

# STRANDS AND STANDARDS

## CARPENTRY 1



### Course Description

This is the first in a sequence of courses that prepares individuals to layout, fabricate, erect, install, and repair wooden structures and fixtures using hand and power tools. Includes instruction in common systems of framing, construction materials, blueprint reading, concrete placing, siding, and mechanical systems.

<b>Intended Grade Level</b>	10-12
Units of Credit	1.0
Core Code	40.08.00.00.010
Concurrent Enrollment Core Code	40.08.00.13.010
Prerequisite	None
Skill Certification Test Number	512
Test Weight	1.0
<b>License Type</b>	CTE and/or Secondary Education 6-12
<b>Required Endorsement(s)</b>	
Endorsement 1	Carpentry
Endorsement 2	N/A
Endorsement 3	N/A



## STRAND 1

**Students will be able to understand and demonstrate the use of wood building materials, fasteners and adhesives.**

### Standard 1

Identify various types of imperfections that are found in lumber.

- Holes
- Knots
- Pitch
- Decay

### Standard 2

Interpret grade markings on lumber and plywood.

- Grade designation – grade name, number, or abbreviation
- Species identification – indicates species individually or in combination
- Condition of seasoning at the time of surfacing

### Standard 3

Identify the uses of pressure-treated lumber.

- Landscape timbers
- Sill plates
- Foundations
- Decks
- Porches

### Standard 4

Identify the safety precautions associated with pressure-treated lumber.

- When cutting pressure-treated lumber, always wear eye protection and a dust mask.
- Wash any skin that is exposed while cutting or handling the lumber.
- Wash clothing that is exposed to sawdust separately from other clothing.
- Do not burn pressure-treated lumber as the ash poses a health hazard.
- Be sure to read and follow the manufacturer's safety instruction.

### Standard 5

Describe the proper method of caring for lumber and wood building materials at the job site.

### Standard 6

State the uses of various types of engineered lumber.

- Headers
- Floor joists

## Standard 7

List the basic nail and staple types and their uses.

- Nails: common and finish
- Chisel staples

## Standard 8

Identify the different types of anchors and their uses.

- Anchor bolts
- Expansion bolts
- Earthquake straps
- Allow something to be securely fastened to masonry or drywall

## Standard 9

Describe the common types of adhesives used in construction work and explain their uses.

- Construction adhesives
- Drywall adhesives
- Contact cement

## Performance Skill

Understand and demonstrate the use of wood building materials, fasteners and adhesives.

- Identify various types of imperfections that are found in lumber.
- Interpret grade markings on lumber and plywood.
- Identify the uses of pressure-treated lumber.
- Identify the safety precautions associated with pressure-treated lumber.
- Describe the proper method of caring for lumber and wood building materials at the job site.
- State the uses of various types of engineered lumber.
- List the basic nail and staple types and their uses.
- Identify the different types of anchors and their uses.
- Describe the common types of adhesives used in construction work and explain their uses.

## STRAND 2

**Students will be able to understand and demonstrate the safe use of hand and power tools.**

### Standard 1

Identify the hand and power tools commonly used by carpenters and describe their uses.

- Hammer, screwdrivers, pliers, chisels, levels, squares, clamps, saws.
- Circular saw, table saw, power miter saws, reciprocating saws, portable sanders, portable drill and screwguns, pneumatic/cordless nailers and staplers, powder-actuated fastening tools.

## Standard 2

Use hand tools in a safe and appropriate manner.

- Follow all safety precautions in the manufacturer's instruction manual.
- Always wear safety glasses and other appropriate safety equipment when working with hand and power tools.

## Standard 3

State the general safety rules for operating all power tools, regardless of type.

## Standard 4

State the general safety rules for properly maintaining all power tools, regardless of type.

## Standard 5

Identify the portable power tools commonly used by carpenters and describe the appropriate and safe manner of using them.

## Performance Skill

Understand and demonstrate the safe use of hand and power tools.

