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| **CABINETMAKING, 46.0400.40** | | | |
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| These standards were validated by a Technical Standards Validation Committee on March 20, 2014. First testing date using the new standards will be Fall 2014. | | | |
| **STANDARD 1.0 DEMONSTRATE BUSINESS OPERATIONS IN A SHOP** | | | |
| 1.1 | | Estimate the cost of a job (supplies, materials, labor, overhead) | |
| 1.2 | | Develop a materials order from a cut list and plan | |
| 1.3 | | Develop a materials order from a cut list and plan | |
| 1.4 | | Use customer service skills to be successful | |
| **STANDARD 2.0 DEMONSTRATE GENERAL SHOP SAFETY** | | | |
| 2.1 | | Explain the importance of shop safety | |
| 2.2 | | Maintain appropriate appearance and safe work attire | |
| 2.3 | | Wear appropriate PPE equipment (personal protective equipment) when needed (e.g. eye protection, ear protection, impact hat) | |
| 2.4 | | Use equipment safety features according to manufacturer’s recommendations | |
| 2.5 | | Use proper lifting techniques | |
| 2.6 | | Examine health-related problems related to exposure to hazardous materials | |
| 2.7 | | Examine the benefits of using dust collection | |
| 2.8 | | Comply with government regulations regarding health and safety in the shop [e.g. OSHA (Occupation Safety and Health Administration), EPA (Environmental Protection Agency), and DNR (Department of Natural Resources)] | |
| 2.9 | | Comply with lockout/tagout rules and procedures | |
| 2.10 | | Handle, use, and store chemicals according to MSDS/SDS sheets | |
| 2.11 | | Apply fire safety rules and procedures | |
| **STANDARD 3.0 DEMONSTRATE BASIC CABINETMAKING SKILLS** | | | |
| 3.1 | | Apply math skills to solve problems related to cabinetmaking, including written instructions to complete a task | |
| 3.2 | | Calculate linear feet, square feet, and board feet | |
| 3.3 | | Tally lumber products | |
| 3.4 | | Measure accurately and convert to standard and/or metric measurement systems as required | |
| 3.5 | | Lay out straight and angled cuts | |
| 3.6 | | Determine plumb, level, and square | |
| 3.7 | | Handle and store wood products | |
| 3.8 | | Specify wood stock for species, grade, grain patterns, and color compatibility | |
| **STANDARD 4.0 PRACTICE SAFE AND APPROPRIATE USE OF HAND AND PORTABLE POWER TOOLS** | | | |
| 4.1 | | Use steel rules/tapes, squares, T-bevels, and calipers | |
| 4.2 | | Use planes and cabinet scrapers to smooth surfaces | |
| 4.3 | | Use wood chisels to notch or mortise stock | |
| 4.4 | | Drive and set nails and screws | |
| 4.5 | | Fasten materials using a pneumatic stapler or nailer | |
| 4.6 | | Use a circular saw to make straight, beveled, and compound angle cuts | |
| 4.7 | | Use a saber/jig saw to plunge/cut curves | |
| 4.8 | | Drill holes with a portable power drill | |
| 4.9 | | Use a power drill to bore holes to specified depth | |
| 4.10 | | Create pocket screw joints using a drill and jig | |
| 4.11 | | Use a router to shape edges; cut a groove, dado, and rabbet | |
| 4.12 | | Use a router with a dovetail jig | |
| 4.13 | | Use plate/biscuit joiners for square and angled joints | |
| 4.14 | | Use sanders for roughing and finishing | |
| 4.15 | | Use a belt sander and grinder to scribe cut a product | |
| 4.16 | | Clean and maintain hand and portable power tools | |
| **STANDARD 5.0 PRACTICE SAFE AND APPROPRIATE USE OF STATIONARY MACHINES** | | | |
| 5.1 | | Use a table saw to make rip, cross, miter, bevel, and groove cuts | |
| 5.2 | | Select, change, and set up blades on a table saw | |
| 5.3 | | Use a radial arm saw to make cross, miter, and compound angle cuts | |
| 5.4 | | Select, change blades, and adjust for squaring on a radial arm saw | |
| 5.5 | | Use a miter/sliding miter saw to make cross, bevel, miter, and compound miter cuts | |
| 5.6 | | Select and change blades on a miter saw | |
| 5.7 | | Use a band saw to cut irregular shapes and re-saw materials | |
| 5.8 | | Select, change, or replace band saw blades | |
