

# Apprenticeship and Industry Training

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**Cabinetmaker**

**Apprenticeship Course Outline**

**0361 (2017)**



Apprenticeship  
and Industry  
Training

**ALBERTA ADVANCED EDUCATION CATALOGUING IN PUBLICATION DATA**

Cabinetmaker: apprenticeship course outline

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**Course Outline**

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## **Apprenticeship**

Apprenticeship is post-secondary education with a difference. Apprenticeship begins with finding an employer. Employers hire apprentices, pay their wages and provide on-the-job training and work experience. Approximately 80 per cent of an apprentice's time is spent on the job under the supervision of a certified journeyman or qualified tradesperson. The other 20 per cent involves technical training provided at, or through, a post-secondary institution – usually a college or technical institute.

To become certified journeymen, apprentices must learn theory and skills, and they must pass examinations. Requirements for certification—including the content and delivery of technical training—are developed and updated by the Alberta Apprenticeship and Industry Training Board on the recommendation of Cabinetmaker Provincial Apprenticeship Committee.

The graduate of the Cabinetmaker apprenticeship program is a certified journeyman who will:

- know the characteristics of wood, wood products or substitutes used in industrial woodworking
- be proficient with the safe use of hand tools, powered machines and equipment used in industrial woodworking
- read and interpret plans and specifications and prepare layouts, working drawings and cutting lists
- calculate material quantities
- detail components and fixtures according to specifications and assume responsibility for the end product
- relate to job situations and other trades that precede or follow
- know the characteristics of glues and adhesives and their accepted usage in industry
- perform assigned tasks in accordance with quality and production standards required in industry
- know techniques for assembly and installation of hardware and other component
- perform assigned tasks in accordance with quality and production standards required by industry
- Understand the fundamentals of operating a small business.
- Perform assigned tasks in accordance with quality and production standards required by industry.

## **Apprenticeship and Industry Training System**

### **Industry-Driven**

Alberta's apprenticeship and industry training system is an industry-driven system that ensures a highly skilled, internationally competitive workforce in more than 50 designated trades and occupations. This workforce supports the economic progress of Alberta and its competitive role in the global market. Industry (employers and employees) establishes training and certification standards and provides direction to the system through an industry committee network and the Alberta Apprenticeship and Industry Training Board. The Alberta government provides the legislative framework and administrative support for the apprenticeship and industry training system.

### **Alberta Apprenticeship and Industry Training Board**

The Alberta Apprenticeship and Industry Training Board provides a leadership role in developing Alberta's highly skilled and trained workforce. The board's primary responsibility is to establish the standards and requirements for training and certification in programs under the Apprenticeship and Industry Training Act. The board also provides advice to the Minister of Advanced Education on the needs of Alberta's labour market for skilled and trained workers, and the designation of trades and occupations.

The thirteen-member board consists of a chair, eight members representing trades and four members representing other industries. There are equal numbers of employer and employee representatives.

### **Industry Committee Network**

Alberta's apprenticeship and industry training system relies on a network of industry committees, including local and provincial apprenticeship committees in the designated trades, and occupational committees in the designated occupations. The network also includes other committees such as provisional committees that are established before the designation of a new trade or occupation comes into effect. All trade committees are composed of equal numbers of employer and employee representatives. The industry committee network is the foundation of Alberta's apprenticeship and industry training system.

### **Local Apprenticeship Committees (LAC)**

Wherever there is activity in a trade, the board can set up a local apprenticeship committee. The board appoints equal numbers of employee and employer representatives for terms of up to three years. The committee appoints a member as presiding officer. Local apprenticeship committees:

- monitor apprenticeship programs and the progress of apprentices in their trade, at the local level
- make recommendations to their trade's provincial apprenticeship committee (PAC) about apprenticeship and certification in their trade
- promote apprenticeship programs and training and the pursuit of careers in their trade
- make recommendations to the board about the appointment of members to their trade's PAC
- help settle certain kinds of disagreements between apprentices and their employers
- carry out functions assigned by their trade's PAC or the board

