

ATPL-1800: SPECIAL TOPICS: CONFINED SPACE

Cuyahoga Community College

Viewing: ATPL-1800 : Special Topics: Confined Space

Academic Term:

Fall 2026

Subject Code

ATPL - Applied Ind Tech - Plumbers

Course Number:

1800

Title:

Special Topics: Confined Space

Catalog Description:

Certification course for plumbers working in confined spaces. Also, an introduction to Material Safety Data Sheets (MSDS) and competent person training in accordance with the Occupational Safety and Health Administration (OSHA) for trenching and excavation operations will be covered.

Credit Hour(s):

1

Lecture Hour(s):

1

Requisites

Prerequisite and Corequisite

Departmental approval: admission to Plumbers' apprenticeship program.

Outcomes

Course Outcome(s):

Apply safety procedures when working in confined spaces.

Objective(s):

1. Explain Occupational Safety and Hazard Administration (OSHA) regulations for working in confined spaces.
2. Describe the atmospheric hazards of confined spaces.
3. Demonstrate proper procedures for confined space entry, including ventilation and use of air monitors as prescribed by OSHA.
4. Demonstrate proper use of personal protective equipment, including air purifying respirators, supplied air respirators, and chemical protective clothing.
5. Demonstrate proper use of communications equipment.
6. Demonstrate the use of retrieval systems and equipment to rescue a person from a confined space.

Course Outcome(s):

Identify potentially hazardous situations and take appropriate steps to resolve them and prevent injuries or accidents.

Objective(s):

1. Describe causes for potential hazards at the construction work site.
 2. Explain preventative actions that can be taken to avoid injuries/accidents at the worksite.
 3. Identify situations and conditions that increase the risk of falls in the workplace.
 4. Interpret and apply chemical labels and material safety data sheets (MSDS).
 5. Calculate unsafe chemical levels based on MSDS.
 6. Interpret materials from data sheets on chemical labels.
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Course Outcome(s):

Explain the requirements of OSHA CFR 29; Part 1926, Sub-Part P

Objective(s):

1. Identify and understand the major components of the OSHA Standards for Trenching and Excavation
2. Demonstrate how to find requirements in the OSHA manual

Course Outcome(s):

Explain the importance of soil mechanics and testing in relation to the pipe trades

Objective(s):

1. Identify factors affecting trenches before and after cave-ins
2. Recognize types of soils and their hazards
3. Demonstrate how to test for soil types related to trenching

Course Outcome(s):

Recognize and implement the importance of job planning and protective systems in reducing hazards and accidents.

Objective(s):

1. Identify parts of job planning.
2. Demonstrate inspection abilities required by OSHA Standards
3. Understand the differences between types of protective systems.

Methods of Evaluation:

1. Assignments
2. Participation
3. Attendance
4. Exams/quizzes
5. Practical experience

Course Content Outline:

- I. Concepts
 1. Causes of falls
 2. Potential hazards
 3. Hazard/accident prevention techniques
 4. Fall protection systems and equipment
 5. Situations requiring fall protection equipment
 6. When and where fall protection is necessary on all work surfaces.
 7. Scaffold regulations and standards
 8. OSHA safety regulations 1926 Subpart L and 1910.28
 9. Definitions and properties of confined spaces
 - a. Limited means of entry/exit,
 - b. Not meant for continuous occupancy
 - c. Poor natural ventilation
 10. Atmospheric hazards of confined spaces
 - a. Oxygen deficiency
 - b. Oxygen enrichment
 - c. Flammable gases and vapors
 - d. Flammable atmospheres
 - e. Vapor density
 - f. Toxic atmospheres

11. OSHA's Permit system
 - a. Definition of confined spaces
 - b. Entry permit
 - c. Confined space standards 29 CFR 1910.146
12. Training requirement for MSDS (OSHA's standard 1926.59 / 1910.1200 (g))
13. Hazard recognition as it applies to material safety data sheets
14. Safe handling of various chemicals used
 - a. Adhesives
 - b. Cleaning Chemicals

