

STRANDS AND STANDARDS

CARPENTRY 2



Course Description

This is the second in a sequence of courses that prepares individuals as a lead or foreman in laying out, fabricating, erecting, and installing wooden structures and fixtures using hand and power tools. Includes instruction in job site management, framing systems, construction materials, estimating, scheduling, blueprint reading, concrete placing, siding, and mechanical systems.

Intended Grade Level	11-12
Units of Credit	1.0
Core Code	40.08.00.00.015
Concurrent Enrollment Core Code	40.08.00.13.015
Prerequisite	Carpentry 1
Skill Certification Test Number	None
Test Weight	N/A
License Type	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
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

Explain the terms commonly used in discussing wood and lumber.

- Hardwoods and softwoods
- Moisture and warping

Standard 2

Identify various types of imperfections that are found in lumber.

- Holes
- Knots
- Pitch
- Decay

Standard 3

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 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

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.

- Explain the terms commonly used in discussing wood and lumber.
- Identify various types of imperfections that are found in lumber.
- Insert performance objective text
- Interpret grade markings on lumber and plywood.
- 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
- Grade beam

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 4

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 and underlayment.

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 joists for a cantilever floor.
- Install a single floor system using tongue and groove plywood/OSB panels.

Standard 9

Identify the components of a wall and ceiling layout.

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 procedure for assembling and erecting an exterior wall.

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

Identify the various types of trusses used in roof framing.

Standard 17

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

Standard 18

Identify various types of sheathing used in roof construction.

Standard 19

Erect a gable roof using trusses.

Standard 20

Understand the use and installation of roofing members.

Standard 21

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 and underlayment.
- Match selected fasteners used in floor framing to their correct uses.
- Demonstrate the ability to install floor systems.
- Identify the components of a wall and ceiling layout.
- 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 procedure for assembling and erecting an exterior wall.
- Layout, assemble, erect, and brace exterior walls for a frame building.
- Understand the terms associated with roof framing.
- Identify the framing members used in gable and hip roofs.
- Identify the various types of trusses used in roof framing.
- 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
- Drywall 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 types of interior doors.

Standard 3

List and identify specific items included on a typical door schedule.

Standard 4

Demonstrate the procedure for placing and hanging a selected door.

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 types of interior doors.
- List and identify specific items included on a typical door schedule.
- Demonstrate the procedure for placing and hanging a selected door.
- 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 2.

Standard 1

Understand and demonstrate reliability.

- Determine individual time management skills.
- Explore what's ethical in the workplace or school.
- Demonstrate awareness of government.
- Demonstrate awareness of professional organizations and trade unions.

Standard 2

Understand and demonstrate responsiveness.

- Define the customer.
- Recognize benefits of doing a community service project.
- Demonstrate social etiquette.
- Identify customer expectations.

Standard 3

Understand resiliency.

- Discover self-motivation techniques and establish short-term goals.
- Select characters of a positive image.
- Identify a mentor.

Standard 4

Understand and demonstrate workplace habits.

- Participate in a shadowing activity.
- Explore workplace ethics: codes of conduct.
- Recognize safety issues.
- Perform a skill demonstration.
- Exercise your right to know.

Standard 5

Understand and develop initiative.

- Develop personal financial skills.
- Develop a business plan.
- Investigate entrepreneurship opportunities.

Standard 6

Understand and demonstrate continuous improvement.

- Conduct a worker interview.
- Demonstrate evaluation skills.
- Examine ethics and values in the workplace.
- Develop a working relationship with a mentor.
- Construct a job search network.