- Identify the hand and power tools commonly used by carpenters and describe their uses.
- Use hand tools in a safe and appropriate manner.
- State the general safety rules for operating all power tools, regardless of type.
- State the general safety rules for properly maintaining all power tools, regardless of type.
- Identify the portable power tools commonly used by carpenters and describe the appropriate and safe manner of using them.

## STRAND 3

**Students will be able to understand and demonstrate the uses of concrete and reinforcing materials.**

### Standard 1

Perform volume quantities and estimates for concrete quantity requirements.

- Calculate cubic yards

### Standard 2

Identify types and sizes of concrete reinforcement bars and describe their uses.

- Rebar
- Wire mesh

### Standard 3

Recognize four kinds of footings.

- Continuous or spread
- Stepped

- Pier
- Spot

## Standard 4

Recognize types of concrete pours that require the construction of edge forms.

- Slabs with or without a foundation
- Driveways
- Sidewalks
- Approaches

## Standard 5

Identify the parts of edge forms and explain their purpose.

## Standard 6

Explain the purpose of a screed and identify the different types of screeds.

## Standard 7

Demonstrate the ability to set screeds on grade.

## Standard 8

Identify the various types of concrete forms.

## Standard 9

Identify the components of each type of form.

## Standard 10

Explain the safety procedures associated with using concrete forms.

## Standard 11

Erect, plumb, and brace selected concrete forms, including:

- Basic wall form with walers and strongbacks
- Ganged wall form
- Radius wall form
- Column form
- Stair form

## Performance Skill

Understand and demonstrate the uses of concrete and reinforcing materials.

- Perform volume quantities and estimates for concrete quantity requirements.
- Identify types and sizes of concrete reinforcement bars and describe their uses.
- Recognize four kinds of footings.
- Recognize types of concrete pours that require the construction of edge forms.
- Identify the parts of edge forms and explain their purpose.
- Explain the purpose of a screed and identify the different types of screeds.
- Demonstrate the ability to set screeds on grade.

- Identify the various types of concrete forms.
- Identify the components of each type of form.
- Explain the safety procedures associated with using concrete forms.
- Erect, plumb, and brace selected concrete forms.

## STRAND 4

**Students will be able to understand and demonstrate framing of flooring systems, wall and ceilings and roofing systems.**

### Standard 1

Read and understand drawings and specifications to determine floor system requirements.

### Standard 2

Identify floor and sill framing and support members.

### Standard 3

Name the methods used to fasten sills to the foundation.

### Standard 4

List and recognize different types of floor joists.

### Standard 5

List and recognize different types of flooring materials.

### Standard 6

Explain the purposes of subflooring.

### Standard 7

Match selected fasteners used in floor framing to their correct uses.

### Standard 8

Demonstrate the ability to:

- Layout and construct a floor assembly.
- Install a single floor system using tongue and groove plywood/OSB panels

### Standard 9

Identify the components of a wall.

### Standard 10

Describe the procedure for laying out a wood frame wall, including plates, corner posts, door and window openings, partition T's, bracing, and firestops.

### Standard 11

Describe the common materials and methods used for installing sheathing on walls.

### Standard 12

Layout, assemble, erect, and brace exterior walls for a frame building.

## Standard 13

Understand the terms associated with roof framing.

## Standard 14

Identify the roof framing members used in gable and hip roofs.

## Standard 15

Identify the various types of trusses used in roof framing.

## Standard 16

Use the rafter framing square, speed square, and calculator in laying out a roof.

## Standard 17

Identify various types of sheathing used in roof construction.

## Standard 18

Erect a gable roof using trusses.

## Standard 19

Understand the use and installation of roofing members.

## Standard 20

Understand the members and installation of stairs.

## Performance Skill

Understand and demonstrate framing of flooring systems, wall and ceilings and roofing systems.

