



# CARPENTRY

## Carpentry 1

A program with 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, estimating, blueprint reading, concrete placing, siding, and mechanical systems. These courses are based on the current National Center for Construction Education and Research (NCCER) task list.

# CARPENTRY 1

Levels:	Grades 10-12
Units of Credit:	Minimum 0.5
CIP Code:	46.0201
11 Digit Code:	40-08-00-00-010
11 Digit CE Code:	40-08-00-13-010
Test #:	512
License:	CTE/Secondary
Endorsement:	Carpentry
Prerequisite:	None

## COURSE DESCRIPTION

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## CORE STANDARDS, OBJECTIVES AND INDICATORS

### STANDARD 1

**Students will receive an orientation to the carpentry trade**

**Objective 1:** Explain the importance of safety in the construction industry.

### STANDARD 2

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

**Objective 1:** Explain the terms commonly used in discussing wood and lumber.

**Objective 2:** Identify various types of imperfections that are found in lumber.

- a. Holes
- b. Knots
- c. Pitch
- d. Decay

**Objective 3:** Interpret grade markings on lumber and plywood.

- a. The trademark indicates agency quality supervision.
- b. Mill identification – firm name, brand, or assigned mill number.
- c. Grade designation – grade name, number, or abbreviation.
- d. Species identification – indicates species individually or in combination.
- e. Condition of seasoning at time of surfacing:
  - S-Dry – 19% maximum moisture content
  - MC15 – 15% maximum moisture content
  - S-GRN – over 19% moisture content (unseasoned)

**Objective 4:** Identify the uses of pressure-treated lumber.

- a. Landscape timbers
- b. Sill plates
- c. Foundations
- d. Decks
- e. Porches
- f. Docks

**Objective 5:** Identify the safety precautions associated with pressure-treated lumber.

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

**Objective 6:** Describe the proper method of caring for lumber and wood building materials at the job site.

**Objective 7:** State the uses of various types of engineered lumber.

- a. Columns
- b. Ridge beams
- c. Girders
- d. Headers
- e. Floor joists

**Objective 8:** List the basic nail and staple types and their uses.

- a. Nails: Common, box, finish, casing, doublehead, T-nail, drywall, masonry, cut, roofing.
- b. Staples: Chisel, crosscut chisel, outside chisel, inside chisel, divergent, outside chisel divergent, spear.

**Objective 9:** Identify the different types of anchors and their uses.

- a. Masonry and hollow-wall
- b. Allow something to be securely fastened to masonry or drywall.

**Objective 10:** Describe the common types of adhesives used in construction work and explain their uses.

### **STANDARD 3**

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

**Objective 1:** Identify the hand tools commonly used by carpenters and describe their uses.

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

**Objective 2:** Use hand tools in a safe and appropriate manner.

- a. Follow all safety precautions in the manufacturer's instruction manual.

- b. Always wear safety glasses and other appropriate safety equipment when working with hand and power tools.

**Objective 3:** State the general safety rules for operating all power tools, regardless of type.

**Objective 4:** State the general rules for properly maintaining all power tools, regardless of type.

**Objective 5:** Identify the portable power tools commonly used by carpenters and describe the uses.

**Objective 6:** Use portable power tools in a safe and appropriate manner.

#### **STANDARD 4**

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

**Objective 1:** Perform volume estimates for concrete quantity requirements.

- a. Calculate cubic feet.
- b. Calculate cubic yards.

**Objective 2:** Identify types of concrete reinforcement bars and anchors and describe their use.

- a. Rebar
- b. Anchor bolt

**Objective 3:** Identify types of reinforcement bar supports and describe their use.

**Objective 4:** Recognize four kinds of footings:

- a. Continuous or spread
- b. Stepped
- c. Pier
- d. Grade beam

**Objective 5:** Identify the parts of footing forms and explain their purpose.

**Objective 6:** Identify the parts of pier forms and explain their purpose.

**Objective 7:** Recognize types of concrete pours that require the construction of edge forms:

- a. Slabs with or without a foundation
- b. Driveways
- c. Sidewalks
- d. Approaches

**Objective 8:** Identify the parts of edge forms and explain their purpose.

**Objective 9:** Explain the purpose of a screed and identify the different types of screeds.

**Objective 10:** Demonstrate the ability to set screeds on grade.

**Objective 11:** Identify the various types of concrete forms.

**Objective 12:** Identify the components of each type of form.

**Objective 13:** Explain the safety procedures associated with using concrete forms.

**Objective 14:** Erect, plumb, and brace selected concrete forms, including:

- a. Basic wall form with walers and strongbacks
- b. Ganged wall form
- c. Radius wall form
- d. Column form
- e. Beam form and shoring
- f. Stair form

