Mississippi CTE

# Carpentry (2025)

## Build Your Future in Construction 1

1 **Describe local program and center expectations, policies, and procedures.** 1.1

- a Describe local program and career center policies and procedures, including dress code, attendance, academic requirements, discipline, shop/lab rules and regulations, and transportation regulations. 1.1.A
- b Give a brief overview of the course and the carpentry industry. Explain the Construction and Carpentry Pathway, why it is important, and how it will be delivered. 1.1.B
- c Compare and contrast local program and school policies to expectations of employers. 1.1.C
- d Preview course objectives, program policy, and the industry standards. 1.1.D

2 **Investigate work-based learning opportunities related to program areas.** 1.2

- a Define work-based learning. 1.2.A
- b Identify ways to pursue a career in the carpentry industry. 1.2.B
- c Explore the opportunities available through the program areas, including: 1.2.C
  - 1 Job shadowing 1.2.C.1
  - 2 Apprenticeship programs 1.2.C.2
  - 3 On-the-job training 1.2.C.3

3 **Discuss the history, mission, and purpose of student organizations, including SkillsUSA.** 1.3

- a Trace the history of the program area student organization. 1.3.A
- b Identify the mission, purpose, and/or goals of the program area student organization. 1.3.B

4 **Explore the advantages of membership in a student organization.** 1.4

- a Discuss the membership process for the program area student organization. 1.4.A
- b Explain the activities related to the local chapter and the state and national organization. 1.4.B

5 **Discuss the organization's brand resources.** 1.5

- a Identify the motto, creed, and/or pledge and discuss their meanings. 1.5.A

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b Recognize related brand resources such as: 1.5.B

1 Emblem 1.5.B.1

2 Colors 1.5.B.2

3 Official Attire 1.5.B.3

4 Logos 1.5.B.4

5 Graphic Standards 1.5.B.5

6 **Apply leadership skills to class and work-related situations and 21st Century Skills.** 1.6

a Define leadership. 1.6.A

b Discuss the attributes of a leader. 1.6.B

c Identify the roles a leader can assume. 1.6.C

7 **Utilize teambuilding skills in class and work-related situations.** 1.7

a Define teambuilding. 1.7.A

b Discuss the attributes of a team. 1.7.B

c Identify the roles included in a team. 1.7.C

8 **Discuss the various competitions offered through the program area student organization.** 1.8

a Describe each of the competitions and the skills needed to accomplish the tasks. 1.8.A

b Perform the tasks needed to complete an assigned requirement for a competition. 1.8.B

**Basic Safety** 2

1 **Describe, define, and illustrate general safety rules for working in a shop/lab and how they relate to construction and the carpentry industry.** 2.1

a Describe how to avoid on-site accidents. 2.1.A

b Explain the relationship between housekeeping and safety. 2.1.B

c Explain the importance of following all safety rules and company safety policies according to Occupational Safety and Health Administration (OSHA) standards. 2.1.C

d Explain the importance of reporting all on-the-job injuries, accidents, and near misses. 2.1.D

e Explain the need for evacuation policies and the importance of following them. 2.1.E

f Explain causes of accidents and the impact of accident costs. 2.1.F

g Compare and contrast shop/lab safety rules to industry safety rules. 2.1.G

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**dentify and apply safety around construction operations.** 2.2

a Use proper safety practices when constructing or working around carpentry operations. 2.2.A

b Explain the term “proximity work.” 2.2.B

3 **Display appropriate safety precautions to take around common job site hazards.** 2.3

a Explain the safety requirements for working in confined areas. 2.3.A

b Explain the different barriers and barricades and how they are used. 2.3.B

4 **Demonstrate the appropriate use and care of personal protective equipment (PPE).** 2.4

a Identify commonly used PPE items. 2.4.A

b Understand proper use of PPE. 2.4.B

c Demonstrate appropriate care for PPE. 2.4.C

5 **Explain fall protection, ladder, stair, and scaffold procedures and requirements.** 2.5

a Explain the use of proper fall protection. 2.5.A

b Inspect and safely work with various ladders, stairs, and scaffolds. 2.5.B

6 **Explain the safety data sheet (SDS).** 2.6

a Explain the function of the SDS. 2.6.A

b Interpret the requirements of the SDS. 2.6.B

c Discuss hazardous material exposures. 2.6.C

7 **Display appropriate safety procedures related to fires.** 2.7

a Explain the process by which fires start. 2.7.A

b Explain fire prevention of various flammable liquids. 2.7.B

c Explain the classes of fire and the types of extinguishers. 2.7.C

d Illustrate the proper steps to follow when using a fire extinguisher. 2.7.D

e Demonstrate the proper techniques for putting out a fire. 2.7.E

8 **Explain safety in and around electrical situations.** 2.8

a Explain injuries that can result when electrical contact occurs. 2.8.A

b Explain safety around electrical hazards. 2.8.B

c Explain actions to take when an electrical shock occurs. 2.8.C

**Introduction to Construction Math** 3

1 **Apply the four basic math skills using whole numbers, fractions, decimals, and percentages, both with and without a calculator.** 3.1

