

CARPENTRY: Level One

27101-06 Orientation to the Trade (2.5 Hours)

Reviews the history of the trade, describes the apprentice program, identifies career opportunities for carpentry and construction workers, and lists the responsibilities and characteristics a worker should possess.

27102-06 Building Materials, Fasteners, and Adhesives (7.5 Hours)

Provides an overview of the building materials used in construction work, including lumber, sheet materials, engineered wood products, structural concrete, and structural steel. Also describes the various fasteners and adhesives used in construction work.

27103-06 Hand and Power Tools (10 Hours)

Provides detailed descriptions of the hand tools and portable power tools used by carpenters. Emphasis is on safe and proper operation of tools, as well as care and maintenance.

27104-06 Reading Plans and Elevations (20 Hours)

Builds upon the basic information presented in the *Introduction to Blueprints* module studied in the *Core Curriculum*. Trainees will learn the techniques for reading and using blueprints and specifications with an emphasis placed on those drawings and types of information that are relevant to the carpentry trade. Introduces the subject of quantity takeoffs.

27105-06 Floor Systems (25 Hours)

Covers framing basics as well as the procedures for laying out and constructing a wood floor using common lumber as well as engineered building materials.

27106-06 Wall and Ceiling Framing (20 Hours)

Describes the procedures for laying out and framing walls and ceilings, including roughing-in door and window openings, constructing corners and partition T's, bracing walls and ceilings, and applying sheathing.

27107-06 Roof Framing (37.5 Hours)

Describes the various kinds of roofs and contains instructions for laying out rafters for gable roof, hip roofs, and valley intersections. Coverage includes both stick-built and truss-built roofs.

27108-06 Introduction to Concrete, Reinforcing Materials, and Forms (5 Hours)

Describes the ingredients of concrete, discusses the various types of concrete, and describes how to mix concrete. The module also covers basic job-built footing, edge, and wall forms and form ties and describes the types and uses of concrete reinforcing materials.

27109-06 Windows and Exterior Doors (12.5 Hours)

Describes the various types of windows, skylights, and exterior doors, and provides instructions for installing them. Also includes instructions for installing weather-stripping and locksets.

27110-06 Basic Stair Layout (12.5 Hours)

Introduces the trainee to the various types of stairs and the common building code requirements related to stairs. The module focuses on the techniques for measuring and calculating rise, run, and stairwell openings, laying out stringers, and fabricating basic stairways.

CARPENTRY: Level Two

27201-07 Commercial Drawings (25 Hours)

Describes the types and uses of drawings prepared for commercial structures. Provides information about the format and content of commercial drawings and their use in conveying specific construction requirements. Describes the standard format for specifications. Includes one 17 x 11 construction drawing.

27202-07 Roofing Applications (25 Hours)

Covers the common materials used in residential and light commercial roofing, along with the safety practices and application methods for these materials. Includes shingles, roll roofing, shakes, tiles, metal, and membrane roofs, as well as the selection and installation of roof vents.

27203-07 Thermal and Moisture Protection (7.5 Hours)

Covers the selection and installation of various types of insulating materials in walls, floors, and attics. Also covers the uses and installation practices for vapor barriers and waterproofing materials.

27204-07 Exterior Finishing (35 Hours)

Covers the various types of exterior siding used in residential construction and their installation procedures, including wood, metal, vinyl, and cement board siding.

27205-07 Cold-Formed Steel Framing (15 Hours)

Describes the types and grades of steel framing materials and includes instructions for selecting and installing metal framing for interior walls, exterior nonbearing walls, and partitions.

27206-07 Drywall Installation (15 Hours)

Describes the various types of gypsum drywall, their uses, and the fastening devices and methods used to install them. Contains detailed instructions for installing drywall on walls and ceilings using nails, drywall screws, and adhesives. Also covers fire- and sound-rated walls.

27207-07 Drywall Finishing (12.5 Hours)

Covers the materials, tools, and methods used to finish and patch gypsum drywall. Includes coverage of both automatic and manual taping and finishing tools.

27208-07 Doors and Door Hardware (20 hours)

Covers the installation of metal doors and related hardware in steel-framed, wood-framed, and masonry walls, along with their related hardware such as locksets and door closers. Also covers the installation of wooden doors, folding doors, and pocket doors.

27209-07 Suspended Ceilings (15 Hours)

Includes the materials, layout, and installation procedures for many types of suspended ceilings used in commercial construction, as well as ceiling tiles, drywall suspension systems, and pan-type ceilings.

27210-07 Window, Door, Floor, and Ceiling Trim (25 Hours)

Covers the different types of trim used in finish work. Focuses on the proper methods for selecting, cutting, and fastening trim to provide a professional finished appearance.

27211-07 Cabinet Installation (10 Hours)

Provides detailed instructions for the selection and installation of base and wall cabinets and countertops.

27212-07 Cabinet Fabrication (10 Hours)

Provides an introduction to the materials, tools, and methods used in cabinetmaking. Practice projects help the trainee learn the various joining techniques, while providing practice on stationary power tools.