### **Provincial Apprenticeship Committees (PAC)**

The board establishes a provincial apprenticeship committee for each trade. It appoints an equal number of employer and employee representatives, and, on the PAC's recommendation, a presiding officer - each for a maximum of two terms of up to three years. Most PACs have nine members but can have as many as twenty-one. Provincial apprenticeship committees:

- Make recommendations to the board about:
  - standards and requirements for training and certification in their trade
  - courses and examinations in their trade
  - apprenticeship and certification
  - designation of trades and occupations
  - regulations and orders under the Apprenticeship and Industry Training Act
- monitor the activities of local apprenticeship committees in their trade
- determine whether training of various kinds is equivalent to training provided in an apprenticeship program in their trade
- promote apprenticeship programs and training and the pursuit of careers in their trade
- consult with other committees under the Apprenticeship and Industry Training Act about apprenticeship programs, training and certification and facilitate cooperation between different trades and occupations
- consult with organizations, associations and people who have an interest in their trade and with employers and employees in their trade
- may participate in resolving certain disagreements between employers and employees
- carry out functions assigned by the board

### **Cabinetmaker PAC Members at the Time of Publication**

Mr. P. Loszchuk.....	Calgary.....	Presiding Officer
Mr. G. Cassidy.....	Edmonton.....	Employer
Mr. R. Stawnychko .....	Calgary.....	Employer
Mr. A. Lay .....	Calgary.....	Employee
Mr. A. Trachuk.....	Edmonton.....	Employee

## Alberta Government

Alberta Advanced Education works with industry, employer and employee organizations and technical training providers to:

- facilitate industry's development and maintenance of training and certification standards
- provide registration and counselling services to apprentices and employers
- coordinate technical training in collaboration with training providers
- certify apprentices and others who meet industry standards

### Apprenticeship Safety

Safe working procedures and conditions, incident/injury prevention, and the preservation of health are of primary importance in apprenticeship programs in Alberta. These responsibilities are shared and require the joint efforts of government, employers, employees, apprentices and the public. Therefore, it is imperative that all parties are aware of circumstances that may lead to injury or harm.

Safe learning experiences and healthy environments can be created by controlling the variables and behaviours that may contribute to or cause an incident or injury. By practicing a safe and healthy attitude, everyone can enjoy the benefit of an incident and injury free environment.

### Alberta Apprenticeship and Industry Training Board Safety Policy

The Alberta Apprenticeship and Industry Training Board (board) fully supports safe learning and working environments and emphasizes the importance of safety awareness and education throughout apprenticeship training- in both on-the- job training and technical training. The board also recognizes that safety awareness and education begins on the first day of on-the-job training and thereby is the initial and ongoing responsibility of the employer and the apprentice as required under workplace health and safety training. However the board encourages that safe workplace behaviour is modeled not only during on-the-job training but also during all aspects of technical training, in particular, shop or lab instruction. Therefore the board recognizes that safety awareness and training in apprenticeship technical training reinforces, but does not replace, employer safety training that is required under workplace health and safety legislation.

The board has established a policy with respect to safety awareness and training:

**The board promotes and supports safe workplaces, which embody a culture of safety for all apprentices, employers and employees. Employer required safety training is the responsibility of the employer and the apprentice, as required under legislation other than the *Apprenticeship and Industry Training Act*.**

The board's complete document on its 'Apprenticeship Safety Training Policy' is available at [www.tradesecrets.alberta.ca](http://www.tradesecrets.alberta.ca); access the website and conduct a search for 'safety training policy'.

Implementation of the policy includes three common safety learning outcomes and objectives for all trade course outlines. These common learning outcomes ensure that each course outline utilizes common language consistent with workplace health and safety terminology. Under the title of 'Standard Workplace Safety', this first section of each trade course outline enables the delivery of generic safety training; technical training providers will provide trade specific examples related to the content delivery of course outline safety training.

## **Occupational Health and Safety**

A tradesperson is often exposed to more hazards than any other person in the work force and therefore should be familiar with and apply the Occupational Health and Safety Act, Regulations and Code when dealing with personal safety and the special safety rules that apply to all daily tasks.

