STRANDS AND STANDARDS
CONSTRUCTION MANAGEMENT 1

Learning that works for Utah
CTE®

Course Description

This is the first in a sequence of courses that prepares individuals to enter the construction industry. This course is designed to allow for scaled model construction with an emphasis on site preparation and foundation work for residential and commercial construction.

Intended Grade Level	9-12
Units of Credit	0.5
Core Code	40.08.00.00.401
Concurrent Enrollment Core Code	N/A
Prerequisite	N/A
Skill Certification Test Number	N/A
Test Weight	N/A
License Area of Concentration	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Construction Management, or
Endorsement 2	Carpentry, or
Endorsement 3	Electrician, or Plumbing

STRAND 1

Students will explain the importance of safety, the OSHA Focus Four and related protections.

Standard 1

Describe the importance of safety, the causes of workplace incidents, and the process of hazard recognition and control.

- Define incidents and the significant costs associated with them.
- Identify the common causes of incidents and their related consequences.
- Describe the processes related to hazard recognition and control, including the Hazard Communication (HAZCOM) Standard and the provisions of a Safety Data Sheet (SDS).

Standard 2

Describe the safe work requirements for elevated work, including fall protection guidelines.

- Identify and describe various fall hazards.
- Identify and describe equipment and methods used in fall prevention and fall arrest.
- Identify and describe the safe use of ladders and stairs.
- Identify and describe the safe use of scaffolds.

Standard 3

Identify and explain how to avoid struck-by and caught-in-between hazards.

- Identify and explain how to avoid struck-by hazards.
- Identify and explain how to avoid caught-in and caught-between hazards.

Standard 4

Identify common energy-related hazards and explain how to avoid them.

- Describe basic job-site electrical safety guidelines.
- Explain the importance of lockout/tagout and describe basic procedures.

Standard 5

Identify and describe the proper use of personal protective equipment (PPE).

- Identify and describe the basic use of PPE used to protect workers from bodily injury.
- Identify potential respiratory hazards and the basic respirators used to protect workers against those hazards.

Standard 6

Identify and describe other specific job-site safety hazards.

- Identify various exposure hazards commonly found on job sites.
- Identify hazards associated with environmental extremes.
- Identify hazards associated with hot work.
- Identify fire hazards and describe basic firefighting procedures.
- Identify confined spaces and describe the related safety considerations.

STRAND 2

Students will read and understand civil drawings, specifications, and other construction documentation.

Standard 1

Identify and describe various types of civil drawings, including their fundamental components and features.

- Identify various types of construction drawings.
- Identify and describe the purpose of the five basic construction drawing components.
- Identify and explain the use of dimensions and various drawing scales.
- Explain the importance of specifications.
- List items commonly shown on architectural drawings.
- Describe information typically shown on structural drawings.
- Explain the importance of referencing mechanical, electrical, and plumbing plans.
- Identify and explain the significance of various drawing elements, such as lines of construction, symbols, and grid lines.

STRAND 3

Students will understand the preliminary steps that must be taken on the site before construction can begin.

Standard 1

Know the major types of soils and how they are classified.

- Understand how factors related to soils can affect design decisions.
- Investigate various way to stabilize soils.

Standard 2

Identify and explain the safe operation and use of construction equipment commonly found on a worksite.

- aerial lifts
- skid-steer loaders
- forklifts
- backhoes
- generators
- compressors
- compactors

Standard 3

State the safety precautions associated with construction equipment.

- Identify safety precautions when transporting construction equipment.
- Identify safety precautions related to interlocking and hydraulic systems.
- Identify safety precautions to observe when fueling construction equipment.
- Identify safety precautions related to batteries of construction equipment.

Standard 4

Recognize, use, and properly care for tools and equipment associated with differential leveling.

- Identify the instruments commonly used for differential leveling.
- Explain how to set up and calibrate a leveling instrument.
- Explain how to use a builder’s level and differential-leveling procedures to determine site and building elevations.

- Read and interpret a set of civil plans and how they relate to elevations on a job site.

STRAND 4

Students will understand the methods and materials used in Concrete & Masonry construction.

Standard 1

Identify various concrete ingredients and describe their purpose in a concrete mixture.

- Explain how Portland cement affects a concrete mixture and list the types of Portland cement.
- Describe the characteristics of aggregate used in a concrete mixture.
- List the characteristics of water used in a concrete mixture.
- List types of concrete admixtures and describe how they affect a concrete mixture.

Standard 2

Identify proper concrete mixture measurements and curing methods.