- Read and understand drawings and specifications to determine floor system requirements.
- Identify floor and sill framing and support members.
- Name the methods used to fasten sills to the foundation.
- List and recognize different types of floor joists.
- List and recognize different types of flooring materials.
- Explain the purposes of subflooring.
- Match selected fasteners used in floor framing to their correct uses.
- Demonstrate the ability to layout and construct a floor assembly.
- Identify the components of a wall.
- Describe the procedure for laying out a wood frame wall, including plates, corner posts, door and window openings, partition T's, bracing, and firestops.
- Describe the common materials and methods used for installing sheathing on walls.
- Layout, assemble, erect, and brace exterior walls for a frame building.
- Understand the terms associated with roof framing.
- Identify the roof framing members used in gable and hip roofs.
- Identify the various types of trusses used in roof framing.
- Use the rafter framing square, speed square, and calculator in laying out a roof.

- Identify various types of sheathing used in roof construction.
- Erect a gable roof using trusses.
- Understand the use and installation of roofing members.
- Understand the members and installation of stairs.

## STRAND 5

**Students will be able to understand and demonstrate installation of windows and exterior doors.**

### Standard 1

Identify various types of fixed, sliding, and swinging windows.

### Standard 2

Identify the steps of a window installation.

- Ensure that the window is closed
- Removing shipping blocks
- Install window in rough opening
- Shim as necessary
- Check sill for level
- Plumb the side jambs
- Recheck for level and plumb
- Nail
- Install insulation

### Standard 3

Install a window.

### Standard 4

Identify the common types of exterior doors.

- Garage
- Entry

### Standard 5

Identify the threshold.

### Standard 6

Install a pre-hung exterior door with weather-stripping.

### Standard 7

Identify the various types of locksets used on exterior doors and explain how they are installed.

### Standard 8

Install a lockset.

## Performance Skill

Understand and demonstrate installation of windows and exterior doors.

- Identify various types of fixed, sliding, and swinging windows.
- Identify the steps of a window installation.
- Install a window.
- Identify the common types of exterior doors.
- Identify the threshold.
- Install a pre-hung exterior door with weather-stripping.
- Identify the various types of locksets used on exterior doors and explain how they are installed.
- Install a lockset.

## STRAND 6

**Students will be able to understand and demonstrate installation of roofing materials.**

### Standard 1

Identify roofing terms and correct installation methods.

- Square
- Coverage
- Exposure
- Rake
- Underlayment
- Flashing
- Weather guard
- Vents
- Gutters

### Standard 2

Identify different roofing materials.

- Asphalt – standard and metric
- Cedar
- Tile
- Metal

## Performance Skill

Understand and demonstrate installation of roofing materials.

- Identify roofing terms and correct installation methods.
- Identify different roofing materials.

## STRAND 7

**Students will be able to understand and demonstrate installation of insulation materials.**

### Standard 1

Identify the types of installation.

- Flexible – fiberglass blankets
- Loose fill - blown
- Rigid – sheet or board form
- Reflective – aluminum foil bonded

### Standard 2

Explain terms related to insulation.

- R-value
- Vapor barrier

### Performance Skill

Understand and demonstrate installation of insulation materials.

- Identify the types of installation.
- Explain terms related to insulation.

## STRAND 8

**Students will be able to understand and demonstrate drywall installation and finishing.**

### Standard 1

Identify the different types of gypsum wallboard (drywall) and their uses.

### Standard 2

Select the type of thickness of drywall required for specific installations.

### Standard 3

Select fasteners for drywall installation.

- Nails
- Drywall screws
- Adhesives

### Standard 4

Explain the fastener schedules for different types of drywall installations.

### Standard 5

Perform single-layer and multi-layer drywall installations using different types of fastening systems select fasteners for drywall installation.

- Nails
- Screws

## Standard 6

Identify the hand tools used in drywall finishing and demonstrate the ability to use these tools.

## Standard 7

Identify the automatic tools used in drywall finishing.