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a Define basic angles and geometric shapes used in the manufacturing industry. 3.1.A

1 Explain angle types. 3.1.A.1

2 Explain geometric shapes and give an overview of their characteristics. 3.1.A.2

3 Discuss area and volume. 3.1.A.3

b Add, subtract, multiply, and divide whole numbers, decimals, and fractions with and without a calculator. 3.1.B

c Convert whole numbers to fractions and convert fractions to whole numbers. 3.1.C

d Convert decimals to percentages and convert percentages to decimals. 3.1.D

e Convert fractions to decimals. 3.1.E

f Convert fractions to percentages. 3.1.F

g Demonstrate reading a standard and metric ruler and tape measure. 3.1.G

h Recognize and use metric units of length, weight, volume, and temperature. 3.1.H

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**Hand Tools** 4

1 **Demonstrate the use and maintenance of hand tools.** 4.1

a Identify, visually inspect, and discuss the safe use of common hand tools used on job sites. 4.1.A

b Discuss rules of safety. 4.1.B

c Select and demonstrate the use of tools. 4.1.C

d Explain the procedures for maintenance. 4.1.D

2 **Explore measurement and layout tools.** 4.2

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**Power Tools** 5

1 **Demonstrate the use and maintenance of power tools.** 5.1

a Identify, visually inspect, and discuss the safe use of common power tools including electric, pneumatic, and hydraulic. 5.1.A

b Discuss rules of safety. 5.1.B

c Select and demonstrate the use of tools. 5.1.C

d Explain the procedures for maintenance. 5.1.D

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**Introduction to Construction Drawings** 6

1 **Read, analyze, and understand basic components of a blueprint.** 6.1

a Recognize and identify terms, components, and symbols commonly used on blueprints. 6.1.A

b Relate information on drawings to actual locations on the print. 6.1.B

c Recognize different types of drawings. 6.1.C

Interpret and use drawing dimensions and scale types. 6.1.D

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2 **Interpret symbols from a blueprint.** 6.2

3 **Examine various detail drawings.** 6.3

**Communication Skills** 7

1 **Demonstrate the ability to follow verbal and written instructions and communicate effectively in on-the-job situations.** 7.1

- a Follow basic written and verbal instructions. 7.1.A
- b Effectively communicate in on-the-job situations using verbal, written, or electronic communication. 7.1.B

2 **Discuss the importance of good listening skills in on-the-job situations.** 7.2

- a Apply the tips for developing good listening and speaking skills. 7.2.A

**Employability Skills** 8

1 **Describe employment opportunities in the carpentry and construction industry.** 8.1

- a Describe employment opportunities, including potential earnings, employee benefits, job availability, working conditions, educational requirements, required technology skills, and continuing education/training. 8.1.A
- b Discuss the guidelines for developing a proper résumé. 8.1.B
- c Demonstrate completing job applications. 8.1.C

2 **Examine the Mississippi Department of Employment Security (MDES) website and its applications relating to employment opportunities.** 8.2

- a Perform various searches through the MDES website such as: 8.2.A
  - 1 Number of jobs available for a specific area of expertise 8.2.A.1
  - 2 Hourly wage 8.2.A.2
  - 3 Percent of jobs in the county 8.2.A.3
  - 4 Percent of jobs in the state 8.2.A.4

3 **Demonstrate appropriate interview skills.** 8.3

- a Identify interview skills such as speaking, dress, professionalism, punctuality. 8.3.A
- b Simulate a job interview. 8.3.B

4 **Describe basic employee responsibilities and appropriate work ethics.** 8.4

- a Compare and contrast employment responsibilities and expectations to local school and program policies and expectations. 8.4.A
- b Define effective relationship skills and workplace issues including, but not limited to, sexual harassment, stress, and substance abuse. 8.4.B

Demonstrate critical thinking and effective leadership skills. 8.4.C

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## Introduction to Materials Handling 9

1. **Safely handle and store materials.** 9.1
   - a Define a load. 9.1.A
   - b Establish a pre-task plan prior to moving a load. 9.1.B
   - c Use proper materials-handling techniques. 9.1.C
   - d Recognize hazards and follow safety procedures required for materials handling. 9.1.D
2. **Choose appropriate materials-handling equipment for the task.** 9.2
   - a Motorized 9.2.A
   - b Non-Motorized 9.2.B

