

Florida Department of Education
Curriculum Framework

Program Title: Carpentry
Program Type: Career Preparatory
Career Cluster: Architecture & Construction

Secondary – Career Preparatory

Program Number	8104300
CIP Number	0646020116
Grade Level	9-12
Standard Length	5 Credits
Teacher Certification	Refer to the <u>Program Structure</u> section.
CTSO	SkillsUSA
SOC Codes (all applicable)	47-3012 – Helpers--Carpenters 47-2031 – Carpenters
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml

Purpose

The purpose of this secondary program is to prepare students for employment in the carpentry industry with an emphasis on learning fundamental carpentry skills.

This program prepares students to enter the construction industry as an apprentice (carpenters helper) to assist journeyman carpenters to construct, erect, install, and repair structures and fixtures made from wood and other materials. Help maintain work areas and equipment, and manage building materials and supplies on the construction site. Expectation is that the journeyman carpenter will teach the carpenter helper to become a journeyman carpenter.

The content includes but is not limited to developing rough and finish carpentry skills.

Additional Information relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

Program Structure

This program is a planned sequence of instruction totaling five credits.

To teach the courses listed below, instructors must hold at least one of the teacher certifications indicated for that course.

The following table illustrates the secondary program structure:

Course Number	Course Title	Teacher Certification	Length	SOC Code	Level	Graduation Requirement
8104310	Carpentry Fundamentals	CAB WOODWK @7 7G CARPENTRY @7 7G BLDG CONST @7 7G TEC CONSTR @7 7G	1 Credit	47-3012	2	
8104320	Carpentry Layout		1 Credit		2	
8104330	Carpentry Framing		1 Credit	47-2031	3	
8104340	Carpentry Exterior		1 Credit		3	
8104350	Carpentry Finish		1 Credit		3	

(Graduation Requirement Abbreviations- EQ= Equally Rigorous Science, PA= Practical Arts, EC= Economics)

Common Career Technical Core – Career Ready Practices

Career Ready Practices describe the career-ready skills that educators should seek to develop in their students. These practices are not exclusive to a Career Pathway, program of study, discipline or level of education. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

1. Act as a responsible and contributing citizen and employee.
2. Apply appropriate academic and technical skills.
3. Attend to personal health and financial well-being.
4. Communicate clearly, effectively and with reason.
5. Consider the environmental, social and economic impacts of decisions.
6. Demonstrate creativity and innovation.
7. Employ valid and reliable research strategies.
8. Utilize critical thinking to make sense of problems and persevere in solving them.
9. Model integrity, ethical leadership and effective management.
10. Plan education and career path aligned to personal goals.
11. Use technology to enhance productivity.
12. Work productively in teams while using cultural/global competence.

Standards

After successfully completing this program, the student will be able to perform the following:

- 01.0 Apply shop and construction site safety skills.
- 02.0 Select, use and maintain hand tools, power tools and stationary equipment.
- 03.0 Apply mathematics knowledge to assist in constructing buildings, structures, and various construction and woodworking related projects.
- 04.0 Read, understand and create basic construction and shop drawings and/or sketches.
- 05.0 Select and recommend appropriate building materials for building and woodworking projects.
- 06.0 Select and use appropriate fasteners and hardware for specific construction and woodworking applications.
- 07.0 Set up and install basic rigging and scaffolding.
- 08.0 Identify ways that sustainable design and construction strategies impact the built environment (Optional).
- 09.0 Explain the importance of employability and entrepreneurship skills (Optional).
- 10.0 Perform site-preparation and building layout activities.
- 11.0 Understand how to layout and/or construct a building foundation.
- 12.0 Layout, cut and install framing members for a floor system (wood and/or metal).
- 13.0 Layout, cut and install a wall framing system (wood and/or metal).
- 14.0 Comply with current hurricane building codes.
- 15.0 Layout, cut and install a wood frame roof system.
- 16.0 Frame walls using cold-formed steel (Optional).
- 17.0 Lay out, cut and rough frame a stair system.
- 18.0 Identify, select and install various roofing materials for building structures.
- 19.0 Identify and apply appropriate thermal boundary, moisture protection and water management systems.
- 20.0 Install windows and exterior doors.
- 21.0 Install gypsum drywall.
- 22.0 Identify and fasten wood stock and joints.
- 23.0 Install cabinets and components (Optional).

