

**Program Description:** The Carpentry course of study prepares students to lay out, fabricate, erect, install, and repair wooden structures and fixtures using hand and power tools. Students receive instruction in common systems of framing, construction materials, estimating, blueprint reading, concrete placing, siding, and mechanical systems. Program standards are aligned with the National Center for Construction Education and Research (NCCER) task list. Prior to performing any carpentry lab projects, students are required to pass the NCCER safety examination. All students wear protective clothing and gear appropriate for work in carpentry occupations.

## **Module 1: Orientation to the Trade**

**Unit Objective:** Students will demonstrate an understanding of the carpenter as a professional.

### **Unit Competencies:**

1. Describe the history of the carpentry trade.
2. Identify the aptitudes, behaviors and skills needed to be a successful carpenter.
3. Identify training, career and entrepreneurial opportunities.
4. Demonstrate the personal characteristics of a responsible worker.

## **Module 2: Building Materials, Fasteners and Adhesives**

**Unit Objective:** Students will demonstrate an understanding of the use of materials of the trade.

### **Unit Competencies:**

1. Identify and state the uses of various types of hardwoods and softwoods and engineered lumber.
2. Describe the proper methods of safely storing and handling building materials.
3. Calculate the quantities of lumber and wood products using industry-standard methods.
4. Describe and explain the usage of fasteners, anchors and adhesives used in construction.

## **Module 3: Reading Plans and Elevations**

**Unit Objective:** Students will be able to read and interpret symbols and plans utilized in the construction industry.

### **Unit Competencies:**

1. Describe drawings and list information found on each type.
2. Identify the different types of lines.
3. Interpret architectural symbols.
4. Identify electrical, mechanical and plumbing symbols.
5. Read and interpret plans, elevations, schedules, sections and details in basic construction drawings.
6. Identify the purpose and describe the parts of a specification.

## **Module 4: Floor Systems**

**Unit Objective:** Students will be able to perform the tasks necessary to install a floor system.

### **Unit Competencies:**

1. Read, interpret drawings and identify the different types of floor systems and requirements.
2. Determine the materials needed to erect a specific floor system.
3. Estimate the amount of material needed to frame a floor assembly.
4. Demonstrate the ability to lay out and construct a floor assembly including bridging, joists for a cantilever floor, sub flooring and tongue-and-groove plywood.

## **Module 5: Wall and Ceiling and Roof Framing**

**Unit Objective: Students will be able to perform the tasks necessary to install walls, ceilings and roof systems.**

**Unit Competencies:**

1. Identify the components of a wall and ceiling layout.
2. Demonstrate the procedure for laying out ceiling joists.
3. Describe the procedure for laying out a wood frame wall, including plates, corner posts, door and window openings, partition T's, bracing and fire stops.
4. Describe the correct procedure for assembling and erecting an exterior wall.
5. Estimate the materials used in framing and sheathing walls and a roof.
6. Describe the materials and methods used for installing sheathing on walls and roofs.  
Identify the methods used to calculate the length of a rafter.
7. Layout, assemble, erect and brace exterior walls for a frame building.
8. Identify the roof framing members used in gable and hip roofs.
9. Identify the types of trusses used in roof framing.
10. Layout a roof by demonstrating the proper use of tools associated with roof construction.
11. Frame a roof opening and a gable roof with vent openings.
12. Erect a gable roof using trusses.

#### **Module 6: Concrete Reinforcing Materials and Forms**

**Unit Objective: Students will demonstrate an understanding of the uses of concrete and reinforcing materials**

**Unit Competencies:**

1. Perform volume estimates for concrete quantity requirements.
2. Identify the types of concrete reinforcement bars and reinforcement bar supports and their uses.
3. Recognize the types of foots, and forms and demonstrate an understanding of their uses.
4. Erect, plumb and brace a simple concrete form with reinforcement.

#### **Module 7: Windows and Exterior Doors**

**Unit Objective: Students will demonstrate competency in the installation of windows and exterior doors.**

**Unit Competencies:**

1. Identify the types of windows and doors.
2. State the requirements for a proper window installation
3. Demonstrate proper installation of a pre-hung window.
4. Identify the types of thresholds used with exterior doors.
5. Demonstrate proper installation of a pre-hung exterior door.
6. Identify the various types of locks and indicate methods for proper installation.
7. Demonstrate proper installation of a lockset.

#### **Module 8: Basic Stair Layout**

**Unit Objective: Students will describe and demonstrate proper stair layout.**

**Unit Competencies:**

1. Identify the types and parts of stairs.
2. Identify the materials used in the construction of stairs.
3. Read and interpret construction drawings of stairs.
4. Calculate the total rise, number and size of risers and number and size of treads required for a

stairway.

5. Demonstrate laying out and cutting stringers, risers and treads.
6. Properly build a small stair unit with a temporary handrail.

### **Module 9: Roofing applications**

**Unit Objective: Students will demonstrate a basic understanding of roofing.**

**Unit Competencies:**

1. Identify the materials and methods used in roofing.
2. Install fiberglass shingles on gable and hip roofs.
3. Demonstrate techniques for installing other selected types of roofing materials.

### **Module 10: Thermal and Moisture Protection**

**Unit Objective: Students will demonstrate a basic understanding of insulation and barriers.**

**Unit Competencies:**

1. Describe the requirements for installation of insulation and vapor barriers.
2. Describe the characteristics of various types of insulation and vapor barriers.
3. Install selected vapor barriers.

### **Module 11: Exterior Finishing**

**Unit Objective: Students will demonstrate a basic understanding of exterior finishing.**

**Unit Competencies:**

1. Describe the purpose of wall insulation and flashing.
2. Demonstrate installation of common cornices.
3. Describe types and styles of wood, vinyl and metal siding.

### **Module 12: Drywall Installation and Finishing**

**Unit Objective: Students will demonstrate methods of drywall installation and drywall finishing.**

**Unit Competencies:**

1. Identify different types of drywall and their uses.
2. Select fasteners for drywall installation.
3. Demonstrate single-layer and multi-layer drywall installations using different types of fastening systems, including: nails, drywall screws, and adhesives.
4. State the differences between the six levels of finish established by industry standards.
5. Demonstrate correct use for hand tools utilized in drywall installation and finishing.
6. Identify purpose and use for materials used in drywall, including: compounds, joint reinforcing tapes, trim material and textures and coatings.
7. Recognize problems that occur in drywall finishes: identify causes and correct solutions.
8. Demonstrate proper technique for patching damaged drywall.

### **Module 13: Doors and Door Hardware**

**Unit Objective: Students will demonstrate proper door and hardware installation.**

**Unit Competencies:**

1. Identify types of door jams and frames and the installation procedures for interior partitions.
2. Identify interior door types and demonstrate procedure for placing and hanging a door.

### **Module 14: Window, Door Floor and Ceiling Trim**

**Unit Objective: Students will demonstrate preparing and installing various trim.**

**Unit Competencies:**

1. Identify the types of standard moldings and describe their uses.
2. Demonstrate square and miter cuts using a miter box or power miter saw.
3. Demonstrate coped joint cuts using a coping saw.
4. Select correct fasteners and demonstrate proper installation of fasteners to install trim.
5. Install interior trim, including: door, window, base and ceiling trim.

**Certifications Offered:**

OSHA-10 Safety Certification

NCCER Safety Certification