

Course Objectives

Carpentry Career and Technical Certificate

The Vocational Certificate in Carpentry prepares students for a career in carpentry as a residential or small commercial carpenter, remodeler, trade foreman, project superintendent, or residential contractor. The program emphasizes both hands-on training and theory to acquire carpentry skills, and building knowledge that can lead to being your own boss. This 1200 clock hour program leads to certifications from the National Center for Construction Education and Research (NCCER), and the Pensacola State College Vocational Certificate in Carpentry.

Students learn to design and construct crafted, safe, healthy, comfortable, affordable, resource efficient, durable and resilient houses, based on current building science principles, sustainable design strategies and mainstream green building practices, using appropriate (climate specific) building materials, systems and technologies.

Program Outline

BCV0003C Introduction to Craft Skills 150 ch

Introduces the student to the proper use and care of hand and power tools, and OSHA compliant shop and jobsite safety practices. Students are provided training to obtain their 2-year CPR, First Aid and AED certification. Emphasis is placed on rigging, handling, and transport techniques to safely load, move, install, store, and care for building materials and jobsite equipment. Learn useful construction math skills to accurately calculate building material quantities, to measure and cut, and layout building structures, components, and other building projects. Reading and interpreting various types of construction drawings, and written specifications, is essential to properly constructing building projects, which is a skill learned only through practice, which this course provides.

At the conclusion of the course the student will have the basic learning outcomes in the following areas:

1. Follow safe jobsite and construction lab work practices and procedures
2. Use math to calculate material quantity take-offs
3. Demonstrate use of various measurement tools to accurately layout, cut, and assemble building structures, components, and projects
4. Correctly identify, select, use and maintain hand and portable power tools
5. Correctly identify, select, use and maintain power tools
6. Read and interpret construction and shop drawings and written specifications
7. Properly maintain a construction lab and/or a job site for construction debris, materials and equipment organization, and cleanliness
8. Verbally communicate skillfully and effectively with construction workers, employers, and supervisors
9. Use appropriate technology and social media to communicate effectively with workers, employers, and supervisors
10. Understand how the construction industry and potential employers operate to prepare for and pursue successful employment

11. Transport, handle, lift, stack, and unload building materials using appropriate Personal Protective Equipment (PPE), tools, and rigging equipment and techniques to safely move and store building materials.

Book(s) - NCCER, Core Curriculum Trainee Guide, 5th ed., Pearson, 2015, ISBN: 9780134130989.

BCV0112C Introduction to Carpentry 150 ch

Learn skills necessary to construct, erect, install, and repair residential and small commercial structures, and building projects, made from wood and other materials. Carpentry tasks involve working from construction drawings, performing construction math and geometry calculations, laying out building components, measuring, cutting and assembling structures or building projects. Learn to identify and select appropriate sustainable building materials, methods of construction, and systems and technologies for durable construction for specific climate zones.

The student will demonstrate competencies in orientation to the trade, building materials, fasteners, adhesives, hand and power tools, reading plans and elevations, floor systems, wall and ceiling framing, roof framing, introduction to concrete, reinforcing materials and forms, windows and exterior doors, and basic stair layout.

At the conclusion of the course the student will have the basic learning outcomes in the following areas:

- 1) Identify career opportunities for carpenters and construction tradespersons
- 2) Know skills, responsibilities, and work etiquette a construction worker should possess
- 3) Identify commonly used building materials, fasteners and adhesives used in the construction of residential and small commercial buildings
- 4) Properly identify, select, use and maintain carpentry hand and power tools, and PPE equipment
- 5) Read and interpret construction and shop drawings, and written specifications
- 6) Produce material quantity take-offs from a set of construction or shop drawings for a building project
- 7) Identify, layout, and install residential floor systems
- 8) Identify, layout, and install residential wall systems and building enclosure components
- 9) Identify types of residential roof systems, and layout and install a residential roof assembly
- 10) Identify major components of a residential, or small commercial building enclosure
- 11) Properly install residential building enclosure components
- 12) Identify types of residential stairs, and IRC building code requirements for stairs
- 13) Measure, calculate, layout, and install a residential set of stairs
- 14) Select and specify green building materials, products, systems, and technologies and installation methods
- 15) Know and apply appropriate IRC/IEEC's to residential structures

Book(s) - NCCER, Carpentry Level 1, 5th ed., Prentice Hall, 2013, ISBN: 9780133402377.

