

**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 member of the trade should possess.

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

Describes the sources and uses of various softwoods and hardwoods, explains the grading systems for lumber and plywood, and discusses the composition and uses of various engineered sheet materials and laminated lumber products. Also describes the many kinds of fasteners and adhesives used with wood and masonry.

**27103-06 Hand and Power Tools (20 Hours)**

Provides detailed descriptions and explanations of the use of the many hand-operated and power tools used by carpenters, including powder-actuated fasteners. 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.

**27165-06 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 and Reinforcing Materials (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 calculation rise, run, and stairwell openings, laying out stringers, and fabricating basic stairways.

**CARPENTRY: Level Two**

**27201-01 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.

**27202-01 Site Layout One — Distance Measurement and Leveling (22.5 Hours)**

Covers the principles, equipment, and methods used to perform the site layout task of distance measurement and differential leveling. Also covered is information about the layout responsibilities of surveyors, field engineers, and carpenters; understanding and using site/plot plan drawings; and methods used for on-site communication.

**27203-01 Introduction to Concrete and Reinforcing Materials (10 Hours)**

Describes the properties, characteristics, and uses of various types of cement, aggregates, and other materials that, when mixed together, form different types of concrete. Procedures for concrete volume estimates and testing of freshly mixed concrete are covered, along with methods and materials for curing concrete. Reinforcement materials used in concrete, such as reinforcement bars, bar supports, and welded-wire fabric are described and defined.

**27204-01 Foundations and Flatwork (15 Hours)**

Covers the construction of forms for continuous, stepped continuous, pier, and grade beam concrete footings. Also covered are edge forms used for on-grade concrete slabs and similar structures. Forming terms, parts of forms, and the procedures for constructing basic footing and edge forms are included.

**27205-01 Concrete Forms (32.5 Hours)**

Covers the applications and construction methods for various types of job-built forms, including wall, column, slab-and-beam, and stair forms. Instructor's Guide includes instruction sheets for construction of various forms.

**27206-01 Reinforcing Concrete (15 Hours)**

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

**27207-01 Handling and Placing Concrete (22.5 Hours)**

Covers the tools, equipment, and procedures required for handling, placement, and finishing of concrete at the job site. Also covered is general information about joints made in concrete structures, the use of joint sealants, and form removal procedures. Safety procedures for handling, placing, and finishing concrete are emphasized.

**27208-01 Manufactured Forms (22.5 Hours)**

Covers the types of manufactured forms and form hardware systems used in the construction of walls, columns, deck and roof slabs, beams and girders, culverts, and highways. Includes coverage of flying forms, slipforms, shoring, and architectural finishes.

**CARPENTRY: Level Three**

**27301-02 Exterior Finishing (35 Hours)**

Covers the various types of exterior siding used in residential construction and their installation procedures, including several types of wood siding, as well as metal and vinyl siding. Also covers the installation of metal and vinyl gutters and downspouts.

**27302-02 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.

**27303-02 Thermal and Moisture Protection (5 Hours)**

In this module, the trainee will learn how to select and install various types of insulating materials in walls, floors, and attics. The uses and installation practices for vapor barriers and waterproofing materials are also covered.

**27304-02 Stairs (15 Hours)**

Covers the various types of wooden stairs used in residential and commercial construction, along with procedures for laying out stairs, cutting out stringers, and installing and finishing stairs.

**27305-02 Framing with Metal Studs (15 Hours)**

Includes instructions for selecting and installing metal framing for interior walls, exterior nonbearing walls, and partitions.

**27306-02 Drywall One: 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.

**2730-027 Drywall Two: 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 tools.

**27308-02 Interior Finish One: Doors (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.

**27309-02 Interior Finish Two: Suspended Ceilings (25 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.

**27310-02 Interior Finish Three: 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.

**27311-02 Interior Finish Four: Cabinet Installation (10 Hours)**

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

**CARPENTRY: Level Four**

**27401-03 Site Layout Two: Angular Measurement (25 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.

**27402-03 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.

**27403-03 Advanced Floor Systems (20 Hours)**

Covers structural and lightweight concrete floors, in-floor radiant heating, and a variety of finish flooring, including hardwood floors, vinyl tile, carpeting, and terra cotta tile.

**27404-03 Advanced Wall Systems (20 Hours)**

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

**27405-03 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.

**27406-03 Introduction to Light Equipment (10 Hours)**

This module introduces the trainees to 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.

**27407-03 Welding (25 Hours)**

The trainee is introduced to the equipment, procedures, and safety practices used in cutting steel with oxyfuel equipment and in shielded metal arc welding. Labs include practice in cutting and welding techniques.

**27408-03 Metal Buildings (15 Hours)**

The trainee is introduced to the basic structural components, fastening methods, and assembly techniques for metal buildings. An overview of the materials and practices used in the application of roofs, wall panels, windows, doors, trim, and flashing is also provided.

**27409-03 Introductory Skills for the Crew Leader (16 Hours)**

Along with the principles of project planning, scheduling, estimating, and management, the trainee learns the basic skills required to supervise personnel. Several case studies are included.