## Orientation to Carpentry 10

1. **Review local program and career center policies and procedures.** 10.1
   - a Review local program and career center policies and school handbook procedures including dress code, attendance, acceptable use of technology policy, academic requirements, discipline, and transportation regulations. 10.1.A
   - b Give a brief overview of the course, and explain to students what General Carpentry is, why it is important for students to know the content of the course, and how it will be delivered. 10.1.B
   - c Review course objectives, program expectations, and industry standards. 10.1.C
2. **Reinforce shop/lab rules and safety procedures.** 10.2
   - a Review Unit 5 of the Construction Core curriculum when discussing basic safety, which is associated with module 00101 or complete OSHA 10 training. 10.2.A
3. **Explore employment opportunities and employment responsibilities.** 10.3
   - a Research employment opportunities and include potential earnings, employee benefits, job availability, work environment, and educational requirements. 10.3.A
   - b Research basic employee responsibilities and appropriate work ethics. 10.3.B
   - c Update your resume and/or employment portfolio. 10.3.C
4. **Review the advantages of membership in a student organization.** 10.4
   - a Discuss the membership process for the program area's student organization. 10.4.A
   - b Explain the activities related to the local chapter and the state and national organizations. 10.4.B
5. **Demonstrate the ability to follow verbal and written instructions and communicate effectively in on-the-job situations** 10.5
   - a Follow basic written and verbal instructions. 10.5.A
   - b Effectively communicate in workplace situations. 10.5.B

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**Building Materials and Fasteners** 11

1 **Select correct building materials, fasteners, and adhesives.** 11.1

- a Identify and state the use of various building materials, types of softwoods and hardwoods, and the safety precautions associated with each. 11.1.A
- b Identify the different grades and markings of wood building materials and types of engineered lumber. 11.1.B
- c * - Calculate the quantities of building materials using industry-standard methods. 11.1.C
- d * - Identify fasteners, anchors, and adhesives used in construction work and explain their uses.

**Construction Plans and Documents** 12

1 **Identify the drawings included in construction plans and how to interpret them.** 12.1

- a Explain what each drawing in a set of plans is used for. 12.1.A
- b Recognize line types, symbols, and related abbreviations. 12.1.B
- c Clarify the various approaches used in dimensioning construction drawings. 12.1.C
- d * - Read and interpret construction plan drawings and schedules. 12.1.D

2 **Explain the uses of written specifications.** 12.2

- a Outline the structure and organization of specifications. 12.2.A
- b Emphasize the significance of adhering to construction building codes. 12.2.B
- c * - Understand and clarify written specifications. 12.2.C

**Principles of Site and Building Layout** 13

1 **Summarize how site and building layouts utilize construction drawings.** 13.1

- a Investigate and categorize site and building layout tasks. 13.1.A
- b Distinguish the uses of construction drawing types with regard to building site layouts. 13.1.B

2 **Identify right triangle computations and basic construction math ideas regarding site layouts.** 13.2

- a Describe how site and building layouts utilize the Pythagorean Theorem and the 3-4-5 rule. 13.2.A

3 **Examine how site and building layouts utilize measurement and leveling tools.** 13.3

- a Identify measurement tools and how they are used. 13.3.A
- b Explain leveling tool applications. 13.3.B
- c * - Determine elevations and angles with the use of leveling tools (e.g., water level, builder's level, laser level, or transit level). 13.3.C
- d Identify and explore instruments and equipment regarding site layouts. 13.3.D
- e Describe site layout instruments and equipment. 13.3.E

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f * - Show how measurement and leveling tools are used. 13.3.F

4 **Verify that corners are square, set up building lines, and measure horizontal and vertical distances.** 13.4

a Determine the procedure for measuring both horizontal and vertical distances. 13.4.A

b Provide a summary of the steps for setting up building lines with batter boards and ensuring that corner boards are square. 13.4.B

c * - Utilize either the 3-4-5 rule or the Pythagorean Theorem to confirm that intersecting walls are at right angles. 13.4.C

## Floor Systems 14

1 **Outline the specifications and construction drawings that indicate the necessary floor system requirements.** 14.1

a Paraphrase how specifications and architectural drawings contribute to floor construction. 14.1.A