BCV0123C Building Layout and Foundations 150 ch

Learn strategies to select appropriate building sites, techniques to properly orient and layout a building, and choose climate specific foundation types and construction. Also learn strategies and techniques to select and install foundations, water management systems, vapor barriers, concrete and block assemblies, and other foundation systems. Learn to perform building site and foundation building material takeoffs, and applying appropriate building codes and performance guidelines to and construct durable foundations.

The student will demonstrate competencies in trenching and excavating, foundations and slab-on-grade, vertical framework, horizontal formwork, and tilt-up wall panels.

At the conclusion of the course the student will have the basic learning outcomes in the following areas:

1. Specify concrete types and materials, methods and materials for curing concrete, and estimate concrete volumes.
2. Select equipment and hardware for rigging, and tie rope knots necessary to secure building materials.
3. Understand safety practices related to rigging and crane hazard activities, procedures, and emergencies.
4. Work around and in trenches to construct building foundations.
5. Select reinforcing materials to use in concrete flatwork, and appropriate bending, cutting, splicing, and tying practices for foundations and formwork.
6. Layout a building foundation on a building site, and select appropriate building foundation type for a specific building site.
7. Understand methods and materials to form and place concrete in vertical forms.
8. Understand methods and materials to form and place concrete in horizontal flatwork forms.
9. Select and use tools and equipment correctly to safely handle, place, and finish concrete, and to construct foundations.
10. Understand tilt-up and precast concrete wall construction methods for forming, erecting, and bracing wall panels.

Books - NCCER, Carpentry Forms, 5th ed., Prentice Hall, 2013, ISBN: 9780133823059.

BCV0122C Carpentry Rough Framing 300 ch

Learn to identify, select, and layout wood and metal, framing members, and construct wood and metal framed structures. Advanced framing techniques will be stressed. Learn to identify, select and install air, moisture, vapor and thermal barriers, and code compliant fasteners and connectors. Knowing how to handle, store and care for framing materials are important skills to learn. Students will perform building material takeoffs, and apply appropriate building codes and performance guidelines to construct durable wood frame structures and building projects.

The student will demonstrate competencies in commercial/residential drawings, roofing applications, thermal and moisture protection, wood and metal framing, and fasteners and connectors.

At the conclusion of the course the student will have the basic learning outcomes in the following areas:

1. Select and install wood and metal framing floor, wall, and roof assemblies.
2. Select and install various building materials, components, and products to dry-in a building enclosure.
3. Select, specify, and install various types of insulation materials in floors, walls, and roof building enclosures.
4. Select, specify, and install various weather resistant barriers; vapor and moisture barriers; vapor and moisture retarders; and exterior thermal barriers in building enclosure assemblies.
5. Select, specify, and install various roofing underpayments.
6. Identify wood truss types.
7. Identify truss members, and select and install roof trusses.
8. Construct interior (temporary) rough-in stairs.
9. Safely handle, store and care for building materials.
10. Perform building materials quantity takeoff.
11. Interpret and apply IRC/IBC/IECCs to building projects.
12. Introduction to the various rough-in building trades: Plumbing/Electrical/HVAC trades.

Book(s) - NCCER, Carpentry Framing & Finishing Level 2, 5th ed., Prentice Hall, 2013, ISBN: 9780133404302.