Florida Department of Education
Student Performance Standards

Course Title: Carpentry Fundamentals
Course Number: 8104310
Course Credit: 1

Course Description:

The purpose of this course is for the student to develop competencies essential to the carpentry industry including safety, use of manual and power tools, applied math, construction plan drawing, building materials, fasteners and hardware, rigging and scaffolding, sustainability and employability skills.

CTE Standards and Benchmarks	
01.0	Apply shop and construction site safety skills--The student will be able to:
01.01	Maintain a clean, orderly and safe work area.
01.02	Transport, handle and store materials safely.
01.03	Operate a fire extinguisher.
01.04	Qualify in basic first-aid procedures
01.05	Know how to identify and report safety hazards and <i>optionally</i> , be able to fill out and report a sample Accident Report to the supervisor.
01.06	Demonstrate the inspection, proper use, inspection, and care of personal protective equipment (PPE).
01.07	Personal Protective Equipment - PPE
01.08	Describe "Right-to-Know" Law as recorded in (29 CFR-1910.1200).
01.09	Explain the purpose of the Occupational Safety and Health Administration (OSHA)
01.10	Use Safety Data Sheets (SDS) to recognize health-related problems that may result from exposure to hazardous materials and chemicals.
01.11	Describe the proper procedures for handling hazardous materials.
01.12	Explain the importance of complying with the Americans with Disabilities Act (ADA) requirements.
02.0	Select, use and maintain hand tools, power tools and stationary equipment --The student will be able to:
02.01	Read and demonstrate proficiency with carpenter's measuring tools.

CTE Standards and Benchmarks

02.02	Identify, select and safely use various hand tools.
02.03	Identify, select and safely use hand held power tools and stationary equipment.
02.04	Properly maintain hand tools, power tools and stationary equipment and learn about the maintenance of them.
03.0	Apply mathematics knowledge to assist in constructing buildings, structures, and various construction and woodworking related projects-- The student will be able to:
03.01	Apply geometry and algebra to solve construction related math problems.
03.02	Use arithmetic to assist in constructing buildings, structures and woodworking projects.
03.03	Use mathematics to solve distance, elevation, perimeter, area and volume problems.
04.0	Read, understand and create basic construction and shop drawings and/or sketches--The student will be able to:
04.01	Identify basic construction and shop drawings, drawing terms, components and symbols.
04.02	Interpret and apply information found on construction drawings and in specifications to assist in construction and woodworking projects.
04.03	Recognize the different types of construction drawings.
04.04	Use an architectural scale to determine and verify construction drawing dimensions.
04.05	Identify, describe and state the purpose of the parts of written specifications.
04.06	Conduct quantity takeoffs for estimating materials.
04.07	Interpret and understand scopes of work for construction guidelines.
04.08	Draw and/or sketch basic floor plans and/or shop drawings and elevations.
05.0	Select and recommend appropriate building materials for building and woodworking projects--The student will be able to:
05.01	Identify the grades and species of lumber and their appropriate uses
05.02	Identify the actual and nominal sizes of lumber.
05.03	Identify the grades of plywood and wood products and their uses.
05.04	Identify defects and blemishes that affect the durability, strength and use of lumber.
05.05	Determine how to locate and mark crowned, bowed or cupped framing lumber and how to cull it for use.