Occupational Health and Safety (a division of Alberta Human Services) conducts periodic inspections of workplaces to ensure that safety regulations for industry are being observed.

Additional information is available at [www.humanservices.alberta.ca](http://www.humanservices.alberta.ca)

## **Technical Training**

Apprenticeship technical training is delivered by the technical institutes and colleges in the public post-secondary system throughout Alberta. The colleges and institutes are committed to delivering the technical training component of Alberta apprenticeship programs in a safe, efficient and effective manner. All training providers place a strong emphasis on safety that complements safe workplace practices towards the development of a culture of safety for all trades.

The technical institutes and colleges work with Alberta's Apprenticeship and Industry Training Board, industry committees and Alberta Advanced Education to enhance access and responsiveness to industry needs through the delivery of the technical training component of apprenticeship programs across the Province. They develop curriculum from the course outlines established by industry and provide technical training to apprentices.

The following institutions deliver Cabinetmaker apprenticeship technical training:

Northern Alberta Institute of Technology                      Southern Alberta Institute of Technology

## **Procedures for Recommending Revisions to the Course Outline**

Advanced Education has prepared this course outline in partnership with the Cabinetmaker Provincial Apprenticeship Committee.

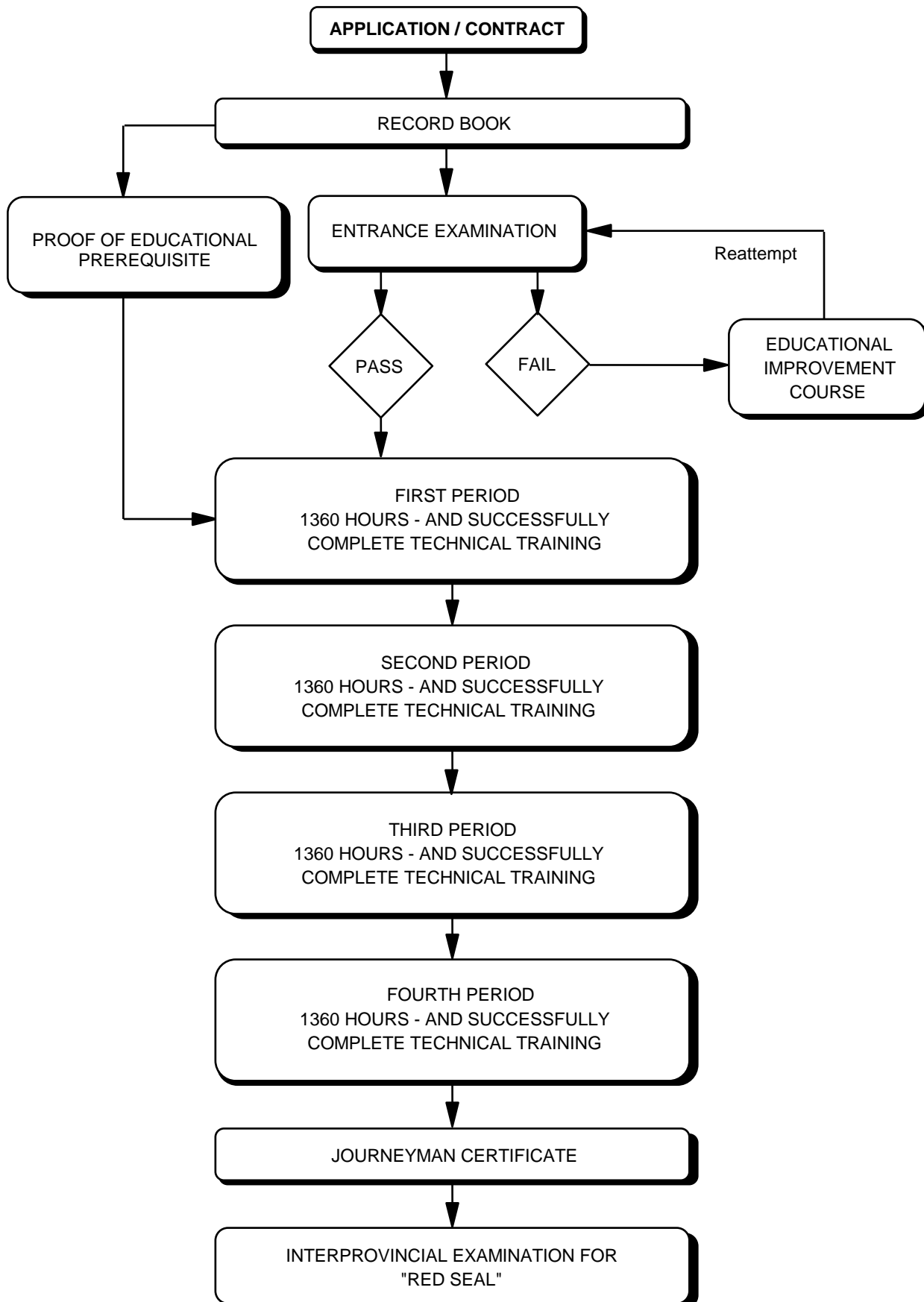
This course outline was approved on December 16, 2016 by the Alberta Apprenticeship and Industry Training Board on a recommendation from the Provincial Apprenticeship Committee. The valuable input provided by representatives of industry and the institutions that provide the technical training is acknowledged.