| 5.9 | | Set up and use a drill press | |
| 5.10 | | Use a jointer to square, bevel, and flatten stock | |
| 5.11 | | Use a router in a router table | |
| 5.12 | | Use a surface planer to smooth surfaces | |
| 5.13 | | Utilize a hollow chisel mortiser | |
| 5.14 | | Set up and use a line boring machine | |
| 5.15 | | Set up and use a lathe for woodturning | |
| **STANDARD 6.0 EXAMINE COMPUTER NUMERICAL CONTROL EQUIPMENT (CNC)** | | | |
| 6.1 | | Explore various CAM (Computer Aided Manufacturing) software for programming CNC (Computer Numerical Control) manufacturing equipment | |
| 6.2 | | Explore various CNC equipment and equipment operations, including 3-dimensional technology | |
| 6.3 | | Demonstrate CNC equipment operation (actual or simulated) | |
| 6.4 | | Program CNC machines to produce a part | |
| **STANDARD 7.0 INTERPRET PLANS AND BLUEPRINTS TO CREATE A PRODUCT** | | | |
| 7.1 | | Read and interpret blueprints | |
| 7.2 | | Extract information from plans for design and specifications | |
| 7.3 | | Verify design plans with field measurements | |
| 7.4 | | Create a cut list | |
| 7.5 | | Create a bill of materials | |
| **STANDARD 8.0 CUT AND SHAPE PRODUCTS** | | | |
| 8.1 | | Mill rough lumber to create S4S (surfaced on four sides) stock | |
| 8.2 | | Cut sheet goods to size and shape | |
| 8.3 | | Create basic woodturnings | |
| 8.4 | | Create basic mouldings | |
| **STANDARD 9.0 DEMONSTRATE COMMON JOINERY APPLICATIONS** | | | |
| 9.1 | | Layout and cut butt joints | |
| 9.2 | | Reinforce butt joints using dowels, screws, biscuits, and pocket screws | |
| 9.3 | | Layout and cut a dado joint | |
| 9.4 | | Layout and cut a rabbet joint | |
| 9.5 | | Layout and cut a lap joint | |
| 9.6 | | Layout and cut a miter joint | |
| 9.7 | | Layout and cut a tongue and groove joint | |
| 9.8 | | Layout and cut a mortise and tenon joint | |
| 9.9 | | Layout and cut a dovetail joint | |
| 9.10 | | Layout and cut a box joint | |

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| **STANDARD 10.0 ASSEMBLE PRODUCTS USING FASTENERS, ADHESIVES, AND HARDWARE** | |
| 10.1 | Explain the purpose and applications of common fasteners |
| 10.2 | Explore various fasteners and RTA (Ready to Assemble) connectors |
| 10.3 | Explain the purpose, types, and applications of common adhesives |
| 10.4 | Use adhesives appropriate to the application |
| 10.5 | Use various clamping devices |
| 10.6 | Demonstrate various ways to remove excess glue |
| 10.7 | Assemble drawer components |
| 10.8 | Explore cabinet installation using fasteners and levelers |
| 10.9 | Fasten stock with metal fasteners (e.g. nails, screws, and staples) |
| 10.10 | Construct case/box |
| 10.11 | Assemble panel doors |
| 10.12 | Attach moulding and trim |
| 10.13 | Explore common uses and applications of jigs and fixtures |
| 10.14 | Fasten a top to the casework |
| 10.15 | Install cabinet hardware |
| 10.16 | Reinforce joints with block |
| **STANDARD 11.0 APPLY WOOD VENEERS AND LAMINATES** | |
| 11.1 | Cut veneers and laminates with appropriate saw blades and router bits |
| 11.2 | Seam two pieces of veneers and/or laminates |
| 11.3 | Apply adhesive |
| 11.4 | Apply edge banding |
| 11.5 | Apply veneers and/or laminates to core |
| 11.6 | Apply wood edges |
| 11.7 | Cut veneers and/or laminates to size |
| 11.8 | Fit veneers and/or laminate joints |
| 11.9 | Trim edges |
| **STANDARD 12.0 DEMONSTRATE FINISHING MATERIALS AND PROCESSES** | |
| 12.1 | Explain the purpose and applications of various types of finishes and finishing processes |
| 12.2 | Select finishing materials for compatibility |
| 12.3 | Follow a finish schedule |
| 12.4 | Apply filler to a wood surface |
| 12.5 | Apply a seal coat to a wood surface |
| 12.6 | Select and use appropriate abrasive types and grit sizes |
| 12.7 | Stain a wood surface |
| 12.8 | Apply clear coat finishes to wood surfaces |
| 12.9 | Apply pigmented finishes to wood surfaces |
| 12.10 | Use cleanup methods according to safe and approved methods (OSHA, EPA, DNR) |
| 12.11 | Repair blemishes/touch up finishes |