B. Skills

1. Setting up fall protection system and equipment including guard rail systems, personal fall arrest systems, lifelines, safety nets, fall protection plans, covers, stairways and ladders, aerial lifts, and housekeeping.
 2. Preparing for protection from falling objects.
 3. Selecting appropriate protective equipment.
 4. Installing toe boards.
 5. Installing catch platforms.
 6. Setting up barricades.
 7. Monitoring air in confined spaces with sampling pump/calibrating air monitors, and using intrinsic safe tools.
 8. Ventilating confined spaces by placement of fans and purging confined spaces.
 9. Using personal protective equipment with air purifying respirators, supplied air respirators, chemical protective clothing, and communications equipment.
 10. Rescuing person from confined space using retrieval systems and equipment.
 11. Interpreting and applying a chemical label.
- II. Interpreting and applying a Material safety data sheet. OSHA Requirements
1. Components of Standard
 - a. Soil Tests
 - b. Protective Systems
 - c. Air Testing
 - d. Water Removal
 - e. Changes in Soil
 2. Locate Information
 - a. How to use an OSHA Standard
 - b. Resources for more information
- III. Soil Mechanics and Testing
1. Factors Affecting
 - a. Soil Types
 - b. Weather Conditions
 - c. Gravity
 - d. Depth
 - e. Vibrations
 - f. Duration of Exposed Trench
 2. Soil Types and Hazards
 - a. Type A
 - b. Type B
 - c. Type C
 3. Testing of Soil Types
 - a. Visual
 - b. Manual
- IV. Job Planning and Protective Systems
1. Parts of Job Planning
 - a. Conditions
 - b. Size and types of materials
 - c. One person responsible for site
 2. Inspection

- a. Types of inspection
 - i. Opening
 - ii. Daily
 - iii. Closing
 - iv. OSHA
 - b. Inspection Reports
3. Protective Systems
- a. Trench Slopping
 - b. Shoring
 - c. Shielding

Religious Accommodation

Before reviewing the course schedule, students should carefully review the following religious accommodation policy and other required instructional policies:

Religious Accommodation:

Students seeking an accommodation for absences permitted under Ohio's Testing Your Faith Act must provide the instructor with written notice of the specific dates for which the student requires an accommodation and must do so not later than fourteen (14) days after the first day of instruction. Please submit requests for accommodations at this link: <https://portal2.tri-c.edu/ReligiousAccommodation/ReligiousAccommodationForm>. Students with questions about their religious accommodations under Ohio's Testing Your Faith Act may contact the College's Office of General Counsel and Legal Services by phone at 216.987.4856 or via email at legal@tri-c.edu.

Other Required Instructional Policies:

<https://www.tri-c.edu/student-resources/curriculum/documents/syllabus-part-b.pdf>

Weekly Schedule

	Topics
Week 1	Course Introduction & OSHA Overview
Week 2	Definition of Confined Spaces
Week 3	Permit Required Confined Spaces
Week 4	Atmospheric Hazards
Week 5	Air Monitoring & Ventilation
Week 6	Personal Protective Equipment (PPE)
Week 7	Emergency Procedures & Rescue
Week 8	Mid Course Review & Assessment
Week 9	Introduction to Trenching & Excavation
Week 10	Soil Mechanics & Soil Types
Week 11	Soil Testing Methods
Week 12	Protective Systems Overview
Week 13	Job Planning & Inspections
Week 14	Water Removal & Changing Conditions
Week 15	Accident Prevention & Case Studies
Week 16	Final Review & Evaluation

The Course Schedule is subject to change due to pedagogical needs, instructor discretion, parts of term, and unexpected events.

Required/Recommended Readings

Instructor-provided materials

Resources for the Instructor

National Institute for Occupational Safety and Health (NIOSH). *NIOSH Pocket Guide to Chemical Hazards (NPG)*. Washington, DC: National Institute for Occupational Safety and Health, <https://www.cdc.gov/niosh/npg/>

American Red Cross. *Standard First Aid and Personal Safety*. American Red Cross, <https://www.redcross.org/training>

Hendrix, Laborn J. *Heavy Equipment Operator Instructional Materials*. Stillwater, OK: Dept. of Vocational and Tech Education, Curriculum & Inst Materials Cntr, 1981.

National Safety Council. *Annual Editions in Criminal Justice*. current. Chicago, IL: National Safety Council, www.nsc.org

National Safety Council. *First Aid and CPR*. current. Chicago, IL: National Safety Council, www.nsc.org

Additional Resources for the Instructor

www.nsc.org (<https://catalog.tri-c.edu/www.nsc.org>)

<https://www.cdc.gov/niosh> (<https://www.cdc.gov/niosh/>)

<https://www.cdc.gov/>

<https://www.osha.gov>

Top of page

Key: 619