Any concerned individual or group in the province of Alberta may make recommendations for change by writing to:

Cabinetmaker Provincial Apprenticeship Committee  
c/o Industry Programs and Standards  
Apprenticeship and Industry Training  
Advanced Education  
10th floor, Commerce Place  
10155 102 Street NW  
Edmonton AB T5J 4L5

It is requested that recommendations for change refer to specific areas and state references used. Recommendations for change will be placed on the agenda for regular meetings of the Cabinetmaker Provincial Apprenticeship Committee.

**Apprenticeship Route toward Certification**





**Cabinetmaker Training Profile**  
**FIRST PERIOD**  
**(8 Weeks 30 Hours per Week – Total of 240 Hours)**

**SECTION ONE**

**STANDARD WORKPLACE  
 SAFETY, ORIENTATION,  
 MATERIAL AND JOINERY**  
**72 HOURS**



<b>A</b>	<b>B</b>	<b>C</b>
Safety Legislation, Regulations & Industry Policy in the Trades 6 Hours	Climbing, Lifting, Rigging and Hoisting 4 Hours	Hazardous Materials and Fire Protection 4 Hours
<b>D</b>	<b>E</b>	<b>F</b>
Apprenticeship Training Program 2 Hour	The Cabinetmaker Trade 2 Hours	The Nature and Properties of Wood 15 Hours
<b>G</b>	<b>H</b>	<b>I</b>
Primary Processing of Hard and Soft Wood 9 Hours	Manufactured Sheet and Panel Products 3 Hours	Adhesives 6 Hours
<b>J</b>	<b>K</b>	<b>L</b>
Fasteners 3 Hours	Abrasives 3 Hours	Principles of Wood Joinery 9 Hours
<b>M</b>	<b>N</b>	<b>I</b>
Solid Laminated Panels 3 Hours	Material Handling 3 Hours	

**SECTION TWO**

**TOOLS, MACHINES AND  
 EQUIPMENT**  
**100 HOURS**



<b>A</b>	<b>B</b>	<b>C</b>
Measuring and Layout Tools 8 Hours	Hand Planes 5 Hours	Scrapers, Chisels, Gouges and Knives 5 Hours
<b>D</b>	<b>E</b>	<b>F</b>
Assembly, Dismantling and Clamping Tools 8 Hours	Hand Drills and Saws 5 Hours	Portable Power Tools 10 Hours
<b>G</b>	<b>H</b>	<b>I</b>
Pneumatic Tools and Fasteners 5 Hours	Table, Panel and Computer Numerical Control (CNC) Saws 20 Hours	Tooling for Portable and Stationary Equipment 12 Hours
<b>J</b>	<b>K</b>	<b>L</b>
Band Saws 4 Hours	Drill Presses 2 Hours	Jointers and Thickness Planers 12 Hours
<b>M</b>		
Explosive Actuated Tools 4 Hours		

