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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 |