2 **Recognize and differentiate categories of floor framing systems.** 14.2

a List and explain the varieties of wood-frame flooring systems. 14.2.A

3 **Determine the components of a floor system and calculate the necessary quantities of materials.** 14.3

a Explain the function of a sill plate and its significance to floor framing. 14.3.A

b Identify and characterize various types of girders and supports. 14.3.B

c Explore types of floor joists. 14.3.C

d Determine the functions of a subfloor and underlayment. 14.3.D

e * - Calculate the quantity of materials required for floor structure. 14.3.E

f Calculate the required material quantity for framing a floor assembly based on a set of plans. 14.3.F

4 **Explain the process of building a platform floor assembly.** 14.4

a Outline the procedure for constructing a floor assembly. 14.4.A

b * - Arrange and build a floor assembly incorporating a rough opening and subfloor material. 14.4.B

## Wall Systems 15

1 **List the elements of a wall system and explain the process of calculating the necessary framing materials.** 15.1

a Outline the elements of a wall system. 15.1.A

b Describe the process of estimating the quantities and materials needed for framing walls. 15.1.B

* - Compute the estimated materials needed for wall framing. 15.1.C

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2 **Describe the process of marking and framing walls.** 15.2

a Provide a comprehensive explanation of the process involved in constructing wood frame walls. 15.2.A

b Provide a comprehensive explanation of the process involved in constructing steel frame walls. 15.2.B

c * - Arrange a wood frame wall incorporating plates, corner assemblies, door and window openings, partition Ts, bracing, and fire-blocking. 15.2.C

3 **Provide a concise overview of the process involved in constructing and raising wall systems.** 15.3

a Outline the process for putting together a wall. 15.3.A

b Demonstrate the four steps required to raise a wall. 15.3.B

c * - Construct and raise a wooden frame wall encompassing top and bottom plates, corner assemblies, openings for doors and windows, partition Ts, bracing, and fire-blocking. 15.3.C

d * - Properly install the sheathing on a wall. 15.3.D

**Roof Framing** 16

1 **Recognize and mount ceiling frame elements.** 16.1

a Explain the process of arranging, cutting, and setting up ceiling joists. 16.1.A

b Describe how to calculate and compute the required number of ceiling joists for a structure. 16.1.B

c * - Demonstrate ceiling joist lay out. 16.1.C

d * - Calculate the quantity of ceiling joists needed for the construction of the building. 16.1.D

2 **Recognize and categorize the various types and components of residential roofs.** 16.2

3 **Explain and demonstrate the techniques of laying out and cutting common rafters.** 16.3

4 **Provide a detailed explanation on the process of constructing and sheathing a gable roof.** 16.4

a Explain the process of constructing a gable roof and its ends. 16.4.A

b Outline the process for attaching sheathing to the roof. 16.4.B

c Determine the quantity of rafters, ridgeboard, and sheathing required for material takeoff. 16.4.C

d * - Cut and install gable roof rafters, frame a gable end wall, and demonstrate how to sheath a gable roof with an opening. 16.4.D

5 **Acknowledge the utilization of trusses in fundamental roof construction.** 16.5

Discuss trusses and describe their installation process. 16.5.A

Use trusses to erect a gable roof. 16.5.B

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## Basic Stair Layout 17

1. **Recognize the essential elements of a stairway and the corresponding requirements associated with them.** 17.1
   - a Define essential stairway terminology and construction specifications. 17.1.A
   - b Expound on the various types of stairways. 17.1.B
2. **Explain how to calculate the overall height, quantity, and dimension of risers and treads required for a staircase.** 17.2
   - a Explain how to calculate the total rise, tread count, dimensions of risers, and the count and dimensions of treads required for a staircase. 17.2.A
   - b Explain the process of determining the dimensions for stairwell openings. 17.2.B
   - c * - Calculate the rise and run for a stairway, determine the height and number of risers, and determine the depth and number of treads. 17.2.C
3. **Explain the details regarding the procedures for constructing stairs.** 17.3
   - a Describe the process for laying out, cutting, and constructing stringers and concrete forms. 17.3.A
   - b * - Demonstrate how to lay out and cut a stringer. 17.3.B

## Building Envelope Systems 18

1. **Explain the function and elements of building envelope systems.** 18.1
   - a Discover methods to reduce air and moisture infiltration in structures. 18.1.A
2. **Explain the varieties of windows and their installation specifications.** 18.2
   - a Recognize different window types, their uses, and the steps involved in their installation. 18.2.A
   - b * - Prepare a rough opening and ensure the correct installation of a window. 18.2.B
3. **Provide an overview of the various types of doors including their specific applications and requirements for installation.** 18.3
   - a Differentiate between residential and non-residential doors and outline the installation procedures for each type. 18.3.A
   - b * - Prepare a rough opening and ensure the correct installation of a door. 18.3.B