**SECTION THREE**

**SHOP DRAWING**  
**44 HOURS**



**A**  
Drafting Basics  
6 Hours

**B**  
Orthographic Drawings  
8 Hours

**C**  
Shop Drawings  
8 Hours

**D**  
Shop Drawing Interpretation  
and Cutting Lists  
8 Hours

**E**  
Orientation to Computers  
and Computer Aided  
Design (CAD)  
6 Hours

**F**  
Residential Drawing  
Interpretation  
8 Hours

**SECTION FOUR**

**TRADE MATH**  
**24 HOURS**



**A**  
Math Concepts  
12 Hours

**B**  
Area, Perimeter, Board Feet  
and Volumes  
6 Hours

**C**  
Ratio, Proportion and  
Percentage  
6 Hours

**SECOND PERIOD**  
**(8 Weeks 30 Hours per Week – Total of 240 Hours)**

**SECTION ONE**

<b>MATERIALS AND HARDWARE</b> <b>36 HOURS</b>	<b>A</b>	<b>B</b>	<b>C</b>
	Apply Adhesives 3 Hours	Millwork Hardware 9 Hours	Plastic Laminates and Solid Surface Materials 9 Hours



<b>D</b>	<b>E</b>
Moulding and Millwork Products 3 Hours	Veneer 12 Hours

**SECTION TWO**

<b>EQUIPMENT, MACHINE USE, ASSEMBLY AND PROCEDURES</b> <b>104 HOURS</b>	<b>A</b>	<b>B</b>	<b>C</b>
	Mortising and Tenoning Machines 2 Hours	Profiling Machines and Auto-Feed Devices 10 Hours	Stationary Sanding Machines 12 Hours



<b>D</b>	<b>E</b>	<b>F</b>
Dowel Boring and Insertion Machines 4 Hours	Breakout Solid and Sheet Materials 12 Hours	Machining and Assembly of Case Work 40 Hours

<b>G</b>	<b>H</b>	<b>I</b>
Doors, Frames and Trim 6 Hours	Introduction to CNC Machinery 10 Hours	Process for Operation of CNC Equipment 8 Hours

**SECTION THREE**

<b>WOOD FINISHING</b> <b>36 HOURS</b>	<b>A</b>	<b>B</b>	<b>C</b>
	Wood Finishing Safety 6 Hours	Prepare Surfaces for Finishing 15 Hours	Application of Finishing Materials 15 Hours



**SECTION FOUR**

<b>DRAWING INTERPRETATION</b> <b>40 HOURS</b>	<b>A</b>	<b>B</b>	<b>C</b>
	Drawing Standards 5 Hours	Commercial Drawing Interpretation 10 Hours	Free-Hand Sketches 4 Hours



<b>D</b>	<b>E</b>	<b>F</b>
Pictorial Drawing and Sketching 4 Hours	Kitchen and Casework Drawings 3 Hours	Material Cutting Lists and Procedural Plans 5 Hours

<b>G</b>	<b>H</b>
CAD Shop Drawing 6 Hours	Digital Renderings 3 Hours

**SECTION FIVE**

<b>MATERIAL CALCULATIONS</b> <b>24 HOURS</b>	<b>A</b>	<b>B</b>	<b>C</b>
	Cut List Calculations 7 Hours	Bulk Material Requirements 7 Hours	Material Estimate 10 Hours



**THIRD PERIOD**  
**(8 Weeks 30 Hours per Week – Total of 240 Hours)**

**SECTION ONE**

**MATERIALS, PACKAGING, SHIPPING AND STAIRS**  
**24 HOURS**



<b>A</b>	<b>B</b>	<b>C</b>
Plastics in Cabinetmaking 2 Hours	Glass in Cabinetmaking 2 Hours	Metals in Cabinetmaking 2 Hours
<b>D</b>	<b>E</b>	<b>F</b>
Packaging and Shipping of Millwork 2 Hours	Correct Deficiencies 4 Hours	Stair Design and Codes 3 Hours
<b>G</b>	<b>H</b>	
Stair Construction 4 Hours	Stair and Handrail Installation 5 Hours	

**SECTION TWO**

**DESIGN THEORY AND SHOP PROCEDURES**  
**74 HOURS**



<b>A</b>	<b>B</b>	<b>C</b>
Principles and Elements of Design 9 Hours	Ergonomics 2 Hours	Joinery Techniques 11 Hours
<b>D</b>	<b>E</b>	<b>F</b>
Curved Elements in Wood 16 Hours	Furniture Design and Architectural Terms 9 Hours	Wall and Ceiling Treatments 11 Hours
<b>G</b>	<b>H</b>	<b>I</b>
Custom Veneer Matches and Production Applications 12 Hours	Prototypes 2 Hours	Dry Fit 2 Hours

**SECTION THREE**

**MACHINES AND EQUIPMENT PROCEDURES**  
**68 HOURS**



<b>A</b>	<b>B</b>	<b>C</b>
Custom Shaper and CNC Machine Production Applications 18 Hours	Moulders 4 Hours	Specialized Industrial Machines 8 Hours
<b>D</b>	<b>E</b>	<b>F</b>
Wood Turning 6 Hours	Advanced Table Saw Applications and Procedures 18 Hours	CNC Manufacturing 14 Hours

**SECTION FOUR**

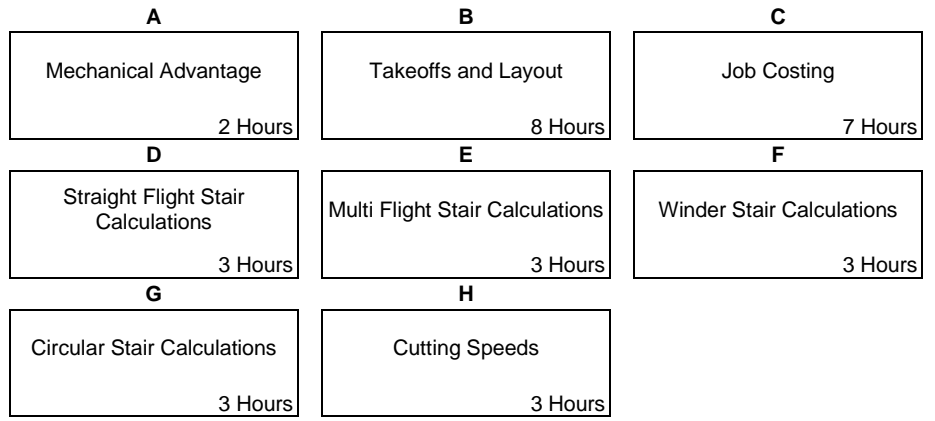
**COMMERCIAL DRAWINGS**  
**42 HOURS**



<b>A</b>	<b>B</b>	<b>C</b>
Drawing Interpretation Principles 2 Hours	Plans, Elevations, Sections and Details 5 Hours	Specialized Plan Views 2 Hours
<b>D</b>	<b>E</b>	<b>F</b>
Integrated Drawing Interpretation Skills 2 Hours	Interpret Commercial Drawings 8 Hours	Shop Drawings from Commercial Drawings 6 Hours
<b>G</b>	<b>H</b>	
Advanced Free-Hand Sketching 6 Hours	Computer Assisted Drafting (CAD) and Computer Assisted Manufacturing (CAM) 11 Hours	

**SECTION FIVE**

**STAIR AND INDUSTRY  
RELATED CALCULATIONS**  
**32 HOURS**



**FOURTH PERIOD**  
**(8 Weeks 30 Hours per Week – Total of 240 Hours)**

**SECTION ONE**

**BUSINESS PRACTICES,  
 WORKPLACE COACHING  
 SKILLS AND ADVISORY  
 NETWORK**  
 57 HOURS

<b>A</b>	<b>B</b>	<b>C</b>
Principles of Advanced Joinery 6 Hours	Marquetry, Parquetry, Intarsia Inlay and Special Veneer Matches 2 Hours	Fire Retardant Materials and Practices 2 Hours
<b>D</b>	<b>E</b>	<b>F</b>
Woodcarving 2 Hours	Commercial Millwork 3 Hours	Integrated CNC Procedures 15 Hours
<b>G</b>	<b>H</b>	<b>I</b>
Handling, Shipping and Installation 2 Hours	Custom Millwork Installation 8 Hours	Job Roles and Responsibilities 2 Hours
<b>J</b>	<b>K</b>	<b>L</b>
Contract Law 2 Hours	Business Structures and Practices 2 Hours	Large and Small Shop Practices 2 Hours
<b>M</b>	<b>N</b>	<b>O</b>
Production Scheduling 2 Hours	Machine Maintenance 2 Hours	Alberta's Industry Network 2 Hours
<b>P</b>	<b>Q</b>	
Workplace Coaching Skills 1 Hours	Interprovincial Standards Red Seal Program 2 Hours	

**SECTION TWO**

**WOOD FINISHING**  
 30 HOURS

<b>A</b>	<b>B</b>	<b>C</b>
Wood Finishing Applications 10 Hours	Specialized Wood Finishing 10 Hours	Refinishing Wood Surfaces 10 Hours

**SECTION THREE**

**DRAWING INTERPRETATION  
 AND SHOP DRAWINGS**  
 69 HOURS

<b>A</b>	<b>B</b>	<b>C</b>
Commercial Drawings with Architectural Elements 9 Hours	Drawing Conflicts and Resolution 3 Hours	Two Point Perspective Drawing 8 Hours
<b>D</b>	<b>E</b>	<b>F</b>
Advanced Sketching 6 Hours	Commercial Layouts 6 Hours	Draw Shop Projects 13 Hours
<b>G</b>		
CAD Shop Drawings 24 Hours		

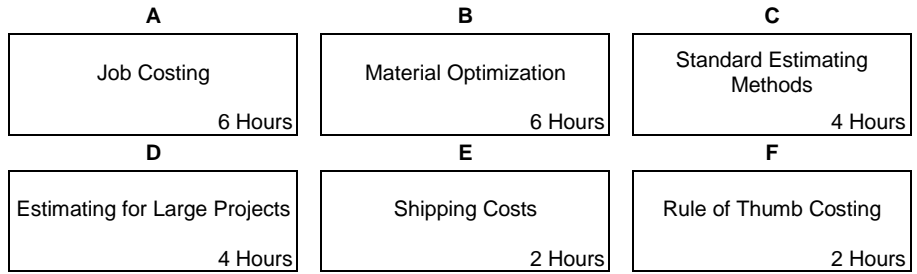
**SECTION FOUR**

**CONSTRUCTION OF INDUSTRY  
 PROJECT**  
 60 HOURS

<b>A</b>
Construct Industry Project 60 Hours

**SECTION FIVE**

**JOB COSTING AND MATERIAL ESTIMATING**  
**24 HOURS**



NOTE: The hours stated are for guidance and should be adhered to as closely as possible. However, adjustments must be made for rate of apprentice learning, statutory holidays, registration and examinations for the training establishment and Apprenticeship and Industry Training.

**FIRST PERIOD TECHNICAL TRAINING  
CABINETMAKER TRADE  
COURSE OUTLINE**

*UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.*

**SECTION ONE: ..... STANDARD WORKPLACE SAFETY, ORIENTATION, ..... 18 HOURS  
MATERIAL AND JOINERY**

**A. Safety Legislation, Regulations & Industry Policy in the Trades ..... 6 Hours**

**Outcome:**     ***Apply legislation, regulations and practices ensuring safe work in this trade.***

1.     Demonstrate the application of the Occupational Health and Safety Act, Regulation and Code.
2.     Describe the employer's and employee's role with Occupational Health and Safety (OH&S) regulations, Worksite Hazardous Materials Information Systems (WHMIS), fire regulations, Workers Compensation Board regulations and related advisory bodies and agencies.
3.     Describe industry practices for hazard assessment and control procedures.
4.     Describe the responsibilities of worker and employers to apply emergency procedures.
5.     Describe tradesperson attitudes with respect to housekeeping, personal protective equipment and emergency procedures.
6.     Describe the roles and responsibilities of employers and employees with the selection and use of personal protective equipment (PPE).
7.     Maintain required PPE for tasks.
8.     Use required PPE for tasks.