## Standard 8

Identify the materials used in drywall finishing and state the purpose and use of each type of material, including:

- Compounds
- Joint reinforcing tapes
- Trim materials
- Textures and coatings

## Performance Skill

Understand and demonstrate drywall installation and finishing.

- Identify the different types of gypsum wallboard (drywall) and their uses.
- Select the type of thickness of drywall required for specific installations.
- Select fasteners for drywall installation.
- Explain the fastener schedules for different types of drywall installations.
- Perform single-layer and multi-layer drywall installations using different types of fastening systems select fasteners for drywall installation.
- Identify the hand tools used in drywall finishing and demonstrate the ability to use these tools.
- Identify the automatic tools used in drywall finishing.
- Identify the materials used in drywall finishing and state the purpose and use of each type of material.

## STRAND 9

**Students will be able to understand and demonstrate interior-finishing.**

### Standard 1

Identify various types of door jambs and frames and demonstrate the installation procedures for placing selected door jambs and frames in different types of interior partitions.

### Standard 2

Identify different swings of interior doors.

### Standard 3

Demonstrate the procedure for placing and hanging a selected door.

### Standard 4

Identify the different types of standard moldings and describe their uses.

## Standard 5

Make square and miter cuts using a miter saw.

## Standard 6

Make coped joint cuts using a coping saw.

## Standard 8

Install interior trim, including:

- Door trim
- Window trim
- Base trim
- Ceiling trim

## Performance Skill

Understand and demonstrate interior-finishing.

- Identify various types of door jambs and frames and demonstrate the installation procedures for placing selected door jambs and frames in different types of interior partitions.
- Identify different swings of interior doors.
- Demonstrate the procedure for placing and hanging a selected door.
- Identify the different types of standard moldings and describe their uses.
- Make square and miter cuts using a miter saw.
- Make coped joint cuts using a coping saw.
- Install interior trim.

## STRAND 10

**Students will be able to read construction plans.**

### Standard 1

Demonstrate the ability to read and understand construction plans.

### Standard 2

Explain why drawings are important in the construction industry.

### Standard 3

Understand the different types of construction plans.

- Plot plans
- Floor plans
- Elevations
- Perspective/3D
- Footings and foundations
- Electrical
- Mechanical
- Plumbing

## Performance Skill

Read construction plans.

- Demonstrate the ability to read and understand construction plans.
- Explain why drawings are important in the construction industry.
- Understand the different types of construction plans.

## STRAND 11

**Students will understand the importance of career readiness skills as it relates to the workplace and outlined in the SkillsUSA Framework – Level 1.**

### Standard 1

Understand and demonstrate the attitude of cooperation.

- Develop awareness of cultural diversity and equality issues.
- Demonstrate effective communication with others.
- Apply team skills to a group project.
- Identify and apply conflict resolution skills.

### Standard 2

Understand and demonstrate the ability of being resourceful and innovative.

- Discover self-motivation techniques and establish short-term goals.
- Measure/modify short-term goals.
- Review a professional journal and develop a three- to five-minute presentation.

### Standard 3

Plan for your future career.

- Complete a self-assessment and identify individual learning styles.
- Define future occupations.
- Identify the components of an employment portfolio.
- List proficiency in program competencies.
- Complete a survey for employment opportunities.
- Create a job application.
- Assemble your employment portfolio.
- Employability skills: evaluate program comprehension.

### Standard 4

Understand and demonstrate the ability to manage a project.

- Apply team skills to a group project.
- Observe and critique a meeting.
- Demonstrate business meeting skills.
- Explore supervisory and management roles in an organization.
- Identify and apply conflict resolution skills.
- Demonstrate evaluation skills.
- Manage a project and evaluate others.

# CARPENTRY 1

## Skill Certificate Test Points by Strand

Test Name	Test #	Number of Test Points by Strand										Total Points	Total Questions
		1	2	3	4	5	6	7	8	9	10		
Carpentry I	512	5	7	5	30	4	3	2	4	12	2	74	74