CTE Standards and Benchmarks

05.06	Explain the effects of temperature differences, chemical reaction and moisture content on building materials.
05.07	Explain and identify the uses of various types of engineered lumber.
06.0	Select and use appropriate fasteners and hardware for specific construction and woodworking applications--The student will be able to:
06.01	Identify and use fasteners and their appropriate applications commonly used in carpentry and/or cabinetmaking.
06.02	Identify and use hardware and their appropriate applications commonly used in carpentry and/or cabinetmaking.
07.0	Set up and install basic rigging and scaffolding--The student will be able to:
07.01	Identify and use rigging equipment.
07.02	Inspect rigging equipment, following safety precautions.
07.03	Estimate size, weight and center of the load.
07.04	Use rigging methods to safely move materials and equipment.
07.05	Correctly and safely assemble, inspect and disassemble scaffolding.
07.06	Inspect and safely use various types of ladders and scaffolding.
08.0	Identify ways that sustainable design and construction strategies impact the built environment (Optional)--The student will be able to:
08.01	Describe how sustainability practices impact the construction industry on the natural environment.
08.02	Describe the life cycle phases of a building and its impacts on the environment throughout the life of the building.
08.03	Recommend sustainable alternative carpentry practices as opposed to conventional carpentry practices.
08.04	Identify specific practices that can lessen adverse impacts on the environment.
09.0	Explain the importance of employability and entrepreneurship skills (Optional)--The student will be able to:
09.01	Identify and demonstrate positive work behaviors needed to be employable.
09.02	Develop personal career plan that includes goals, objectives and strategies.
09.03	Examine licensing, certification and industry credentialing requirements.
09.04	Maintain an updated resume and a portfolio to document work knowledge, skills and experience.
09.05	Evaluate and compare employment opportunities that match career path goals.

CTE Standards and Benchmarks

09.06 Identify and exhibit traits for retaining employment.

09.07 Identify opportunities and research requirements for career advancement.

09.08 Research the benefits of ongoing professional development and education.

09.09 Examine and describe entrepreneurship opportunities as a career planning option.

**Florida Department of Education
Student Performance Standards**

Course Title: Carpentry Layout
Course Number: 8104320
Course Credit: 1

Course Description:

The purpose of this course is for the student to continue developing competencies essential to the carpentry profession. These competencies include site preparation and layout, building foundations, engineered structural lumber and floor system framing.

CTE Standards and Benchmarks	
10.0	Perform site-preparation and building layout activities--The student will be able to:
10.01	Identify building layout dimensions and elevations from plans and specifications using math skills.
10.02	Use a transit, a builder’s level and laser level.
10.03	Erect batter boards and locate building lines.
10.04	Locate building line points on batter boards using a builder’s level and measuring instruments.
10.05	Locate building lines on a site plan.
10.06	Square a building, using the 3-4-5-triangle method and the diagonal (Pythagorean Theorem) method.
11.0	Understand how to layout and/or construct a building foundation--The student will be able to:
11.01	Establish building and final grade elevations.
11.02	Identify various types of footings and foundations.
11.03	Identify various footing requirements used to support different types of foundations.
11.04	Identify and select appropriate footing and foundation construction details for a specified building plan.
11.05	Install flashing, foundation anchors and connectors, and termite shields.
11.06	Understand and/or apply proper moisture management details for foundations, if required.
11.07	Layout and construct a building foundation. (Optional)

CTE Standards and Benchmarks

12.0 Layout, cut and install framing members for a floor system (wood and/or metal)--The student will be able to:

12.01 Identify floor framing members including the subfloor.

12.02 Identify structural support components for floor framing systems (e.g. sill plates, columns, girder beams, etc.).

12.03 Identify various floor joist types, sizes and openings, including joists for a cantilevered floor.

12.04 Identify various types of bridging.

12.05 Identify various subfloor materials and fastening techniques.

12.06 Layout, cut and install framing members for a floor system.

**Florida Department of Education
Student Performance Standards**

Course Title: **Carpentry Framing**
Course Number: **8104330**
Course Credit: **1**

Course Description:

This Course focuses on framing walls and roofs, and provides an understanding of hurricane codes.

