

Identifier	Poplar - Apprentice - Wood		Introduced	Completed
A W 1	SAFETY AND EQUIPMENT			
A W 1.1.01	General Rules	Identify potential general lab and worksite safety hazards.		
A W 1.1.02	General Rules	Identify basic first aid procedures for treating cuts, burns, and electrical shock.		
A W 1.1.03	General Rules	List the regulatory agencies that govern job-site safety.		
A W 1.1.04	General Rules	List the four (4) basic classifications of fires and the proper use of fire extinguishers.		
A W 1.1.05	General Rules	Identify basic personal protection equipment.		
A W 1.1.06	General Rules	Identify emergency evacuation procedures.		
A W 1.2.01	Tools	Identify hand and power tools based on the name and intended use.		
A W 2	MATHEMATICS			
A W 2.1.01	Use	Add, subtract, multiply, and divide whole numbers.		
A W 2.1.02	Use	Measure to the nearest 1/32 inch.		
A W 2.1.03	Use	Measure to the nearest millimeter.		
A W 2.1.04	Use	Add, subtract, multiply and divide fractions, decimals and whole numbers.		
A W 2.1.05	Use	Convert fractions to decimals.		
A W 2.1.06	Use	Calculate percentages and ratios.		
A W 3	PLANNING AND DESIGN			
A W 3.1.01	Elements of Design	Discuss the importance of function and form for furniture and cabinetmaking.		
A W 3.1.02	Elements of Design	Identify alternative designs with convenience and flexibility.		
A W 3.1.03	Elements of Design	Explain the decision-making process for furniture and cabinetmaking.		
A W 3.1.04	Elements of Design	Identify the three levels of design: copying, adapting, and creating.		
A W 3.2.01	Styles	Identify various forms of cabinet and furniture styles.		
A W 3.2.02	Styles	Describe the ergonomics/human factors that affect furniture and cabinet design.		
A W 3.3.01	Drafting/ Blueprints	Identify drafting tools and their uses.		
A W 3.4.01	Bill of Materials	Read a bill of materials from an existing plan.		
A W 3.4.02	Bill of Materials	Interpret standard industry abbreviations (i.e., S2S, RW&L, KD, 6/4).		
A W 3.5.01	Estimating	Compare board feet, square feet, and linear feet.		
A W 3.5.02	Estimating	Read and interpret a price list.		
A W 3.5.03	Estimating	Demonstrate the ability to locate a building material supplier.		
A W 3.6.01	Project Planning	List the steps to square a board.		
A W 3.6.02	Project Planning	Explain the elements and importance of a plan of procedures.		
A W 4	TOOL USAGE AND SELECTION			
A W 4.1.01	Measurement/ Layout	Read a ruler and measure to the nearest 1/32 inch.		
A W 4.1.02	Measurement/ Layout	Read a ruler and measure to the nearest millimeter.		
A W 4.1.03	Measurement/ Layout	Identify commonly used measuring and layout tools (i.e., measuring tools, squares, gauges, dividers, calipers)		
A W 4.1.04	Measurement/ Layout	Identify common layout and measurement terms (i.e., squareness, concentricity, perpendicular, parallel)		
A W 4.2.01	Cutting	Identify the various types and kinds of cutting tools, (i.e., hacksaw, backsaw, compass saw, coping saw, dovetail saw, keyhole saw, crosscut saw, rip saw, cabinet scraper).		
A W 4.2.02	Cutting	Identify terms used with cutting tools (i.e., kerf, set, grain and TPI).		
A W 4.3.01	Striking	Identify various types of striking tools, (i.e., hammers, mallets, nail sets, chisels, punches).		
A W 4.4.01	Boring	Identify various types of shaping and boring tools and their uses (i.e., auger bit, Forstner bit, masonry drill bit, multi-spur bit, plug cutter, spade bit, twist drill bit, single taper twist bit and countersink bit).		
A W 4.4.02	Boring	Identify common terms (i.e., drilling, boring, counter boring and countersinking).		
A W 4.5.01	Shaping	Identify various types of hand shaping tools and their uses (i.e., draw knife, planes, spokeshave, rasps, files, carving tools, chisel and surf form).		
A W 4.5.02	Shaping	Identify terms used with hand-shaping tools (i.e., concave, convex, radius, bevel, taper and profile).		
A W 4.6.01	Clamping	Identify various clamping tools (i.e., c-clamp, bar clamp, bench vise, band clamp, face frame clamp, web clamp, vacuum bag, hand-screw clamp, spring clamp).		
A W 5	POWER TOOLS			
A W 5.1.01	Portable	Identify common portable power tools (i.e., saws, drills, sanders, routers, nailers and plate joiners).		
A W 5.2.01	Stationary	Identify common stationary power tools, (i.e., saw, jointer, planer, sander, lathe, drill press, shaper).		
A W 6	JOINERY, FASTENERS, ADHESIVES			
A W 6.1.01	Metallic	Identify the various metallic fasteners and nomenclature used in the furniture and cabinetmaking industry (i.e., screws, nails, bolts, staples and anchors).		
A W 6.1.02	Metallic	Identify general techniques (i.e., toe nailing, countersinking and pocket screws).		
A W 6.2.01	Dowels/ Biscuits	Identify the various types and sizes of biscuits and dowels used.		
A W 6.2.02	Dowels/ Biscuits	Identify the advantages and disadvantages of dowel and biscuit joinery.		
A W 6.3.01	Adhesives	Describe the types of adhesives used in the furniture and cabinetmaking industry, (i.e., aliphatic resins, Polyvinyl, contact cement, urethane, epoxy and thermal setting).		
A W 6.3.02	Adhesives	List and define common terminology to include: open assembly time; closed assembly time; cure time; slip and shelf life.		

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A W 6.4.01	Joints	Identify the types of wood joints, (i.e., butt, edge, rabbit, dado, miter, mortise and tenon, lap and dovetail).		
A W 7	MATERIALS			
A W 7.1.01	Hardwoods/ Softwoods	Identify characteristics of wood (i.e., open grain, close grain, texture, smell and color).		
A W 7.1.02	Hardwoods/ Softwoods	Identify common terms, (i.e., moisture content, air dry, kiln dry, lumber grades and lumber surfacing).		
A W 7.1.03	Hardwoods/ Softwoods	Identify price considerations of various hardwoods and softwoods.		
A W 7.2.01	Sheet Goods	Identify various types of sheet goods (i.e., plywood, melamine, particle board, fiber board and hardboard).		
A W 7.2.02	Sheet Goods	Identify the various grading designations (i.e., good one side, shop, density, interior and exterior).		
A W 7.2.03	Sheet Goods	Identify the common sizes of sheet materials.		
A W 7.2.04	Sheet Goods	Identify price considerations of various sheet goods.		
A W 7.3.01	Surfaces	Identify the different edge treatments for laminating.		
A W 7.3.02	Surfaces	Identify common terms (i.e., postform, substrate and self-edge).		
A W 7.3.03	Surfaces	List the advantages of using laminates.		
A W 7.3.04	Surfaces	List the limitations of laminates.		
A W 7.4.01	Veneers	Identify the different edge treatments for veneers.		
A W 7.4.02	Veneers	Identify common terms (i.e., vacuum press, marquetry, parquetry, inlay and pattern matching).		
A W 7.4.03	Veneers	List the advantages of using veneers.		
A W 7.4.04	Veneers	List the limitations of veneers.		
A W 8	CONSTRUCTION			
A W 8.1.01	Furniture	Identify common furniture construction terms (i.e., stile, rail, grain pattern, mullion).		
A W 8.2.01	Cabinetry	Identify common terms used in cabinet construction (i.e., grain direction, web frame, stiles and rails, joints and doors).		
A W 8.2.02	Cabinetry	Identify common door styles and construction techniques.		
A W 8.2.03	Cabinetry	Identify common drawer styles and construction techniques.		
A W 8.2.04	Cabinetry	Identify what type of case construction is appropriate for a specific project.		
A W 8.3.01	Manufacturing	Identify common terms (i.e., jigs and fixtures, quality assurance, quality control, CNC, templates, mass production, flow chart and critical path).		
A W 8.3.02	Manufacturing	Identify the advantages and disadvantages of mass production cabinets versus custom-built cabinets.		
A W 8.3.03	Manufacturing	Identify mass production processes used in the furniture and cabinetmaking industry.		
A W 8.4.01	Hardware	Identify common terms (i.e., hinge, knobs, pulls, slide, European, caster, latch and locks).		
A W 8.4.02	Hardware	Identify common types of hardware (i.e., drawer hardware, door hardware, bottom and side mounts and case mounts).		
A W 8.5.01	Plastics	Identify various plastic laminates used in the furniture and cabinetmaking industry.		
A W 8.5.02	Plastics	Identify a minimum of three (3) different edge treatments.		
A W 8.5.03	Plastics	Identify appropriate tools for shaping laminates.		
A W 9	FINISHING			
A W 9.1.01	Abrasives	Identify the various types of natural and synthetic abrasives.		
A W 9.1.02	Abrasives	Identify the different grading systems for abrasives (i.e., steel wool, grit system, paste abrasives, backing and adhesives).		
A W 9.1.03	Abrasives	Identify common terms (i.e., open coat, close coat, and non-loading).		
A W 9.1.04	Abrasives	Identify different forms/shapes of abrasives (i.e., disc, belts, sheets, strips and drums).		
A W 9.2.01	Stains	Describe the various ways of applying stains.		
A W 9.2.02	Stains	Describe the proper ways to prepare a surface before applying stains.		
A W 9.2.03	Stains	Identify the various types of stains.		
A W 9.2.04	Stains	Identify common terms (i.e., vehicle, pigment, bleeding and coverage).		
A W 9.3.01	Sealers	Describe the various ways of applying sealer and finish coats.		
A W 9.3.02	Sealers	Describe the proper ways to prepare a surface before applying a sealer or finish coat.		
A W 9.3.03	Sealers	Identify the various types of sealer and finish coats.		
A W 9.3.04	Sealers	Identify common terms (i.e., gloss, sheen, sealer and topcoat).		
A W 9.4.01	Fillers	Describe the various ways of applying filler materials.		
A W 9.4.02	Fillers	Describe the proper ways to prepare a surface before applying a filler material.		
A W 9.4.03	Fillers	Identify the various types of filler materials.		
A W 9.4.04	Fillers	Identify common terms (i.e., putty, shellac, plastic wood and water-based filler).		
A W 10	INSTALLATION			
A W 10.1.01	Transporting	Identify proper lifting techniques.		
A W 10.1.02	Transporting	Identify proper packaging materials.		
A W 10.1.03	Transporting	Identify precautions to be used when transporting projects.		
A W 10.2.01	Layout/ Installation	Identify common cabinet installation terms (i.e., plumb, level, square, base cabinet, upper cabinet and tall cabinet).		
A W 10.3.01	Countertops	Define the terms: scribe, plumb, square and level.		
A W 10.3.02	Countertops	Identify hardware specific to countertops (i.e., draw bolts, sink clips).		
A W 10.4.01	Molding/ Trim	Identify different types of molding and trim.		

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A W 10.4.02	Molding/ Trim	Identify the appropriate tools, adhesives and fasteners used for the installation of moldings and trims.		
A W 10.4.03	Molding/ Trim	Identify the specific joints specific to molding and/or trim (i.e., coped, miter, compound miter and outside miter)		
A W 11	EMPLOYABILITY SKILLS			
A W 11.1.01	Problem Solving	Identify the basic steps in the problem-solving process.		
A W 11.1.02	Problem Solving	Identify alternative solutions to solve a problem.		
A W 11.1.03	Problem Solving	Identify the basic components of an action plan.		
A W 11.2.01	Critical Thinking	State the importance of critical thinking in identifying, analyzing, and solving a furniture and cabinetmaking problem.		
A W 11.2.02	Critical Thinking	Identify the essential steps of critical thinking.		
A W 11.2.03	Critical Thinking	Define emotional and logical thinking.		
A W 11.2.04	Critical Thinking	Identify the difference between opinions and statements of fact.		
A W 11.3.01	Speak, Write, Listen	Define communications.		
A W 11.3.02	Speak, Write, Listen	Explain the benefits of effective communication in the furniture and cabinetmaking trade.		
A W 11.3.03	Speak, Write, Listen	Explain how cultural and physical diversity affect communication.		
A W 11.3.04	Speak, Write, Listen	Identify applicable medium for conveying messages.		
A W 11.4.01	Technology	Recognize technology used in the furniture and cabinetmaking trades.		
A W 11.4.02	Technology	Use an Internet browser to locate specific Websites related to the furniture and cabinetmaking trades.		
A W 11.5.01	Leadership and Teamwork	Explain the importance of groups.		
A W 11.5.02	Leadership and Teamwork	Explain how to organize groups.		
A W 11.5.03	Leadership and Teamwork	Wear appropriate attire.		
A W 11.6.01	Ethics	Describe the importance of ethics in the workplace.		
A W 11.6.02	Ethics	Meet attendance standards.		
A W 11.6.03	Ethics	Describe an organized workplace.		
A W 11.6.04	Ethics	Identify appropriate responses to unethical actions.		
A W 11.7.01	Workplace	List effective time management skills.		
A W 11.7.02	Workplace	Utilize materials, tools, and processes to complete a task related to a career selection.		
A W 11.7.03	Workplace	Read and follow instructions from manuals on the use and care of materials, tools, and equipment.		
A W 11.7.04	Workplace	Maintain a clean, organized, and safe job site.		
A W 11.7.05	Workplace	Identify traits needed for cooperation and leadership in a team at school or in a workplace setting.		
A W 11.7.06	Workplace	Identify the material resources and space requirements needed to complete an assignment.		
A W 11.8.01	Career	Locate employment opportunities.		
A W 11.8.02	Career	Identify job requirements for entry-level positions in the furniture and cabinetmaking industry.		
A W 11.8.03	Career	Identify general conditions for employment.		
A W 11.8.04	Career	Identify educational/training requirements for related furniture and cabinetmaking fields.		
A W 11.8.05	Career	Identify the elements of goal setting.		
A W 11.8.06	Career	Identify furniture and cabinetmaking related careers.		
A W 11.8.07	Career	Describe essential job interview skills.		
A W 11.8.08	Career	Identify the components of a career portfolio.		
A W 11.9.01	Retention	Describe the importance of a portfolio.		
A W 11.9.02	Retention	Identify options for lifelong learning.		
A W 11.9.03	Retention	Identify interpersonal skills needed for job retention.		
A W 11.9.04	Retention	Identify jobs with opportunity for advancement.		
A W 11.9.05	Retention	Describe the importance of career planning.		

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J W 1	SAFETY AND EQUIPMENT			
J W 1.1.01	General Rules	Demonstrate proper use of safety apparel at all times, including but not limited to, eye protection, hearing protection, skin protection, head protection, footwear and protection from airborne particulate matter.		
J W 1.1.02	General Rules	Demonstrate the safe handling, storage and disposal of chemicals, materials and adhesives in accordance with local, state, and federal safety and environmental regulations (OSHA, EPA, HazCom, MSDS, etc.)		
J W 1.1.03	General Rules	Demonstrate continuous awareness of potential hazards to self and others.		
J W 1.1.04	General Rules	Demonstrate appropriate construction-related safety procedures.		
J W 1.1.05	General Rules	Inspect extension cords for the presence of a functional ground connection prior to use.		
J W 1.1.06	General Rules	Place and secure ladders when appropriate.		
J W 1.1.07	General Rules	Demonstrate awareness of personnel and activities near the work area.		
J W 1.1.08	General Rules	Report hazards found on the job site to their supervisor/teacher.		
J W 1.1.09	General Rules	Explain basic first aid procedures for treating cuts, burns, and electrical shock.		
J W 1.1.10	General Rules	Demonstrate proper fall-protection practices and use of safety devices at all times.		
J W 1.2.01	Tools	Demonstrate the safe use and care of hand tools.		
J W 1.2.02	Tools	Demonstrate the proper operation of stationary power tools for an assigned task.		
J W 1.2.03	Tools	Perform basic maintenance on hand and power tools.		
J W 1.2.04	Tools	Demonstrate the proper operation of pneumatic tools.		
J W 1.2.05	Tools	Inspect power tools for intact guards, shields, insulation and other protective devices.		
J W 2	MATHEMATICS			
J W 2.1.01	Use	Check corner layouts using the diagonal method.		
J W 2.1.02	Use	Estimate board, square and linear feet using formulas and/or tables with a calculator.		
J W 2.1.03	Use	Estimate material costs.		
J W 3	PLANNING AND DESIGN			
J W 3.1.01	Elements of Design	Identify needs and wants in cabinets and furniture in everyday living.		
J W 3.1.02	Elements of Design	Identify common sizes in relation to furniture and cabinets.		
J W 3.1.03	Elements of Design	Apply design elements: shapes, textures, lines and colors to create functional and attractive furniture and cabinets.		
J W 3.1.04	Elements of Design	Apply principles of design, harmony, repetitions, balance and proportion.		
J W 3.1.05	Elements of Design	Describe the relationship between the function and form of a cabinet or piece of furniture.		
J W 3.1.06	Elements of Design	Identify the elements of kitchen floor plans.		
J W 3.2.01	Styles	Explain the progress of cabinetry and furniture styles from the 17 th century to today.		
J W 3.2.02	Styles	Identify various cabinet styles and components.		
J W 3.2.03	Styles	List characteristics of the styles that belong to traditional, provincial, and contemporary designs.		
J W 3.2.04	Styles	Identify various kitchen cabinet components.		
J W 3.3.01	Drafting/ Blueprints	Sketch a project using manual drawing techniques.		
J W 3.3.02	Drafting/ Blueprints	Use drafting tools to create a pictorial and working drawing.		
J W 3.3.03	Drafting/ Blueprints	Create cutting diagrams.		
J W 3.3.04	Drafting/ Blueprints	Read and interpret blueprints.		
J W 3.4.01	Bill of Materials	Develop a bill of materials list from a working drawing.		
J W 3.4.02	Bill of Materials	Develop a cutting list from a working drawing.		
J W 3.4.03	Bill of Materials	Evaluate an existing bill of materials for accuracy.		
J W 3.5.01	Estimating	Determine the cost of materials needed for a furniture/cabinetmaking project.		
J W 3.5.02	Estimating	Optimize available materials from a cutting diagram.		
J W 3.5.03	Estimating	Compare and contrast the cost of a specific project using different materials.		
J W 3.6.01	Project Planning	List the sequence of cutting.		
J W 3.6.02	Project Planning	List the sequence of assembly.		
J W 3.6.03	Project Planning	List the sequence of finishing steps.		
J W 4	TOOL USAGE AND SELECTION			
J W 4.1.01	Measurement/ Layout	Demonstrate the accurate use of common measuring and layout tools.		
J W 4.1.02	Measurement/ Layout	Select the proper layout tools for specific tasks.		
J W 4.2.01	Cutting	Select the proper cutting tools for specific operations.		
J W 4.2.02	Cutting	Demonstrate the safe and proper use of specific hand-cutting tools.		
J W 4.2.03	Cutting	Select tools for cutting curves and straight cuts.		
J W 4.2.04	Cutting	Select the most appropriate blade for a given operation.		
J W 4.3.01	Striking	Demonstrate the safe and proper use of specific striking tools.		
J W 4.3.02	Striking	Maintain striking tools (i.e., dressing, sharpening, grinding).		
J W 4.4.01	Boring	Select the proper boring tools for specific operations.		
J W 4.4.02	Boring	Demonstrate the safe and proper use of hand boring tools.		
J W 4.5.01	Shaping	Select the proper hand-shaping tools for specific operations.		
J W 4.5.02	Shaping	Demonstrate the safe and proper use of hand-shaping tools.		
J W 4.5.03	Shaping	Construct a working edge.		
J W 4.5.04	Shaping	Construct a working surface.		
J W 4.6.01	Clamping	Select proper clamping tools for specific operations.		

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J W 4.6.02	Clamping	Demonstrate safe and proper use of clamping tools.		
J W 4.6.03	Clamping	Demonstrate initial assembly and dry clamping procedures.		
J W 5	POWER TOOLS			
J W 5.1.01	Portable	Demonstrate the operation of portable power tools for an assigned task.		
J W 5.1.02	Portable	Perform basic maintenance on a portable power tool.		
J W 5.1.03	Portable	Pass a written safety test on the use of portable power tools.		
J W 5.1.04	Portable	Demonstrate a performance skills safety test.		
J W 5.1.05	Portable	Demonstrate the safe use of pneumatic power tools.		
J W 5.2.01	Stationary	Pass written safety tests on the use of stationary power tools.		
J W 5.2.02	Stationary	Pass performance-based skills safety tests.		
J W 5.2.03	Stationary	Perform basic and special set-up operations on stationary power tools.		
J W 5.2.04	Stationary	Demonstrate the proper operation of stationary power tools for an assigned task.		
J W 5.2.05	Stationary	Perform basic maintenance and care of stationary power tools.		
J W 6	JOINERY, FASTENERS, ADHESIVES			
J W 6.1.01	Metallic	Define the purposes for metallic fasteners in furniture and cabinetmaking.		
J W 6.1.02	Metallic	Select the proper metallic fasteners for specific applications.		
J W 6.1.03	Metallic	Demonstrate the proper use of metallic fasteners for specific applications.		
J W 6.2.01	Dowels/ Biscuits	Determine appropriate applications and sizes for dowels and biscuits.		
J W 6.2.02	Dowels/ Biscuits	Construct a dowel joint.		
J W 6.2.03	Dowels/ Biscuits	Construct a biscuit joint.		
J W 6.3.01	Adhesives	Select the proper adhesive(s) to construct wood joints used in furniture or cabinets.		
J W 6.3.02	Adhesives	Demonstrate the proper use and application of adhesives.		
J W 6.3.03	Adhesives	Demonstrate the proper cleanup procedures for specific adhesives.		
J W 6.3.04	Adhesives	Identify characteristics of adhesives that affect the assembly time, cure time and strength of the product.		
J W 6.4.01	Joints	Construct five (5) separate types of wood joints.		
J W 6.4.02	Joints	Compare and contrast joints commonly used in the cabinet and furniture making industries, (i.e., strength, appearance and ease of construction).		
J W 6.4.03	Joints	Select the correct type of wood joint used for a specific application and material.		
J W 6.4.04	Joints	Demonstrate the proper use of tools used in creating and applying specific wood joints.		
J W 7	MATERIALS			
J W 7.1.01	Hardwoods/ Softwoods	Define the difference between a hardwood and a softwood.		
J W 7.1.02	Hardwoods/ Softwoods	Identify a minimum of five (5) species of hardwood and its characteristics that are common to the furniture and cabinet industry.		
J W 7.1.03	Hardwoods/ Softwoods	Identify a minimum of five (5) species of softwood and its characteristics that are common to the furniture and cabinet industry.		
J W 7.1.04	Hardwoods/ Softwoods	Identify common defects found in wood and list possible solutions.		
J W 7.2.01	Sheet Goods	Identify a minimum of five (5) types of panel products used in the furniture and cabinetmaking industries.		
J W 7.2.02	Sheet Goods	Explain the use of various panel products and their uses in the furniture and cabinetmaking industries.		
J W 7.2.03	Sheet Goods	Describe the cutting and handling techniques used for sheet goods.		
J W 7.2.04	Sheet Goods	Compare and contrast the advantages and disadvantages of sheet goods versus solid wood stock.		
J W 7.3.01	Surfaces	Identify standard sizes of laminates.		
J W 7.3.02	Surfaces	Identify the grades of various laminates.		
J W 7.3.03	Surfaces	Identify substrates required for laminating.		
J W 7.3.04	Surfaces	Identify the proper adhesive required for applying laminate.		
J W 7.4.01	Veneers	Identify standard sizes of veneers.		
J W 7.4.02	Veneers	Identify the grades of various veneers.		
J W 7.4.03	Veneers	Identify substrates required for veneers.		
J W 7.4.04	Veneers	Identify the proper adhesive(s) required for applying veneers.		
J W 7.4.05	Veneers	Identify the types of pattern matching in veneers.		
J W 8	CONSTRUCTION			
J W 8.1.01	Furniture	Square a board to a specific size.		
J W 8.1.02	Furniture	Demonstrate common case construction.		
J W 8.1.03	Furniture	Demonstrate common frame and panel construction.		
J W 8.1.04	Furniture	Demonstrate common leg and rail construction.		
J W 8.2.01	Cabinetry	Square a board to a specific size.		
J W 8.2.02	Cabinetry	Construct a 32 millimeter case using appropriate construction techniques.		
J W 8.2.03	Cabinetry	Construct a case with a face frame using appropriate construction techniques.		
J W 8.2.04	Cabinetry	Construct a frameless case using appropriate construction techniques.		
J W 8.2.05	Cabinetry	Construct a cabinet drawer using appropriate construction techniques.		
J W 8.2.06	Cabinetry	Construct a cabinet door using appropriate construction techniques.		
J W 8.3.01	Manufacturing	Demonstrate the use of a jig, template or fixture in a mass production project.		
J W 8.3.02	Manufacturing	Use a specific quality control instrument to check the accuracy of a project.		

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J W 8.3.03	Manufacturing	Demonstrate the use of a mass production technique (i.e., parts duplication and assembly processes).		
J W 8.4.01	Hardware	Select the appropriate hardware for a specific project.		
J W 8.4.02	Hardware	Create a hardware schedule for a specific project.		
J W 8.4.03	Hardware	Layout, install and adjust the appropriate drawer hardware to include drawer slides and pulls.		
J W 8.4.04	Hardware	Layout, install and adjust the appropriate door hardware to include European and standard hinges.		
J W 8.5.01	Plastics	Prepare a substrate for bonding a laminate to a surface.		
J W 8.5.02	Plastics	Cut plastic laminates.		
J W 8.5.03	Plastics	Apply a plastic laminate to a surface using an appropriate adhesive.		
J W 8.5.04	Plastics	Trim laminate using a router and laminate file.		
J W 8.5.05	Plastics	Apply a minimum of three (3) different edge treatments.		
J W 8.5.06	Plastics	Use appropriate tools for shaping laminates.		
J W 9	FINISHING			
J W 9.1.01	Abrasives	Properly prepare a surface for treatment.		
J W 9.1.02	Abrasives	Select the proper abrasive for shaping and smoothing materials.		
J W 9.1.03	Abrasives	Select the proper grit sizes and sequences for shaping and smoothing operations.		
J W 9.1.04	Abrasives	Demonstrate the proper ways to keep abrasives clean.		
J W 9.1.05	Abrasives	Comply with the health and safety factors used in working with abrasives.		
J W 9.2.01	Stains	Select the proper type of stain for a specific application.		
J W 9.2.02	Stains	Demonstrate proper application methods for different types of stains.		
J W 9.2.03	Stains	Comply with the health and safety factors used in working with stains.		
J W 9.2.04	Stains	Demonstrate cleaning procedure for various types of stains.		
J W 9.3.01	Sealers	Demonstrate proper application methods for different types of sealers and finish coats.		
J W 9.3.02	Sealers	Select the proper type of sealer and finish coat for a specific application.		
J W 9.3.03	Sealers	Comply with the health and safety factors used in working with sealer and finish coats (i.e., spray booths, respirators, gloves and spray equipment).		
J W 9.3.04	Sealers	Demonstrate cleaning procedures for various types of sealer and finish coats.		
J W 9.4.01	Fillers	Demonstrate proper application methods for different types of filler materials.		
J W 9.4.02	Fillers	Select the proper type of filler material for a specific application.		
J W 9.4.03	Fillers	Comply with the health and safety factors used in working with filler materials.		
J W 9.4.04	Fillers	Demonstrate cleaning procedures for various types of filler materials.		
J W 10	INSTALLATION			
J W 10.1.01	Transporting	Package a project for shipping.		
J W 10.1.02	Transporting	Secure a packaged project for transportation.		
J W 10.1.03	Transporting	Transport a project from one location to another without damage.		
J W 10.2.01	Layout/ Installation	Layout a cabinet installation according to a floor plan.		
J W 10.2.02	Layout/ Installation	Layout a plumb line and a level line.		
J W 10.2.03	Layout/ Installation	Adjust a layout to plumb, square and level.		
J W 10.2.04	Layout/ Installation	Install a base cabinet.		
J W 10.2.05	Layout/ Installation	Install an upper cabinet.		
J W 10.3.01	Countertops	Create and adjust a layout to plumb, square and level.		
J W 10.3.02	Countertops	Scribe into a corner.		
J W 10.3.03	Countertops	Use appropriate fastening methods for attaching countertops to cabinets.		
J W 10.3.04	Countertops	Use a cut-in template.		
J W 10.4.01	Molding/ Trim	Layout and cut molding and/or trim to the appropriate angle and size for a specific application.		
J W 10.4.02	Molding/ Trim	Use the appropriate adhesives and fasteners to install a minimum of three (3) different types of trim and/or molding.		
J W 10.4.03	Molding/ Trim	Demonstrate the proper techniques to construct a miter (other than 90 degrees), a compound miter and a cope.		
J W 11	EMPLOYABILITY SKILLS			
J W 11.1.01	Problem Solving	Solve a furniture and cabinetmaking problem using the appropriate steps in the problem-solving process.		
J W 11.1.02	Problem Solving	Demonstrate brainstorming techniques.		
J W 11.1.03	Problem Solving	Examine and explain the advantages and disadvantages of alternative solutions to one or more problems.		
J W 11.1.04	Problem Solving	Create an action plan based upon a solution to a furniture and cabinetmaking problem.		
J W 11.1.05	Problem Solving	Identify the benefits of solving a furniture and cabinetmaking problem.		
J W 11.2.01	Critical Thinking	Identify and explain the essential elements of the critical-thinking process as related to the furniture and cabinetmaking trades.		
J W 11.2.02	Critical Thinking	Demonstrate critical-thinking skills necessary in the furniture and cabinetmaking trades.		
J W 11.2.03	Critical Thinking	Explain how emotional thinking and logical thinking affect decision making in the furniture and cabinetmaking trades.		
J W 11.2.04	Critical Thinking	Explain the difference between reliable and unreliable observations and statements of facts.		

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J W 11.2.05	Critical Thinking	Recognize patterns or relationships through observation and discovery.		
J W 11.3.01	Speak, Write, Listen	Explain the benefits of effective communication skills in the workplace.		
J W 11.3.02	Speak, Write, Listen	Effectively interpret and respond to verbal and nonverbal messages.		
J W 11.3.03	Speak, Write, Listen	Demonstrate proper telephone etiquette.		
J W 11.3.04	Speak, Write, Listen	Effectively communicate thoughts, ideas and information in writing.		
J W 11.3.05	Speak, Write, Listen	Organize ideas and communicate orally; is able to effectively demonstrate job skills to others.		
J W 11.3.06	Speak, Write, Listen	Locate, understand and interpret written information in documents such as manuals, graphs and schedules.		
J W 11.3.07	Speak, Write, Listen	Select and utilize an appropriate medium for conveying messages with dignity and respect.		
J W 11.3.08	Speak, Write, Listen	Organize information into the appropriate format in accordance with standard practices, which includes prewriting, drafting, proofreading, editing/revising, and preparing a final copy.		
J W 11.3.09	Speak, Write, Listen	Demonstrate sensitivity to cultural diversity in communication.		
J W 11.3.10	Speak, Write, Listen	Identify common communication barriers and methods for improving communication.		
J W 11.4.01	Technology	Demonstrate ability to utilize basic keyboarding techniques.		
J W 11.4.02	Technology	Demonstrate ability to utilize other input devices.		
J W 11.4.03	Technology	Demonstrate ability to utilize various electronic research methods.		
J W 11.4.04	Technology	Demonstrate knowledge of the basic technology systems currently available and how they apply to your field (i.e., word processing, spreadsheets, multimedia applications and databases).		
J W 11.4.05	Technology	Investigate and explain the use, benefits, and costs of technological developments in the workplace and school.		
J W 11.4.06	Technology	Identify and demonstrate the appropriate use of technology to enhance the efficiency of the workplace and school.		
J W 11.4.07	Technology	Demonstrate routine maintenance and repair of technological equipment.		
J W 11.5.01	Leadership and Teamwork	Work cooperatively with others when given group project.		
J W 11.5.02	Leadership and Teamwork	Explain traits necessary to effectively lead and influence individuals and groups.		
J W 11.5.03	Leadership and Teamwork	Demonstrate appropriate attitudes and behaviors for effective leadership.		
J W 11.5.04	Leadership and Teamwork	Demonstrate respect for team members, team processes, and team goals.		
J W 11.5.05	Leadership and Teamwork	Participate in the implementation of a group's decision and evaluate the results.		
J W 11.5.06	Leadership and Teamwork	Demonstrate the qualities of an effective leader and team member.		
J W 11.5.07	Leadership and Teamwork	Describe the importance of a proper dress code.		
J W 11.6.01	Ethics	Develop personal work ethics through work experience.		
J W 11.6.02	Ethics	Demonstrate correct ethics in the workplace.		
J W 11.6.03	Ethics	Demonstrate regular attendance, promptness, and the willingness to follow instructions and complete an assigned task.		
J W 11.6.04	Ethics	Demonstrate appropriate personal and professional attitudes and behaviors.		
J W 11.6.05	Ethics	Maintain a safe, clean, and organized work area.		
J W 11.6.06	Ethics	Demonstrate awareness of legal responsibilities related to individual performance, safety, and customer satisfaction.		
J W 11.6.07	Ethics	Demonstrate knowledge of various types of harassment.		
J W 11.7.01	Workplace	Develop a time schedule and prioritized task list to complete a job assignment.		
J W 11.7.02	Workplace	Identify the resources needed to complete a job assignment.		
J W 11.7.03	Workplace	Organize the material resources and space requirements needed to complete a job assignment.		
J W 11.7.04	Workplace	Effectively use technology to complete a job assignment.		
J W 11.7.05	Workplace	Demonstrate cooperation and leadership as a team at school or in a workplace setting.		
J W 11.7.06	Workplace	Use the basic components of effective time management.		
J W 11.7.07	Workplace	Recognize the need for management skills in the workplace with regard to stress, anger management and substance abuse.		
J W 11.8.01	Career	Prepare a job application.		
J W 11.8.02	Career	Prepare a personal resume.		
J W 11.8.03	Career	Complete a personal aptitude and interest inventory.		
J W 11.8.04	Career	Participate in a mock job interview.		
J W 11.8.05	Career	Establish short-term career goals.		
J W 11.8.06	Career	Establish long-term career goals.		
J W 11.8.07	Career	Use the Montana Career Information System (CIS) or a similar computer-based program to research careers in a chosen field.		
J W 11.8.08	Career	Participate in an organized job-shadowing activity.		
J W 11.8.09	Career	Participate in a community service project.		
J W 11.8.10	Career	Construct a career portfolio.		
J W 11.9.01	Retention	Maintain an employment/career portfolio.		
J W 11.9.02	Retention	Explain strategies for balancing work and family roles.		
J W 11.9.03	Retention	Demonstrate understanding of the need for lifelong learning in a rapidly changing job market.		
J W 11.9.04	Retention	Describe strategies to maintain employment in the face of job reductions.		
J W 11.9.05	Retention	Develop long-term career planning strategies.		

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J W 11.9.06	Retention	Describe various educational options needed for job retention.		
J W 11.9.07	Retention	Model sound workplace ethics, such as honesty, loyalty, punctuality, and initiative.		
J W 11.9.08	Retention	Demonstrate interpersonal skills needed for job retention.		

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M W 1	SAFETY AND EQUIPMENT			
M W 1.1.01	General Rules	Design a safety-improvement plan.		
M W 1.1.02	General Rules	Administer simulated basic first aid procedures for treating cuts, burns, and electrical shock.		
M W 1.1.03	General Rules	Obtain first aid/CPR certification.		
M W 1.1.04	General Rules	Obtain OSHA 10 certification.		
M W 1.2.01	Tools	Perform advanced maintenance on hand and power tools.		
M W 1.2.02	Tools	Earn certification for specialized equipment.		
M W 2	MATHEMATICS			
M W 2.1.01	Use	Estimate labor for all aspects of furniture and cabinetmaking construction using industry tables.		
M W 2.1.02	Use	Lay out corners using the Pythagorean theorem (3-4-5 Rule) or (6-8-10 Rule).		
M W 2.1.03	Use	Use construction calculator to solve project-related problems.		
M W 3	PLANNING AND DESIGN			
M W 3.1.01	Elements of Design	Identify and describe Americans with Disabilities Act (ADA) requirements.		
M W 3.2.01	Styles	Research and design period furniture.		
M W 3.3.01	Drafting/ Blueprints	Use computer software to design furniture/cabinetry.		
M W 3.3.02	Drafting/ Blueprints	Create a kitchen cabinet layout.		
M W 3.4.01	Bill of Materials	Develop a bill of materials using a computer-based program.		
M W 3.5.01	Estimating	Develop a total cost estimate for kitchen cabinetry in a residence.		
M W 3.6.01	Project Planning	Develop a plan of procedures for a complete kitchen.		
M W 4	TOOL USAGE AND SELECTION			
M W 4.1.01	Measurement/ Layout	Demonstrate how to use digital and electronic measurement and layout tools.		
M W 4.1.02	Measurement/ Layout	Demonstrate and use mechanical precision measuring equipment to the nearest .001 inch.		
M W 4.2.01	Cutting	Maintain and sharpen cutting hand tools.		
M W 4.2.02	Cutting	Hand-cut a dovetail.		
M W 4.3.01	Striking	Use specific striking tools to create mortise and tenon joints.		
M W 4.4.01	Boring	Students will hand bore using a doweling jig.		
M W 4.5.01	Shaping	Carve an identifiable object using hand-shaping tools.		
M W 4.5.02	Shaping	Square a board using hand-shaping tools.		
M W 4.6.01	Clamping	Form curved shapes using vacuum bag clamping.		
M W 5	POWER TOOLS			
M W 5.1.01	Portable	Perform advanced maintenance on portable power tools.		
M W 5.1.02	Portable	Obtain the OSHA CareerSafe certification.		
M W 5.2.01	Stationary	Perform advanced maintenance on stationary power tools.		
M W 5.2.02	Stationary	Obtain the OSHA CareerSafe certification.		
M W 6	JOINERY, FASTENERS, ADHESIVES			
M W 6.1.01	Metallic	Design a project requiring the use of specialized metallic fasteners.		
M W 6.2.01	Dowels/ Biscuits	Design a project using both dowels and biscuits.		
M W 6.2.02	Dowels/ Biscuits	Conduct a strength test comparing dowel and biscuit joinery.		
M W 6.3.01	Adhesives	Develop a research paper describing the uses of adhesives in industrial processes.		
M W 6.4.01	Joints	Design and conduct a test to measure the strengths and weaknesses of various wood joints.		
M W 6.4.02	Joints	Design and construct jigs and fixtures for specialty applications.		
M W 7	MATERIALS			
M W 7.1.01	Hardwoods/ Softwoods	Research and present information identifying the current status of a specific species of lumber found in the furniture and cabinetmaking industries.		
M W 7.2.01	Sheet Goods	Research and present information on the sources of raw materials for sheet good products.		
M W 7.2.02	Sheet Goods	Research and present information on the manufacturing process of sheet good products.		
M W 7.3.01	Surfaces	Research and present information on how laminate is manufactured.		
M W 7.3.02	Surfaces	Student will develop a method for repairing delaminations.		
M W 7.3.03	Surfaces	Research and present information on various solid surfaces used in the furniture and cabinetmaking industry.		
M W 7.4.01	Veneers	Research and present information on how veneers are manufactured.		
M W 7.4.02	Veneers	Demonstrate a method for repairing damaged veneers.		
M W 8	CONSTRUCTION			
M W 8.1.01	Furniture	Construct a cabriole leg.		
M W 8.1.02	Furniture	Hand carve a custom furniture part (i.e., ball and claw foot, appliqué, etc.).		
M W 8.1.03	Furniture	Demonstrate bending and laminating of material to a contoured shape.		
M W 8.2.01	Cabinetry	Construct a dovetail drawer.		
M W 8.2.02	Cabinetry	Construct a multiple cabinet layout.		
M W 8.3.01	Manufacturing	Develop a procedure to mass produce a product.		
M W 8.3.02	Manufacturing	Prepare a research paper on a manufacturing process that influences the furniture and cabinetmaking construction industry.		
M W 8.3.03	Manufacturing	Develop a flow chart and production schedule to mass produce a product.		
M W 8.3.04	Manufacturing	Research and present information on current trends in manufacturing and mass production.		
M W 8.3.05	Manufacturing	Develop a CNC produced part.		
M W 8.4.01	Hardware	Design and construct hardware for a specific project.		
M W 8.4.02	Hardware	Create a hardware schedule for a multiple cabinet installation.		

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M W 8.4.03	Hardware	Layout and install decorative hardware on a project.		
M W 8.4.04	Hardware	Develop a hardware installation template.		
M W 8.5.01	Plastics	Bend a laminate to match a contoured surface.		
M W 8.5.02	Plastics	Prepare a research paper describing how plastic laminate is manufactured.		
M W 8.5.03	Plastics	Research and present information about a solid surface material such as Corian.		
M W 8.5.04	Plastics	Demonstrate how to repair a delamination in plastic laminate.		
M W 9	FINISHING			
M W 9.1.01	Abrasives	Prepare a research paper on the manufacturing processes for abrasives.		
M W 9.2.01	Stains	Mixing different colors of stains to match an existing color.		
M W 9.2.02	Stains	Spray stain.		
M W 9.3.01	Sealers	Apply a two-part epoxy-finishing coat.		
M W 9.3.02	Sealers	Prepare a research paper comparing and contrasting different types of finish coats.		
M W 9.3.03	Sealers	Apply a French polish finish.		
M W 9.4.01	Fillers	Create a filler material for use in an application.		
M W 10	INSTALLATION			
M W 10.1.01	Transporting	Create a specialized crate to properly ship a project.		
M W 10.2.01	Layout/ Installation	Layout and install a complete set of kitchen cabinets at a job site.		
M W 10.2.02	Layout/ Installation	Install a bathroom vanity cabinet.		
M W 10.3.01	Countertops	Design and fabricate a substrate for a countertop installation.		
M W 10.3.02	Countertops	Scribe into two (2) adjacent corners.		
M W 10.3.03	Countertops	Install cut-ins (i.e., breadboard, sink, cook top)		
M W 10.4.01	Molding/ Trim	Design a custom molding and/or trim.		
M W 10.4.02	Molding/ Trim	Create a custom molding and/or trim for a specific project.		
M W 11	EMPLOYABILITY SKILLS			
M W 11.1.01	Problem Solving	Develop methods to analyze the advantages and disadvantages of alternative solutions.		
M W 11.1.02	Problem Solving	Devise an action plan for a furniture and cabinetmaking problem based on information gained through research of alternative solutions and implement in a group decision/action.		
M W 11.2.01	Critical Thinking	Analyze how critical-thinking skills affect work performance.		
M W 11.2.02	Critical Thinking	Formulate, implement, and evaluate an action plan.		
M W 11.2.03	Critical Thinking	Demonstrate the skills necessary to identify, analyze, and solve a design problem.		
M W 11.3.01	Speak, Write, Listen	Research and present information on a topic related to furniture and cabinetmaking.		
M W 11.3.02	Speak, Write, Listen	Prepare technical documents relating to bill of materials, blueprints, plan of procedures, etc.		
M W 11.3.03	Speak, Write, Listen	Present and defend a furniture and cabinetmaking procedure.		
M W 11.3.04	Speak, Write, Listen	Compete in a SkillsUSA job skill demonstration and/or public speaking contest.		
M W 11.4.01	Technology	Critique the use, benefits and cost of technologically advanced equipment in the furniture and cabinetmaking trades.		
M W 11.4.02	Technology	Analyze the impact of technological changes on one or more aspects of furniture and cabinetmaking trades by researching current literature.		
M W 11.4.03	Technology	Compete in a state-level SkillsUSA cabinetmaking contest.		
M W 11.5.01	Leadership and Teamwork	Analyze the stages of group development.		
M W 11.5.02	Leadership and Teamwork	Demonstrate leadership ability within a group or team.		
M W 11.5.03	Leadership and Teamwork	Compromise and/or build consensus within a group and summarize the decision of the group while maintaining respect for diverse viewpoints.		
M W 11.5.04	Leadership and Teamwork	Complete levels 1-3 of the SkillsUSA Professional Development Program.		
M W 11.5.05	Leadership and Teamwork	Campaign for a local SkillsUSA chapter office.		
M W 11.5.06	Leadership and Teamwork	Serve as a committee chair in a local SkillsUSA chapter.		
M W 11.6.01	Ethics	Demonstrate time-management skills and cost-effective practices.		
M W 11.7.01	Workplace	Recognize the individual roles of team members, delegate tasks, and provide feedback on performance.		
M W 11.7.02	Workplace	Acknowledge and utilize the skills, abilities, and input of all members of a team.		
M W 11.7.03	Workplace	Develop an action plan to accomplish tasks within a given period.		
M W 11.8.01	Career	Develop a community service or job-shadowing project.		
M W 11.8.02	Career	Develop an education/training plan to fulfill long-term career goals.		
M W 11.8.03	Career	Define advantages and disadvantages of self-employment or working for various sizes and types of businesses.		
M W 11.8.04	Career	Critique the results of a job interview.		
M W 11.8.05	Career	Develop a proposal for an organized community service project.		
M W 11.8.06	Career	Compete in a state level SkillsUSA job interview contest.		
M W 11.8.07	Career	Investigate the opportunities presented by an apprenticeship program.		
M W 11.9.01	Retention	Maintain an electronic portfolio.		
M W 11.9.02	Retention	Create a plan for lifelong learning.		
M W 11.9.03	Retention	Create a presentation illustrating interpersonal skills needed for job retention.		
M W 11.9.04	Retention	Adapt new knowledge and skills in changing situations.		
M W 11.9.05	Retention	Analyze how work life is affected by families and how families are affected by work life.		