## **STANDARD 5**

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

**Objective 1:** Read and understand drawings and specifications to determine floor system requirements.

**Objective 2:** Identify floor and sill framing and support members.

**Objective 3:** Name the methods used to fasten sills to the foundation.

**Objective 4:** List and recognize different types of floor joists

**Objective 5:** List and recognize different types of flooring materials.

**Objective 6:** Explain the purposes of subflooring and underlayment.

**Objective 7:** Match selected fasteners used in floor framing to their correct uses.

**Objective 8:** Demonstrate the ability to:

- a. Layout and construct a floor assembly
- b. Install joists for a cantilever floor
- c. Install a single floor system using tongue and groove plywood/OSB panels

**Objective 9:** Identify the components of a wall and ceiling layout.

**Objective 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.

**Objective 11:** Describe the correct procedure for assembling and erecting an exterior wall.

**Objective 12:** Describe the common materials and methods used for installing sheathing on walls.

**Objective 13:** Layout, assemble, erect, and brace exterior walls for a frame building.

**Objective 14:** Understand the terms associated with roof framing.

**Objective 15:** Identify the roof framing members used in gable and hip roofs.

**Objective 16:** Identify the various types of trusses used in roof framing.

**Objective 17:** Use a rafter framing square, speed square, and calculator in laying out a roof.

**Objective 18:** Identify various types of sheathing used in roof construction.

**Objective 19:** Erect a gable roof using trusses.

**Objective 20:** Understand the use and installation of roofing members.

**Objective 21:** Understand the members and installation of stair.

### **STANDARD 6**

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

**Objective 1:** Identify various types of fixed, sliding, and swinging windows.

**Objective 2:** Identify the parts of a window installation.

**Objective 3:** State the requirements for a proper window installation.

**Objective 4:** Install a pre-hung window

**Objective 5:** Identify the common types of exterior doors and windows and explain how they are constructed.

**Objective 6:** Identify the types of thresholds used with exterior doors.

**Objective 7:** Install a pre-hung exterior door with weatherstripping.

**Objective 8:** Identify the various types of locksets used on exterior doors and explain how they are installed.

**Objective 9:** Install a lockset.

### **STANDARD 7**

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

**Objective 1:** Identify the different types of gypsum wallboard (drywall) and their uses.

**Objective 2:** Select the type and thickness of drywall required for specific installations.

**Objective 3:** Select fasteners for drywall installation.

**Objective 4:** Explain the fastener schedules for different types of drywall installations.

**Objective 5:** Perform single-layer and multi-layer drywall installations using different types of fastening systems, including:

- a. Nails
- b. Drywall screws
- c. Adhesives

**Objective 6:** Identify the hand tools used in drywall finishing and demonstrate the ability to use these tools.

**Objective 7:** Identify the automatic tools used in drywall finishing.

**Objective 8:** Identify the materials used in drywall finishing and state the purpose and use of each type of material, including:

- a. Compounds
- b. Joint reinforcing tapes
- c. Trim materials
- d. Textures and coatings

## **STANDARD 8**

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

**Objective 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.

**Objective 2:** Identify different types of interior doors.

**Objective 3:** List and identify specific items included on a typical door schedule.

**Objective 4:** Demonstrate the procedure for placing and hanging a selected door.

**Objective 5:** Identify the different types of standard moldings and describe their uses.

**Objective 6:** Make square and miter cuts using a miter box or power miter saw.

**Objective 7:** Make coped joint cuts using a coping saw.

**Objective 8:** Install interior trim, including:

- a. Door trim
- b. Window trim
- c. Base trim
- d. Ceiling trim

## **STANDARD 9**

**Students will gain an understanding of Building Trades as a profession and will develop professional skills for the workplace.**

**Objective 1:** As a participating member of the SkillsUSA student organization complete the SkillsUSA Level 1 Professional Development Program.

- a. Complete a self-assessment inventory and identify individual learning styles.
- b. Discover self-motivation techniques and establish short-term goals.
- c. Determine individual time-management skills.

- d. Define future occupations.
- e. Define awareness of cultural diversity and equity issues.
- f. Recognize the benefits of conducting a community service project.
- g. Demonstrate effective communication skills with others.
- h. Participate in a shadowing activity.
- i. Identify components of an employment portfolio.
- j. Explore what is ethical in the workplace or school.
- k. Demonstrate proficiency in program competencies.
- l. Explore what is ethical in the workplace or school.
  - State the SkillsUSA motto.
  - State the SkillsUSA creed.
  - Learn the SkillsUSA colors.
  - Describe the official SkillsUSA dress.
  - Describe the procedure for becoming a SkillsUSA officer.

**Objective 2:** Understand the use of drawings in architectural design and how those drawings relate to career opportunities.

**Objective 3:** Display a professional attitude toward the instructor and peers.

\* SkillsUSA PDP requirements - recommended