional resources is identified, the response system is initiated, the scene is secured and rendered safe until additional resources arrive, and awareness-level personnel are incorporated into the operational plan.

Enabling Learning Objectives

- 1. Describe operational protocols
- 2. Identify specific planning forms
- 3. Describe types of incidents common to the AHJ
- 4. Identify hazards
- 5. Identify types of resources
 - Hazmat
 - Rescue
 - Medical
 - Decontamination
 - Rehabilitation
 - Law enforcement
 - Site representatives
 - Public information officer
 - Logistics
 - Utilities/public works
- 6. Identify needed resources
 - Personnel
 - o Roles
 - o Quantity
 - o Rotations
 - Equipment
 - PPE, including chemical protective clothing
 - Respiratory protection
 - o Harnesses
 - Communications equipment
 - o High-point anchor
 - Retrieval systems
 - Monitoring devices
 - $\circ \quad \text{Ventilation}$
 - \circ Lighting
 - o Rescue tools
- 7. Describe incident support operations and resources
- 8. Describe safety measures
- 9. Apply operational protocols
- 10. Select specific planning forms based on types of hazards within the AHJ

- 11. Request support and resources
- 12. Determine required safety measures

Discussion Questions

- 1. What types of resources might be required to support a confined space incident?
- 2. Given the number of potential resources, what logistical needs should you consider?

Application

1. Given sample confined space rescue incidents, have students identify the necessary resources required to support the rescue operation.

Instructor Notes

1. None

Topic 3-4: Identifying Hazards

Terminal Learning Objective

At the end of this topic a student, given a confined space incident and technical resources, will be able to identify all incident hazards so that hazards can be mitigated prior to entry.

Enabling Learning Objectives

- 1. Describe hazards commonly found at confined space incidents
 - Atmospheric hazards
 - Oxygen deficient
 - o Oxygen enriched
 - o Flammability
 - Airborne combustible dust
 - Toxicity
 - Engulfment hazards
 - Finely divided solids
 - Liquids
 - Physical/mechanical hazards
 - Environmental hazards
 - High temperature
 - Cryogenics
 - Corrosive hazards
 - Radiological
 - Biological hazards
 - Psychological hazards
- 2. Describe basic physical properties of contaminants
- 3. Describe signs, symptoms, and behavioral impacts of hazard exposure
- 4. Identify 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 confined spaces affiliated with different industries?
- 2. What hazards might you find in confined spaces found in your AHJ?
- 3. How can a hazard inside a confined space become a hazard in the area adjacent to the confined space?
- 4. What are the signs, symptoms, and behavioral effects of exposure to atmospheric hazards?
- 5. How would these hazards affect you as a first responder?

Application

1. Determined by instructor

Instructor Notes

1. None

Topic 3-5: Initiating Isolation Procedures

Terminal Learning Objective

At the end of this topic a student, given scene control barriers, personal protective equipment (PPE), requisite equipment, and available specialized resources, will be able to initiate isolation procedures for a specific confined space incident so that all hazards are identified; unauthorized entry to the confined space and adjacent areas are controlled; resource application fits the operational requirements; hazard isolation is considered; risks to rescuers, bystanders, and victims are minimized; and rescue time constraints are taken into account.

Enabling Learning Objectives

- 1. Describe resource capabilities and limitations
- 2. Describe methods for controlling access to the scene
- 3. Describe isolation terminology and methods
 - Lockout/tag out
 - \circ Shut down system
 - \circ Isolation
 - Apply lockout/tagout device
 - Control stored energy
- 4. Describe how to operate control and mitigation equipment
 - Atmospheric monitoring
 - o Equipment
 - Techniques
 - Common problems and way to avoid or overcome them
 - Ventilation
 - o Equipment
 - Techniques
 - o Common problems and way to avoid or overcome them
- 5. Identify types of technical references
- 6. Identify resource capabilities and limitations
- 7. Identify potential hazards to rescuers and bystanders
- 8. Identify potential paths for entry to the confined space and its adjacent areas
- 9. Utilize scene entry control methods
- 10. Place scene control barriers
 - Establish control zones
- 11. Operate control and mitigation equipment

Discussion Questions

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

Application

1. Given visual cues, have students identify different types of isolation, monitoring, and ventilation techniques.

Instructor Notes 1. None CTS Guide Reference: CTS 1-1

Topic 3-6: Initiating a Search in Areas Immediately Adjacent to a Confined Space

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 confined space so that search parameters are established, the victim survival profile is established, the access and egress of all people either involved in the search or already within the search area are questioned and the information is updated and relayed to command, the personnel assignments match their expertise, all victims in the areas adjacent to the confined space are located as quickly as possible, applicable technical rescue concerns are managed, risks to searchers are minimized, and all searchers are accounted for.