- Describe normal concrete-mix proportions and measurements.
- List special types of concrete.
- Describe the properties of air-entrained concrete.
- Describe how concrete is cured.

Standard 3

Describe the methods for testing concrete.

- Describe the proper procedure for sampling concrete.
- Explain the purpose of a slump test.
- Describe how a concrete compression test is performed.

Standard 4

Calculate concrete volume for rectangular or circular structures.

- Calculate rectangular volume.
- Calculate circular volume.

Standard 5

Describe modern masonry materials and techniques.

- Explain how clay masonry units (brick) are used in construction.
- Explain how concrete masonry units (CMUs or block) are used in construction.
- Explain how stone is used in construction.
- Describe how mortar and grout are used in masonry construction.

Standard 6

Explain how to mix mortar and lay masonry units.

- Explain how to mix mortar.
- Describe how to lay masonry units.

Standard 7

Describe how to install both brick and concrete masonry units.

- Identify the characteristics of both brick and concrete masonry units.
- Explain how to set up, lay out, and bond both brick and concrete masonry units.

- Explain how to lay and tool both brick and concrete masonry units.
- Explain how to clean brick.

STRAND 5

Students will understand the factors considered in foundation and concrete flatwork.

Standard 1

Identify the various types of foundations and list appropriate uses for each.

- Identify the various types of deep-foundation elements.
- Identify the various types of shallow foundation elements.

Standard 2

Explain how to properly perform job-site layout.

- Describe how to establish building layout.
- Explain how to establish building lines with batter boards.
- Describe excavating and trenching processes.
- Explain how to lay out forms.

Standard 3

Explain the proper methods for placing and consolidating concrete into forms.

- Explain the proper method for placing concrete into forms.
- Explain the proper method for consolidating concrete.

Standard 4

Describe the proper methods for finishing and curing concrete.

- Explain the proper method for screeding concrete.
- Explain the proper method for leveling concrete.
- Explain the proper method for finishing concrete.
- Describe how to properly cure concrete.
- Describe the use of joint sealants.

Standard 5

Identify the different kinds of joints in concrete structures.

- Identify construction joints.
- Identify isolation joints.
- Identify control joints.
- Identify decorative joints.

Standard 6

Identify various types of foundation forms and their proper removal.

- Describe how to erect and strip job-built wood forms.
- Explain how to erect manufactured forms.
- Describe how to strip forms.

Standard 7

Describe how slabs-on-grade are formed and finished.

- List slab-on-grade construction considerations.
- Describe how to form and finish a commercial slab-on-grade.
- Discuss the use of screeds when finishing slabs-on-grade.

STRAND 6

Students will be invited to participate in SkillsUSA.

Standard 1

Summarize how to be connected to the industry through an organization like SkillsUSA.

- Understand SkillsUSA membership.
- Understand the program, curriculum, and SkillsUSA championships.
- Understand the National Program of Work Standards.

Performance Skills

- Properly set up and climb/descend an extension ladder,demonstrating proper three-point contact.
- Inspect a typical power cord and GFCI to ensure their serviceability.
- Inspect, don, fit, and remove the following PPE items:
  - Eye protection
  - Hearing protection
  - Hard hat
  - Gloves
  - Fall arrest harness
  - Approved footwear
- Using a supplied floor plan:
  - Locate the wall common to both interview rooms.
  - Determine the overall width of the structure studio.
  - Determine the distance from the outside east wall to the center of thebeam in the structure studio.
  - Determine the elevation of the slab.
  - Determine pacing?
- Set up, adjust, and field-test leveling instruments.
- Use a builder's level, leveling rods, and/or laser level with appropriatedifferential-leveling procedures to determine site and buildingelevations.
- Perform a concrete slump test or create a concrete test cylinder.
- Calculate concrete volume requirements using formulas, concretetables, and/or concrete calculators, as applicable.
- Properly mix mortar by hand.
- Properly spread mortar using a trowel.
- Lay brick to the line in courses that are true for height, level, plumb, and range.
- Establish elevations.
- Lay out and construct an instructor-selected foundation using an established gridline.
- Properly place and consolidate concrete in selected concrete forms.
- Use a screed to strike off and level a concrete surface.
- Use a bull float and/or darby to level and smooth a concrete surface.

- Use a hand float and finishing trowel to level high spots, remove imperfections, and smooth a concrete surface.
- Use an edger to form a radius at the edges of a concrete pad, slab, etc.
- Use a jointer to make control joints in a concrete surface.

Workplace Skills

- Communication
- Critical Thinking
- Accountability
- Problem Solving
- Teamwork
- Dependability
- Legal Requirements/Expectations