CNST-2050: ADVANCED CONSTRUCTION SAFETY

Cuyahoga Community College

Viewing: CNST-2050 : Advanced Construction Safety

Board of Trustees:
November 2024

Academic Term:
Fall 2025

Subject Code
CNST - Construction Engineering Tech

Course Number:
2050

Title:
Advanced Construction Safety

Catalog Description:
Detailed coverage of fall protection, aerial lift operations, fall restraints, confined spaces, and excavations with a focus in utility construction. Practice use of equipment to solidify safe operations in the field. Students need to be 18 years of age or older due to equipment to be used during lab activities, per Occupational Safety and Health Administration (OSHA) regulations.

Credit Hour(s):
3

Lecture Hour(s):
2

Lab Hour(s):
2

Requisites

Prerequisite and Corequisite
CNST-1751 Construction Safety or departmental approval

Outcomes

Course Outcome(s):
Analyze and explain common hazards in utilities construction.

Essential Learning Outcome Mapping:
Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):
1. Analyze and explain fall hazards and ways to mitigate. (29 CFR 1926 Subpart M)
2. Analyze and explain confined space hazards and ways to mitigate.
3. Analyze and explain trenching hazards and ways to mitigate.
4. Analyze and explain electrical hazards.
5. Analyze and explain rigging hazards.

Course Outcome(s):
Demonstrate safe usage of common equipment used in utilities

Essential Learning Outcome Mapping:
Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

1. Demonstrate safe usage of a fall protection system
2. Demonstrate safe usage of an aerial lift
3. Demonstrate safe entry into a confined space
4. Demonstrate safe operations of trenching

Course Outcome(s):

Apply common OSHA standards seen in utilities construction.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

1. Explain the importance of 29 CFR 1926 Subpart B, General Interpretations.
2. Explain the importance of 29 CFR 1926 Subpart L, Scaffolds.
3. Explain the importance of 29 CFR 1926 Subpart AA, Confined Spaces in Construction.
4. Explain the importance of 29 CFR 1926 Subparts , Excavations; Subpart S, Underground Construction, Caissons, Cofferdams, and Compressed Air; and Subpart V, Electric Power Transmission and Distribution.
5. Explain the importance of 29 CFR 1926 Subpart K, Electrical.
6. Explain the importance of 29 CFR 1926 Subpart H, Rigging Equipment for Material handling.

Note: Each subpart has detailed training requirements that need to be met in the OSHA requirements.

Methods of Evaluation:

1. Quizzes
2. Written Assignments
3. Exams
4. Lab Activities
5. Participation

Course Content Outline:

1. Fall Protection [29 CFR 1926 Subpart M: 1926.501(b)(13), 1926.501(b)(1), 1926.501(a)(1), 1926.501(b)(10), 1926.501(b)(11), 1926.501(b)(4)(i)]
   a. Fall hazard identification
   b. Working at a height
   c. Fall protection oversight
   d. Passive systems
   e. Administrative controls
   f. Fall arrest system components
   g. Harness donning and inspection
   h. Equipment care
   i. Rescue requirements
   j. System
2. Aerial Lifts ((29 CFR 1926, Subpart L, Section 1926.453)
   a. Anatomy and components
   b. Stability principles
   c. Safe operations
   d. Common hazards
   e. Meter usage
   f. Fall Restraints
3. Confined Spaces (29 CFR 1926, Subpart AA)

a. Basics of confined spaces
b. Oversight
c. Roles & responsibilities
d. Controlling hazards
e. Emergency response
f. Working in confined spaces
g. Meter usage and hazard identification
h. Permits
i. Rescue operations

4. Excavation (29 CFR 1926 Subpart P, S, and V)
   a. Introduction
   b. Understanding and applying OSHA Excavation Safety Standards
   c. Identifying excavation hazards
   d. Taking action
   e. Soil classifications
   f. Protective systems
5. Electrical (29 CFR 1926, Subpart K and V)
   a. Introduction
   b. Hazards in construction environment
   c. Possible solutions
   d. Protective equipment
   e. Special industries introduction
6. Rigging Equipment for Material Handling (29 CFR 1926, Subpart H)
   a. Introduction
   b. Working loads
   c. Safe operation
   d. Rigging materials
   e. Inspection requirements
7. Applied Activities
   a. Use of Fall Arrest System
   b. Use of aerial lifts
   c. Practice in confined space
   d. Practice safe excavation
   e. Practice safe rigging
   f. Practice using a ladder safely
   g. Practice ergonomical lifting and working techniques

Resources

National Safety Compliance. *OSHA Construction Industry Regulations*. 7th ed. Springfield, MO, 2024.

Goetsch, David L. *Construction Safety and Health*. 2nd ed. Boston: Pearson, 2021.

National Safety Compliance. *Fall Protection Standards & Regulations*. 7th ed. Springfield, MO, 2024.

Resources Other

3M. (2024). Safety training and education. https://www.3m.com/3M/en_US/fall-protection-us/support/training/
OSHA. (2024). Confined spaces in construction. https://www.osha.gov/confined-spaces-construction
OSHA. (2024). Trenching and excavation. https://www.osha.gov/trenching-excavation
OSHA. (2024). Fall protection. https://www.osha.gov/fall-protection

OSHA. (2024). Infrastructure safety and health. https://www.osha.gov/construction/infrastructure

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