UTAH SYSTEM OF HIGHER EDUCATION

Utah System of Higher Education
The Gateway, Salt Lake City, UT 84101
801-646-4784

Concrete Masonry Apprenticeship — Course Description

Catalog Year: 2025, Required Hours: 360, Credits: 12

Foundational Courses (Required Hours: 360, Credits: 12)

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TECN 1000	**Concrete Masonry IA**	**3.00**	**90.00**

The course is an overview of the construction industry careers; OSHA 10 certification; construction math, drawings, hand, and power tools; materials handling; basic communication skills; building materials, fasteners/adhesives, heavy equipment/crane and rough terrain forklift safety, and orientation to basic oxyfuel cutting and safety to equip them with skills needed on the job.

Objectives:
- Obtain OSHA 10 certification.
- Select the correct building materials to perform a specific task and perform calculations using industry-standard methods.
- Use job-specific hand, measurement, layout, and power tools and construction drawings to identify symbols and markers for floor and all finishes.
- Identify standard equipment and hitches used in rigging, including emergency hand signal.
- Demonstrate tying common knots used in material handling and safe manual lifting techniques.
- Set up, adjust, and field-test leveling instruments; determine site and building elevations and transfer elevations up a structure using the correct tools and procedures.
- Describe types of rough-terrain forklifts, chassis components, in-cab controls, start-up, and operating procedures, and safety guidelines for working around heavy equipment.
- Perform basic oxyfuel cutting following safety guidelines.

TECN 1100	**Concrete Masonry IB**	**3.00**	**90.00**

In this course apprentices are introduced to concrete construction, safety, fall protection, trade tools and equipment, concrete placement prep and reinforcement, foundations and slabs-on-grade, and horizontal formwork. The course is designed to help the apprentice develop their craft skills and be contributing members of a concrete crew.

Objectives:
- Follow safety regulations and standards related to concrete operations, fall protection, and elevated work.
- Identify, use, and properly care for the concrete construction hand and power tools.
- Operate a vibrating compactor to compact subgrade, confirm the elevation of a prepared subgrade, and complete a pre-placement inspection.
- Use appropriate tools to cut and bend reinforcing bars.
- Demonstrate five types of ties for reinforcing bars; use wire ties for lap splicing reinforcing bars; and place, space, type, and support reinforcing bars.
- Establish elevations; layout and construct foundation using an establish grid line; install templates, keyways, and embedments; and prepare strip pier foundation forms for resetting at another location.
- Erect, plumb, brace, and level a handset deck form.
- Install edge forms, including blockouts, embedments, and bulkheads.

TECN 1200	**Concrete Masonry IIA**	**3.00**	**90.00**

In this course, apprentices are introduced to foundations and vertical formwork; site concrete; finishing, curing, and protecting concrete. The course is designed to help the apprentice develop their craft skills and be contributing members of a concrete crew.

Objectives:
- Erect, plumb, and brace a wall, column, or stair form.
- Describe the procedures and techniques used in constructing common site-built structures and constructing curbs, gutters, site-built concrete steps, walks, drives, and patios.
- Perform calculations for tread and riser dimensions.
- Build wood formwork for a set of steps on grade with a top landing, and place and finish concrete for a curb, gutter, and set of steps.
- Hand float, edge, groove, and trowel a small concrete slab.
- Apply a broom finish to a slab and a sack or stone-rubbed finish to a surface.
- Mark and saw control joints.
- Apply a curing compound to a slab using a systematic pattern, cover a slab with curing coverings, sealed and wrinkle-free.

TECN 1210	**Concrete Masonry IIB**	**3.00**	**90.00**

In this course, apprentices are introduced to properties of concrete, estimating concrete quantities, tilt-up wall panels, paving, architectural finishes, industrial/superflat floors, surface treatments, troubleshooting and quality control, and concrete repair. The course is designed to help the apprentice develop their craft skills and be contributing members of a concrete crew.

Objectives:
- Calculate metric linear and weight conversions and work with denominate numbers to determine area and volume.
- Interpret construction drawings and estimate concrete quantities and form a tilt-up panel per construction drawings.
- Install inserts, reinforcements, and architectural features.
- Set up and perform slipform paving, concrete slump test, and hot-mix asphalt paving.
- Prepare and finish the concrete surface to a specified surface profile.
- Assist in placing, consolidating, and screeding an industrial floor slab to a given elevation and setting a wooden superflat-floor edge from on-grade to a specified elevation.
- Mix, place, and cure a concrete repair.
- Collect concrete samples, prepare specimens, and complete field tests.

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