CTE Standards and Benchmarks	
13.0	Layout, cut and install a wall framing system (wood and/or metal)--The student will be able to:
13.01	Identify framing members used in wall and partition construction.
13.02	Lay out wall lines and partition locations on a floor.
13.03	Lay out walls for studs, doors and windows.
13.04	Identify studs, trimmers, cripples, headers, fire stops and other framing components.
13.05	Layout, cut and build up wall partition intersecting T's, corners and headers.
13.06	Identify various wall sheathing and/or diagonal bracing systems used in exterior walls.
13.07	Identify and describe various insulation materials, moisture and air barrier materials and systems.
13.08	Cut and install framing members for a wall system.
14.0	Comply with current hurricane building codes--the student will be able to:
14.01	Install hurricane anchors and connectors using approved fasteners.
14.02	Install hurricane clips using approved fasteners.
14.03	Explain the purpose and importance of the codes relating to hurricanes.
14.04	Identify and/or construct braced and structural panel shear wall assemblies.
15.0	Layout, cut and install a wood frame roof system--The student will be able to:

CTE Standards and Benchmarks

15.01 Understand the terms associated with roof framing.

15.02 Identify roof framing members used to construct various roofing types.

15.03 Calculate the lengths of rafters for various locations.

15.04 Identify the various types of trusses used in roof framing.

15.05 Use a rafter framing square, speed square and calculator to lay out a roof system.

15.06 Identify various types of sheathing used in roof construction.

15.07 Layout, cut and frame various roof types using conventional framing methods.

15.08 Understand various truss types and components, and how to correctly install them.

15.09 Estimate materials needed to frame and sheath a roof.

**Florida Department of Education
Student Performance Standards**

Course Title: Carpentry Exterior
Course Number: 8104340
Course Credit: 1

Course Description:

This course provides students with knowledge and skills pertaining to cold-formed steel framing, exterior stair construction, roofing applications, thermal and moisture protection and window and door installation.

CTE Standards and Benchmarks	
16.0	Frame walls using cold-formed steel (Optional)--The student will be able to:
16.01	Identify the components of a steel framing wall system.
16.02	Identify and select the tools and fasteners used in a steel framing wall system.
16.03	Identify applications for steel framing wall systems.
16.04	Demonstrate the ability to build other cold-formed steel wall framing components.
16.05	Lay out and install a steel stud structural and/or non-structural wall with openings to include bracing and blocking.
17.0	Lay out, cut and rough frame a stair system--The student will be able to:
17.01	Identify various types of stair systems.
17.02	Identify the components of stair systems.
17.03	Calculate the size and number of treads and risers for a stair system.
17.04	Lay out, cut and assemble a stair system.
18.0	Identify, select and install various roofing materials for building structures--The student will be able to:
18.01	Identify the materials and methods used in roofing.
18.02	Explain the safety requirements for roofing installation jobs.
18.03	Install fiberglass/asphalt shingles on various roof types.

CTE Standards and Benchmarks

18.04 Install roofing materials correctly in a roof valley.

18.05 Explain how to make various roof projections watertight when using fiberglass/asphalt shingles.

18.06 Properly cut and install hip and ridge caps using fiberglass/asphalt shingles.

18.07 Lay out, cut and install a cricket or saddle.

18.08 Identify and discuss techniques for installing various types of roofing systems.

19.0 Identify and apply appropriate thermal boundary, moisture protection and water management systems--The student will be able to:

19.01 Identify, select and install various types of insulation material and moisture/air barriers.

19.02 Calculate the required amounts of insulation and moisture/air barriers for a structure.

19.03 Identify, select, and install materials to provide an effective water management system for a structure.

19.04 Identify, discuss and/or install moisture, air, and vapor barriers.

19.05 Describe air infiltration and exfiltration control requirements.

20.0 Install windows and exterior doors--The student will be able to:

20.01 Identify various types of fixed, sliding and swinging windows including sliding, patio and French doors.

20.02 Identify various materials and techniques used to install a window.

20.03 Identify the requirements for a proper window installation.

20.04 Install a pre-hung window in accordance with manufacturer's installation instructions.

20.05 Identify the common types of exterior doors and explain how they are constructed.

20.06 Identify various materials and techniques used to install a door.

20.07 Identify the types of thresholds and door frames used with exterior doors.

20.08 Install a pre-hung exterior door.

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

20.10 Discuss and/or install various types of locksets.

**Florida Department of Education
Student Performance Standards**

Course Title: Carpentry Finish
Course Number: 8104350
Course Credit: 1

Course Description:

This course provides students with knowledge and skills pertaining to finish carpentry. Competencies covered include drywall installation, cabinetry and an overview of construction documents.