BCV0126C Carpentry Exterior Finishes 150 ch

Learn to select appropriate exterior (climate specific) weather resistant barriers and finishes: air barrier materials; drainage plane systems; moisture management systems; cladding types and trim, and techniques to properly install these systems. Learn to identify, select, and install exterior claddings; hardware and trim; windows and doors; flashings; roofing products; decking materials, and stair components. Students will be introduced to renewable energy systems, and installation techniques for fastening these systems to various roofing products, materials, and assemblies. Material take-offs, building code requirements, and third party performance practices are skills learned in this course.

The student will demonstrate competencies in weather resistant exterior barriers and finishes, claddings and finish trim, exterior windows and doors, roofing materials and products, and introduction to renewable energy systems.

At the conclusion of the course the student will have the basic learning outcomes in the following areas:

1. Specify, and install various roofing products and materials using appropriate installation methods and techniques.
2. Specify and install various exterior claddings and finish trim.
3. Select and Install various exterior weather resistant barriers using appropriate installation methods and techniques.
4. Specify, and install windows, exterior doors, and door hardware.
5. Select exterior drainage plane and water management systems and materials, and installation techniques.
6. Caulk and flash exterior claddings, and trim.
7. Select methods and techniques and materials to build decks, porches, and stairs.
8. Prepare roof assemblies for a Photovoltaic Solar System.
9. Properly handle, manage, store and care for all building materials products, and equipment on a construction site.
10. Perform a quantity takeoff for various building materials needed to construct a structure, or a building project.
11. Read, and interpret construction drawings, and apply appropriate building code (IRC/IBC/IECC) requirements to residential construction project.
12. Interpret and apply third party performance guidelines to building residential construction projects, and verify performance with third party verification.

Book(s) - NCCER, Carpentry Framing & Finishing Level 2, 5th ed., Prentice Hall, 2013, ISBN: 9780133404302

BCV0127C Interior Finish and Trim 300 ch

Learn to select and install thermal barriers, interior finish trim and doors, stair assemblies, paint and sealers, finish flooring, cabinets, door hardware, and plumbing accessories. Learn about testing ductwork and building enclosures for air leakage, and building commissioning. Create punch-out lists and learn how to delegate responsibilities to complete items on the list. Perform building material take-offs, and apply pertinent building codes on a residential building.

The student will demonstrate competencies in interior finish work including trim and doors, stair assemblies, cabinet installation and fabrication, drywall materials and installation, and plumbing accessories.

At the conclusion of the course the student will have the basic learning outcomes in the following areas:

1. Read and interpret door, floor, trim, and cabinet schedules from construction drawings for finish installation product and materials locations.
2. Identify, select, and install interior doors and door hardware.
3. Select drywall materials, applications, and installation methods.
4. Specify drywall finishes/textures.
5. Select and install window, door, floor, and ceiling finish trim.
6. Select and identify cabinet styles and types, and install.
7. Select and install various interior wall cladding and finish materials.
8. Select and specify from a variety of stair components and styles to install and finish wooden staircases.
9. Select from a variety of insulation products to install into a building enclosure, and methods of installation.
10. Paint, seal, and finish interior floor, wall, ceiling, and trim surfaces.
11. Select and install finish plumbing accessories.
12. Follow third party guidelines for energy efficiency and green building practices and have the building performance verified by a certified rater.
13. Create a punch list of items that need to be completed prior to requesting a Certificate of Completion from the Building Inspection Department, and delegate those tasks to the appropriate person, or responsible trade.
14. Perform a building material quantity takeoff for building materials, or products needed to perform any of the interior finish trim tasks.
15. Read and Interpret construction drawings, and manufacturers installation instructions to determine and/or verify code compliance for any equipment or appliance installations
16. Understand fundamental crew leadership skills necessary to manage a construction project, by problem solving, project planning, scheduling, and estimating labor, materials, and time.

Book(s) - NCCER, Carpentry Advanced, 5th ed., Prentice Hall, 2013, ISBN: 9780133823141

Total Clock Hours:

1200