CARPENTRY: Level Three

27301-07 Rigging Equipment (10 Hours)

Describes the use and inspection of basic equipment and hardware used in rigging, including slings, wire rope, chains, and attaching hardware such as shackles, eyebolts, and hooks, as well as rigging knots. Explains sling angles. Also covers tuggers, jacks, hoists, and come-alongs.

27302-07 Rigging Practices (15 Hours)

Describes basic rigging and crane hazards and related safety procedures, provides an overview of personnel lifting and lift planning, and introduces crane load charts and load balancing. Includes instructions for rigging and lifting pipe.

27303-07 Properties of Concrete (10 Hours)

Describes the properties, characteristics, and uses of cement, aggregates, and other materials that, when mixed together, form different types of concrete. Covers procedures for estimating concrete volume and testing freshly mixed concrete, as well as methods and materials for curing concrete.

27304-07 Reinforcing Concrete (15 Hours)

Explains the selection and uses of different types of reinforcing materials. Describes requirements for cutting, bending, splicing, and tying reinforcing steel and the placement of steel in footings, columns, walls, and slabs.

27305-07 Handling and Placing Concrete (22.5 Hours)

Covers the tools, equipment, and procedures required for handling, placing, and finishing concrete. Also covers joints made in concrete structures, the use of joint sealants, and form removal procedures. Emphasizes safety procedures for handling, placing, and finishing concrete.

27306-07 Trenching and Excavating (10 Hours)

Prepares the trainee for working in and around excavations, particularly in preparing building foundations. It covers types and bearing capacities of soils; procedures used in shoring, sloping, and shielding trenches and excavations; trenching safety requirements, including recognition of unsafe conditions; and mitigation of groundwater and rock when excavating foundations.

27307-07 Foundations and Slab-on-Grade (20 Hours)

Covers basic site layout tools and methods; layout and construction of deep and shallow foundations; layout and forming of slabs-on-grade; and forms used for curbing and paving.

27308-07 Vertical Formwork (27.5 Hours)

Covers the applications and construction methods for various types of forming and form hardware systems for walls, columns, and stairs, as well as slip forms, climbing forms, and shaft forms. The module also provides an overview of the assembly, erection, and stripping of gang forms.

27309-07 Horizontal Formwork (22.5 Hours)

Covers the types of elevated decks and the formwork systems and methods used in their construction. It covers joist, pan, metal deck, and flat slab systems and provides instructions for the use of flying forms, as well as shoring and reshoring systems.

27310-07 Tilt-Up Wall Panels (20 Hours)

Describes how tilt-up concrete construction is used and how tilt-up panels are formed, erected, and braced. It covers the installation of rebar and the types of embedments used to lift and brace the panels. Methods used to achieve architectural and decorative finishes are also covered.

CARPENTRY: Level Four

27401-08 Site Layout One: Distance Measurement and Leveling (22.5 Hours)

Covers the equipment, principles, and methods used to perform distance measurement and leveling. Also covers the layout responsibilities of surveyors, field engineers, and carpenters; interpretation and use of site/plot plan drawings; and methods used for on-site communication.

27402-08 Site Layout Two: Angular Measurement (30 Hours)

Covers the principles, equipment, and methods used to perform the site layout tasks that require making angular measurements. Tasks include laying out building foundation lines and determining elevations by trigonometric leveling. The use of laser instruments, transits, theodolites, electronic distance measurement, and total stations are covered. Reviews trade mathematics, including geometry and right-angle trigonometry, needed to perform the calculations related to angular measurements.

27403-08 Advanced Roof Systems (20 Hours)

Covers commercial roofing materials and structures and describes the procedures for installing commercial roofing such as standing seam, lap seam, and built-up roofs.

27404-08 Advanced Wall Systems (25 Hours)

Covers installation of a variety of finishing materials, including paneling, and wainscoting. Also covers installation of curtain walls and fire-rated commercial construction.

27405-08 Advanced Stair Systems (25 Hours)

Provides extensive coverage of the materials and techniques used in finishing wooden staircases. Also covers a variety of stair systems used in commercial construction.

27406-08 Introduction to Light Equipment (10 Hours)

Introduces various pieces of light construction equipment commonly used at a construction site, including the aerial lift, skid steer loader, trencher, electric power generator, compressor, compactor, and forklift. An overview of general safety, operation, and maintenance procedures is given for each type of equipment covered.

27407-08 Welding (25 Hours)

Introduces the equipment, procedures, and safety practices used in cutting steel with oxyfuel equipment, as well shielded metal arc welding, gas-tungsten arc welding, and gas metal arc welding. Labs include practice in cutting and welding techniques.

27408-08 Commercial Finish Work (5 Hours)

Introduces a variety of specialized finish materials used on interior and exterior walls, ceilings, and floors of commercial buildings.

27409-08 Site Preparation (7.5 Hours)

Covers the planning process the precedes the start of work on a construction site, including environmental considerations, personnel issues, access roads, traffic controls, permits, site safety, utilities, and crane-related concerns.

27410-08 Introductory Skills for the Crew Leader (16 Hours)

Along with the principles of project planning, scheduling, estimating, and management, introduces the basic skills required for supervising personnel. Several case studies are included.