CTE Standards and Benchmarks	
21.0	Install gypsum drywall --The student will be able to:
21.01	Identify the different types of drywall and their uses.
21.02	Select the type and thickness of drywall required for specific installations.
21.03	Select fasteners for drywall installation.
21.04	Perform single-layer and multi-layer drywall installations using different types of fastening systems including nails, drywall screws and adhesives.
21.05	Install drywall on wood or steel studs.
21.06	Estimate material quantities for a drywall installation.
22.0	Identify and fasten wood stock and joints--The student will be able to:
22.01	Identify types of glues, fasteners and clamps and describe their applications.
22.02	Fasten stock with glue and various types of clamps.
22.03	Fasten stock and joints with appropriate fasteners such as nails, staples, screws and bolts.
22.04	Fill and finish nail and screw holes with fillers and plugs.
23.0	Install cabinets and components (Optional)--The student will be able to:
23.01	Install hardware such as hinges, catches, pulls, knobs and guides on assembled cabinets.
23.02	Install fasteners.

CTE Standards and Benchmarks

23.03 Install drawers.

23.04 Install pre-fabricated cabinets, countertops and other components.

23.05 Install various types of doors including overlay, lipped and flush. (Optional, if taught)

23.06 Install adjustable shelving. (Optional, if taught)

23.07 Install glass panels and/or decorative metal grilles in cabinet doors. (Optional, if taught)

23.08 Install specialty hardware such as wire racks and “pull-outs”. (Optional, if taught)

23.09 Install sliding doors and track. (Optional, if taught)

Additional Information

Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Academic Alignment

Secondary Career and Technical Education courses are pending alignment to the B.E.S.T. (Benchmarks for Excellent Student Thinking) Standards for English Language Arts (ELA) and Mathematics that were adopted by the State Board of Education in February 2020. Academic alignment is an ongoing, collaborative effort of professional educators that provide clear expectations for progression year-to-year through course alignment. This initiative supports CTE programs by improving student performance through the integration of academic content within CTE courses.

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate for social and instructional purposes within the school setting. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: <http://www.cpalms.org/uploads/docs/standards/eld/SI.pdf>. For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition at sala@fldoe.org.

Special Notes

The occupational standards and benchmarks outlined in this secondary program correlate to the standards and benchmarks of the postsecondary program with the same Classification of Instructional Programs (CIP) number.

Career and Technical Student Organization (CTSO)

SkillsUSA is the intercultural career and technical student organization for providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Cooperative Training – OJT

On-the-job training is appropriate but not required for this program. Whenever offered, the rules, guidelines, and requirements specified in the OJT framework apply.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

In addition to accommodations, some secondary students with disabilities (students with an IEP served in Exceptional Student Education (ESE)) will need modifications to meet their needs. Modifications change the outcomes or what the student is expected to learn, e.g., modifying the curriculum of a secondary career and technical education course. Note: postsecondary curriculum and regulated secondary programs cannot be modified.

Some secondary students with disabilities (ESE) may need additional time (i.e., longer than the regular school year), to master the student performance standards associated with a regular course or a modified course. If needed, a student may enroll in the same career and technical course more than once. Documentation should be included in the IEP that clearly indicates that it is anticipated that the student may need an additional year to complete a Career and Technical Education (CTE) course. The student should work on different competencies and new applications of competencies each year toward completion of the CTE course. After achieving the competencies identified for the year, the student earns credit for the course. It is important to ensure that credits earned by students are reported accurately. The district's information system must be designed to accept multiple credits for the same course number for eligible students with disabilities.

Additional Resources

For additional information regarding articulation agreements, Bright Futures Scholarships, Fine Arts/Practical Arts Credit and Equivalent Mathematics and Equally Rigorous Science Courses please refer to:

<http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml>