

# Cabinetmaker Level 2

## Cabinetmaker

**Unit:** B1 Computer Aided Design (CAD)

**Level:** Two

**Duration:** 56 hours

Theory: 28 hours

Practical: 28 hours

### Overview:

This unit is designed to provide the apprentice with the knowledge and skills of computer aided design (CAD). Beginning with terminology, the unit will Interpret industry standards and specifications while reviewing architectural, cabinet and furniture drawings. The focus of this unit is CAD and its characteristics and applications. The unit also covers the procedures to produce different styles of CAD drawings for multiple applications. Finally, apprentices will perform and produce CAD drawings.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Define terminology associated with computer aided design (CAD).</b>	<b>5%</b>
a. Refer to Cabinetmaker Red Seal Occupational Standard (RSOS)	
<b>2. Interpret industry standards and specifications pertaining to CAD shop drawings.</b>	<b>5%</b>
a. Architectural Woodwork Manufacturers Association of Canada (AWMAC)	
b. Architectural print specifications	
c. Shop-specific standard	
<b>3. Review architectural, cabinet and furniture drawings.</b>	<b>5%</b>
a. Drawing types	
b. Views	
• Plan	
• Elevation	
• Section	
• Detail	
c. Documentation	
• Specifications	
d. Drawing conventions	
• Line weight	
• Reference numbers, symbols and abbreviations	
• Units of measurement (metric/imperial)	
• Scaling	
• Title block and legend	
• Notes and schedules	

- 4. Identify and describe CAD and its characteristics and applications. 20%**
- a. Set up
    - Metric/imperial
    - Configure tool bars
    - Layers
    - Dimension style
    - Text style
    - Page layout (model/paper space)
  - b. Draw (model)
    - Line
    - Circle
    - Arc
    - Rectangle
    - Other
  - c. Modify
    - Copy and move
    - Trim/extend
    - Stretch
    - Mirror
    - Other
  - d. Annotations
    - Text
    - Dimension
    - Tables
  - e. Plot
- 5. Describe and demonstrate the procedures to produce CAD drawings. 30%**
- a. Set-up
    - Current profile
    - Drawing features
  - b. Produce drawings in model space
  - c. Modify drawings in model space
  - d. Set-up paper space
    - Page set-up (size)
    - Viewport
    - Title block
    - Scale
  - e. Dimension and annotate drawings
  - f. Plot and publish drawings
- 6. Perform the procedures to produce CAD drawings. 35%**
- a. Set-up
  - b. Produce drawings
  - c. Modify drawings
  - d. Set-up paper space
  - e. Dimension and annotate drawings
  - f. Plot and publish drawings

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## Cabinetmaker

**Unit:** B2 Laminating Materials

**Level:** Two

**Duration:** 49 hours

Theory: 14 hours

Practical: 35 hours

### Overview:

This unit is designed to provide the apprentice with the knowledge and skills of laminating materials. Beginning with terminology, hazards and describe safe work procedures, the unit will describe laminating materials, their characteristics and applications. The unit also will describe and demonstrate the procedures to laminate wood and composite materials. Finally, apprentices will perform wood and composite laminations.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Define terminology associated with laminating materials.</b>	<b>5%</b>
a. Refer to Cabinetmaker Red Seal Occupational Standard (RSOS)	
<b>2. Identify hazards and describe safe work procedures for laminating materials.</b>	<b>5%</b>
a. Relevant content and resources from unit <i>A2 Trade Safety Awareness</i>	
• Workplace Hazardous Material Information System (WHMIS) and procedures.	
• Safety data sheets	
• Personal protective equipment	
<b>3. Identify and describe laminating materials, their characteristics and applications.</b>	<b>30%</b>
a. Types of laminated products	
• Butcher block tops	
• Tables	
• Panels	
• Segmented layers	
b. Wood properties	
• Moisture content	
• Absorption rate	
c. Types of adhesives	
• Wood glues	
• Epoxies	
• Polyurethanes	
• Waterproof	
d. Adhesive properties	
• Open time	
• Clamp time	

- Curing time
- Clean-up
- e. Application Methods
  - Rolling
  - Brushing
- f. Laminating troubleshooting
  - Sunken joints
  - Delamination
  - Starved joints
  - Warping

**4. Describe and demonstrate the procedures to laminate wood and composite materials. 30%**

- a. Determine finished component size
- b. Inspect for defects, colour and grain of materials
- c. Prevent warping and cupping
  - Alternating growth ring orientation
- d. Select adhesive and application method
- e. Spread adhesive
  - Rolling
  - Brushing
- f. Select and use clamps
  - Hand (Bar and F clamps)
  - Pneumatic
  - Vacuum
- g. Ensure alignment prior to final clamping pressure
- h. Remove excess glue
  - Wet wipe
  - Dry scrape

**5. Perform wood and composite laminations. 30%**

- a. Interpret drawings
- b. Layout
- c. Machine components
- d. Dry fit
- e. Glue and assemble components
- f. Combine components in final assemblies

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## Cabinetmaker

**Unit:** B3 Cabinet Fabrication and Assembly

**Level:** Two

**Duration:** 77 hours

Theory: 28 hours

Practical: 49 hours

### Overview:

This unit is designed to provide the apprentice with the knowledge and skills of cabinet fabrication and assembly. Beginning with terminology and safe work procedures, the unit covers cabinet planning and site layout considerations. The unit also covers cabinet assembly, and their characteristics and applications. Apprentices will describe and demonstrate the procedures to combine cabinet components into subassemblies and final assemblies. Finally, apprentices will perform cabinet fabrication and assembly.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Define terminology associated with cabinet fabrication and assembly.</b>	<b>5%</b>
a. Refer to Cabinetmaker Red Seal Occupational Standard (RSOS).	
<b>2. Identify hazards and describe safe work procedures pertaining to cabinet fabrication and assembly.</b>	<b>5%</b>
a. Relevant content and resources from unit <i>A2 Trade Safety Awareness</i>	
<b>3. Interpret industry standards and drawings pertaining to cabinet fabrication and assembly.</b>	<b>5%</b>
a. Architectural Woodwork Manufacturers Association of Canada (AWMAC)	
b. Shop-specific standard	
c. Shop drawings	
d. National building code of Canada	
<b>4. Identify and describe cabinet planning, and their applications and considerations.</b>	<b>10%</b>
a. Layout	
• L-shape	
• U-shape	
• Galley	
• Peninsula	
• Island	
• Site dimensions	
b. Design and function	
• Kitchen triangle	
• Appliance sizes	
• Building codes	

- Kitchen style
- c. Manufacturing production flow
  - Material receiving
  - Material layup
  - Beam saw and panel saw
  - Edgebander
  - CNC
  - Case clamp
  - Assembly line
  - Finishing line
  - Shipping area
- d. Cabinet construction grade (AWMAC)
  - Premium
  - Custom

**5. Identify and describe cabinet site layout, and their applications and considerations 5%**

- a. Select and use layout tools
- b. Transfer drawing information and specifications to full scale layout
- c. Identify potential problems on site
- d. Take site measurements
- e. Template site conditions
  - Curved and angled walls
  - Walls out of plumb
  - Floors out of level
- f. Observe site accessibility
  - Passage doors
  - Elevators
  - Parking
  - Stairways
  - Loading docks
- g. Verify design requirements
  - Accessibility
  - Site measurements

**6. Identify and describe cabinet assembly, their characteristics and applications. 15%**

- a. Cabinet components
  - Gables, tops, bottoms and backs
  - Doors and drawer fronts
  - Drawer boxes and bases
  - Face frame construction
- b. Types of doors
  - Raised panel
  - Flat panel
  - Slab
  - Tambour
- c. Types of base
  - Integrated
  - Ladder
- d. Standard measurements and codes
  - Kitchens
  - Countertops

- Vanities
- Other
- e. Properties
  - Expansion/contraction
- f. Joints
  - Dowel (32mm system)
  - Biscuit
  - Dovetail and finger
  - Rabbets and dados
  - Mortise and tenon
  - Mitre
  - Other
- g. Fasteners
  - Biscuits, dowels, splines and screws
  - Assembly fittings, pins and glue blocks
  - Ready to assemble (RTA) fasteners
- h. Door and drawer front applications
  - Full-overlay, half-overlay and inset
- i. Door hardware
  - European hinges
  - Locks
  - Pulls
  - Lifts
  - Other
- j. Drawer hardware
  - Full-extension slides
  - Integrated slides
  - Soft-closing
  - Locks
  - Pulls

**7. Describe and demonstrate the procedures to combine cabinet components into subassemblies and final assemblies. 15%**

- a. Assembly subassemblies
  - Drawer boxes
  - Pull out shelf
  - Other
- b. Install hardware
  - Hinges
  - Slides
  - Locks
- c. Install specialty hardware
  - Retractable door hardware
  - Lazy susan hardware
  - Pantry pullout application
  - Other
- d. Apply components into final assembly
  - Subassemblies
  - Decorative mouldings
  - Face frame
  - Base
  - Other



- e. Install and adjust doors and drawer fronts
- f. Install decorative hardware
  - Knobs and pulls
- g. Install glass and decorative panels into framework
- h. Test and evaluate all components
  - Operation
  - Aesthetic appeal
  - Installation considerations

**8. Perform cabinet fabrication and assembly.**

**40%**

- a. Interpret drawings
- b. Layout
- c. Machine components
- d. Dry fit
- e. Glue and assemble components
- f. Combine components in final assemblies
- g. Surface preparation

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## Cabinetmaker

**Unit:** B4 High Pressure Decorative Laminate II

**Level:** Two

**Duration:** 28 hours

Theory: 7 hours

Practical: 21 hours

### Overview:

Cabinetmakers apply laminate sheets to a variety of substrates to provide a durable, sanitary and decorative finish. Many countertops are now supplied by companies that specialize in post-formed countertop manufacturing. This unit is designed to provide the apprentice with the knowledge and skills of high pressure decorative laminate (HPDL). Beginning with terminology and safe work practices, the unit covers drawings, industry standards and product specifications. The unit will review HPDL from Level 1 and describe application methods and conditions. The unit will also cover the procedures to prepare, adhere and cleanup HPDL. Finally, apprentices will demonstrate and perform fabrication of various applications using HPDL.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<p><b>1. Define terminology associated with high pressure decorative laminate.</b></p> <p>a. Refer to Cabinetmaker Red Seal Occupational Standard (RSOS)</p>	<b>5%</b>
<p><b>2. Identify hazards and describe safe work procedures for high pressure decorative laminate.</b></p> <p>a. Relevant content and resources from unit <i>A2 Trade Safety Awareness</i></p> <ul style="list-style-type: none"> <li>• Handling procedures</li> <li>• Safety Data Sheets</li> </ul>	<b>5%</b>
<p><b>3. Interpret drawings, industry standards and product specifications pertaining to high pressure decorative laminate.</b></p> <p>a. Shop drawings</p> <p>b. Architectural Woodwork Manufacturers Association of Canada (AWMAC)</p> <p>c. Manufactures fabrication guide</p>	<b>5%</b>
<p><b>4. Review and describe high pressure decorative laminate.</b></p> <p>a. Grades</p> <p>b. Sheet sizes</p> <p>c. Properties</p> <p>d. Cores</p> <p>e. Adhesives</p> <p>f. Tools and equipment</p>	<b>5%</b>

- 5. Identify and describe HPDL application methods and conditions. 20%**
- a. Glue
    - Contact cement
    - Polyvinyl acetate (PVA)
    - Urea resin
    - Other
  - b. Application methods
    - Brush or roller
    - Automatic glue spreader
    - Spray gun
  - c. Pressure methods
    - J-Roller
    - Cold press
    - Hot press
    - Vacuum press
  - d. Repairs
    - Delamination
    - Other
  - e. Environmental conditions
    - Temperature
    - Humidity
- 6. Describe and demonstrate the procedures to prepare HDPL and substrate 15%**
- a. Choose size, grade and thickness of laminate sheets and substrate
  - b. Inspect laminate sheets for flaws and damage
  - c. Balance sheet construction
  - d. Select and use tools and equipment
  - e. Cut laminate sheets
  - f. Handle laminate sheets with care
  - g. Join laminate
    - Edge
    - Seams
    - Sequence
  - h. Cut substrate
  - i. Join substrate
    - Biscuits
    - Splines
    - Countertop connectors
    - Other
- 7. Describe and demonstrate the procedures to adhere and cleanup HDPL 20%**
- a. Select adhesives
  - b. Apply adhesives
    - Sequence of HPDL application
  - c. Apply pressure to laminate
  - d. Achieve tight and flush seam
  - e. Trim excess laminate
  - f. Bevel finished laminate edge
  - g. File laminate
    - Edges
    - Inside radius corners

- Cut-outs
- h. Remove excess adhesives

**8. Perform fabrication of various applications using high pressure decorative laminate. 25%**

- a. Drawings
  - Dimensions
  - Location
  - Material requirements
- b. Prepare Substrate
  - Cut
  - Join
- c. Prepare HPDL
- d. Adhere HPDL to substrate
- e. Final cleanup
  - Trim
  - File
  - Clean

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## Cabinetmaker

**Unit:** B5 Cabinet and Countertop Installation

**Level:** Two

**Duration:** 35 hours

Theory: 14 hours

Practical: 21 hours

### Overview:

This unit is designed to provide the apprentice with the knowledge and skills of cabinet and countertop installation. Beginning with terminology and safe work procedures, the unit covers cabinet and countertop installation, and their characteristics and applications. Apprentices will describe and demonstrate the procedures for installation and finalization. Finally, apprentices will perform the installation cabinets and countertops.

<b>Objectives and Content:</b>	<b>Percent of <u>Unit Mark (%)</u></b>
<p><b>1. Define terminology associated with cabinet and countertop installation.</b></p> <p>a. Refer to Cabinetmaker Red Seal Occupational Standard (RSOS)</p>	<b>5%</b>
<p><b>2. Identify hazards and describe safe work procedures for cabinet and countertop installation.</b></p> <p>a. Relevant content and resources from unit <i>A2 Trade Safety Awareness</i></p> <ul style="list-style-type: none"> <li>• Workplace Hazardous Material Information System (WHMIS) and procedures.</li> <li>• Safety data sheets</li> <li>• Personal protective equipment</li> </ul>	<b>5%</b>
<p><b>3. Interpret industry standards and drawings pertaining to cabinet and countertop installation.</b></p> <p>a. Architectural Woodwork Manufacturers Association of Canada (AWMAC)</p> <p>b. Architectural plans</p> <p>c. Drawings</p> <p>d. Product installation guide</p>	<b>5%</b>
<p><b>4. Identify and describe cabinet and countertop installation and their characteristics and applications.</b></p> <p>a. Installation</p> <ul style="list-style-type: none"> <li>• As-built shop drawings</li> <li>• Location</li> <li>• Wall type</li> <li>• Site conditions (humidity)</li> <li>• Blocking, Joists</li> </ul> <p>b. Tools and equipment</p> <ul style="list-style-type: none"> <li>• Measuring and layout</li> </ul>	<b>15%</b>

- Cutting
  - Leveling
  - Fastening
  - Assisting devices (adjustable jacks, dollies and hand truck)
- c. Access panels and holes
- Electrical and mechanical
  - Data

**5. Describe and demonstrate the procedures for cabinet and countertop installation. 20%**

- a. Plan and organize tools and equipment
- b. Protect floors and surrounding areas
- c. Locate and verify structural components and utilities
  - Stud and blocking locations
- d. Pre-assemble cabinet components prior to installation where necessary
- e. Lay out cabinets
  - Floor high point
  - Horizontal references (cabinet component heights)
  - Vertical references (cabinet widths)
- f. Modify cabinets and components
  - Size
  - Scribe (filler and base)
- g. Position, level and fasten cabinets to walls and floor
- h. Fit, assemble and fasten countertop to cabinets
- i. Cut out for components
  - Sinks
  - Cooktops
  - Access panels
  - Grommets
- j. Install trim components
  - Crown
  - Base

**6. Describe and demonstrate the procedures to finalize the installation of cabinets and countertop. 20%**

- a. Install pulls, knobs and accessory hardware
- b. Check and adjust all doors, drawer fronts and hardware
- c. Identify and repair imperfections
  - Scratches and dents
- d. Seal cut-outs
- e. Clean cabinets, countertop and worksite
- f. Select and apply caulking

**7. Perform the installation cabinets and countertops. 30%**

- a. Layout components
- b. Scribe cabinets and countertop
- c. Secure cabinets and countertop
  - Wall construction types
  - Fastening
  - Hanging

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## Cabinetmaker

**Unit:** B6 Wood Finishing I

**Level:** Two

**Duration:** 35 hours

Theory: 14 hours

Practical: 21 hours

### Overview:

This unit is designed to provide the apprentice with the knowledge and skills of wood finishing. Beginning with terminology, hazards and safe work practices, the unit covers finishing materials, and their application and characteristics. The unit also covers the procedures and application of finishing materials. Finally, apprentices will perform preparation and finishing of wood products.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Define terminology associated with wood finishing.</b>	<b>5%</b>
a. Refer to Cabinetmaker Red Seal Occupational Standard (RSOS)	
<b>2. Identify hazards and describe safe work procedures for wood finishing.</b>	<b>10%</b>
a. Relevant content and resources from unit <i>A2 Trade Safety Awareness</i>	
• Safety data sheets	
• Workplace Hazardous Material Information System (WHMIS) and procedures.	
• Personal protective equipment	
• Flammability, off gassing and toxicity	
• Hazardous material disposal	
<b>3. Interpret industry standards and drawings pertaining to wood products finishing.</b>	<b>5%</b>
a. Architectural Woodwork Manufacturers Association of Canada (AWMAC)	
b. Shop-specific standard	
c. Shop drawings and specifications	
<b>4. Identify and describe finishing materials, and their application and characteristics.</b>	<b>25%</b>
a. Types	
• Lacquers	
• Varnishes	
• Shellac	
• Stains	
• Water-based/solvent-based	
• Oils	
b. Additives	
• Solvents	

- Driers
- Slow-reducers
- Catalysts
- c. Application methods
  - Spraying
  - Wiping
  - Brushing (size, shape and type)
  - Rolling
  - Pouring
- d. Finishing material properties
  - Sheen
  - Drying time
  - Appearance
  - Durability
- e. Wood properties
  - Absorption
  - Open grain/closed grain
- f. Procedures to prepare surface
  - Scuff sanding (manual and machine)
  - Removing contaminants (blowing off dust, tacking surface, vacuuming)
  - Filling imperfections
  - Shading/toning
  - Wash coat
- g. Finishing problems
  - Drips and runs
  - Orange peel
  - Fish eye
  - Pin-holes
  - Colour variance
  - Bleeding
  - Blush

**5. Describe and demonstrate the procedures and application of finishing materials. 25%**

- a. Select finishing materials
- b. Measure, mix and filter finishing materials
- c. Test and adjust finishing materials
- d. Select and use tools and equipment for applying finishing material
  - Manual
  - Spray finishing
- e. Test application tools with finishing material
  - Manual
  - Spray finishing
- f. Confirm product is cleaned, sanded and ready to be finished
- g. Select PPE used for finishing materials
- h. Select application technique
- i. Set up area for applying and drying
  - Ventilation
  - Clean
  - Racking
- j. Check product for finishing problems
- k. Repair finishing problems if required



**6. Perform preparation and finishing of wood products.**

**30%**

- a. Measure, mix and filter product
- b. Test and adjust finishing materials
  - Sample board
- c. Application method
  - Manual
  - Spray
- d. Apply finish
  - Stain
  - Sealer
  - Topcoat

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