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 emergency evacuation procedures
- 4. Operate in the adjacent areas to the confined space incident
- 5. Perform escape from the area if conditions become untenable

Discussion Questions

- 1. What areas can you enter and not enter to search as an awareness level responder?
- 2. What are the evacuation warnings in your AHJ?

Application

1. Given sample confined space rescue incidents and images, have students identify the areas that can and cannot be searched by an awareness-level responder.

Instructor Notes

- 1. None
- CTS Guide Reference: CTS 1-2

Topic 3-7: Communicating with Victim(s)

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) so that victim communication is established when possible and information relative to patient condition is documented and conveyed to incoming confined space rescue resources.

Enabling Learning Objectives

- 1. Describe victim communication methods appropriate to confined space
- 2. Describe how to use information acquired for initial victim assessment
- 3. Use communication methods that are effective from the outside to the inside of a confined space
- 4. Document and transfer victim information

Discussion Questions

- 1. What forms of communication should you use to establish a victim's survival profile?
- 2. What information should you gather as part of establishing a victim profile?

Activities

- 1. Given sample confined space rescue incidents and images, have students determine survival profile based on:
 - Visual assessment
 - Verbal communications
 - Hazard assessment

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: Performing 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 cache, will be able to perform nonentry rescue so that the retrieval system is operated to extract the victim, the rescuer is protected from fall hazards when working near unprotected edges, victim communication is established and maintained, the victim is managed through the portal, and patient care is initiated on extraction.

Enabling Learning Objectives

- 1. Describe principles of operation for nonentry rescue (retrieval) systems and equipment
 - Self-rescue
 - Nonentry rescue
- 2. Identify risks associated with nonentry rescue
- 3. Describe methods for fall prevention
- 4. Describe protocols for:
 - Safety
 - Communication
 - Medical care
 - Operations
- 5. Use and apply PPE
- 6. Use and apply fall prevention methods
- 7. Operate nonentry rescue (retrieval) systems and equipment
- 8. Implement safety, communication, medical, and operational protocols
- 9. Assure victim passage through the portal without obstruction

Discussion Questions

- 1. What are the differences between self-rescue and nonentry rescue?
- 2. What are some examples of a nonentry rescue?
- 3. What are some risks associated with a nonentry rescue?

Application

1. Given rescue (retrieval) systems and equipment and a simulated victim, have students retrieve the victim.

Instructor Notes

1. None

How to Read a Course Plan

A course plan identifies the details, logistics, resources, and training and education content for an individual course. Whenever possible, course content is directly tied to a national or state standard. SFT uses the course plan as the training and education standard for an individual course. Individuals at fire agencies, academies, and community colleges use course plans to obtain their institution's consent to offer courses and provide credit for their completion. Instructors use course plans to develop syllabi and lesson plans for course delivery.

Course Details

The Course Details segment identifies the logistical information required for planning, scheduling, and delivering a course.

Required Resources

The Required Resources segment identifies the resources, equipment, facilities, and personnel required to deliver the course.

Unit

Each Unit represents a collection of aligned topics. Unit 1 is the same for all SFT courses. An instructor is not required to repeat Unit 1 when teaching multiple courses within a single instructional period or academy.

Topics

Each Topic documents a single Terminal Learning Objective and the instructional activities that support it.

Terminal Learning Objective

A Terminal Learning Objective (TLO) states the instructor's expectations of student performance at the end of a specific lesson or unit. Each TLO includes a task (what the student must be able to do), a condition (the setting and supplies needed), and a standard (how well or to whose specifications the task must be performed). TLOs target the performance required when students are evaluated, not what they will do as part of the course.

Enabling Learning Objectives

The Enabling Learning Objectives (ELO) specify a detailed sequence of student activities that make up the instructional content of a lesson plan. ELOs cover the cognitive, affective, and psychomotor skills students must master to complete the TLO.

Discussion Questions

The Discussion Questions are designed to guide students into a topic or to enhance their understanding of a topic. Instructors may add to or adjust the questions to suit their students.

Application

The Application segment documents experiences that enable students to apply lecture content through cognitive and psychomotor activities, skills exercises, and formative testing. Application experiences included in the course plan are required. Instructors may add additional application experiences to suit their student population if time permits.

Instructor Notes

The Instructor Notes segment documents suggestions and resources to enhance an instructor's ability to teach a specific topic.

CTS Guide Reference

The CTS Guide Reference segment documents the standard(s) from the corresponding Certification Training Standard Guide upon which each topic within the course is based. This segment is eliminated if the course is not based on a standard.

Skill Sheet

The Skill Sheet segment documents the skill sheet that tests the content contained within the topic. This segment is eliminated if the course does not have skill sheets.