**B. Climbing, Lifting, Rigging and Hoisting ..... 4 Hours**

**Outcome:**     ***Use industry standard practices for climbing, lifting, rigging and hoisting in this trade.***

1.     Describe manual lifting procedures.
2.     Describe rigging hardware and associated safety factors.
3.     Select equipment for rigging loads.
4.     Describe hoisting and load moving procedures.
5.     Maintain personal protective equipment (PPE) for climbing, lifting and load moving equipment.
6.     Use PPE for climbing, lifting and load moving equipment.

**C. Hazardous Materials & Fire Protection ..... 4 Hours**

**Outcome:**     ***Apply industry standard practices for hazardous materials and fire protection in this trade.***

1.     Describe roles, responsibilities, features and practices related to the Workplace Hazardous Materials Information System (WHMIS) program.
2.     Describe three key elements of WHMIS.
3.     Describe handling, storing and transporting procedures for hazardous material.
4.     Describe venting procedures when working with hazardous materials.
5.     Describe hazards, classes, procedures and equipment related to fire protection.



**D. Apprenticeship Training Program..... 2 Hours****Outcome:    *Manage an apprenticeship to earn journeyman certification.***

1.     Describe the contractual responsibilities of the apprentice, employer and Alberta Apprenticeship and Industry Training.
2.     Describe the purpose of the apprentice record book.
3.     Describe the procedure for changing employers during an active apprenticeship.
4.     Describe the purpose of the course outline.
5.     Describe the procedure for progressing through an apprenticeship.
6.     Describe advancement opportunities in this trade.

**E. The Cabinetmaker Trade ..... 2 Hours****Outcome:    *Describe the scope of the cabinetmaker trade.***

1.    Describe the history of the cabinetmaker trade as it developed from ancient to modern times.
2.    Describe current trends in the cabinetmaker trade (including CNC).
3.    Describe and define the scope of the journeyperson cabinetmaker's duties
4.    Describe the terms commercial, institutional, furniture and residential as they apply to the cabinetmaker trade
5.    Define general trade-related terminology.

**F. The Nature and Properties of Wood ..... 15 Hours****Outcome:    *Describe solid woods used in the cabinetmaker trade.***

1.    Describe and classify woods used in the cabinetmaking industry.
2.    Describe the cellular structure of various hard and softwood species and their effect on performance and workability.
3.    Describe the terms for grain and figure patterns in wood.

**G. Primary Processing of Hard and Soft Wood ..... 9 Hours****Outcome:    *Select lumber used in the manufacture of cabinetry.***

1.    Describe the cutting, drying, grading and storing of hard and softwood lumber.
2.    Describe natural and manufactured defects in wood.
3.    Describe hardwood lumber grades.
4.    Identify sample boards by species and determine their respective grades.

**H. Manufactured Sheet and Panel Products ..... 3 Hours****Outcome:    *Select manufactured sheet products used in the cabinetmaker trade.***

1.    Describe the properties and grading of composite panels, overlays, plywood and bendable sheet goods.
2.    Describe the application of composite panels, overlays, plywood and bendable sheet goods.

**I. Adhesives ..... 6 Hours****Outcome:    *Use adhesives in the manufacture of cabinetry.***

1.    Describe the principles of adhesion and cohesion.

2. Describe adhesives and their application.
3. Use adhesives on assigned projects.

**J. Fasteners ..... 3 Hours**

**Outcome:**     *Use fasteners in the manufacture of cabinetry.*

1. Describe the fasteners used in the cabinetmaker trade and their applications.
2. Use fasteners for assigned projects.

**K. Abrasives ..... 3 Hours**

**Outcome:**     *Use abrasives.*

1. Describe the abrasives used in the cabinetmaker trade.
2. Describe the properties, grits and usage of abrasives.
3. Perform preliminary sanding.
4. Use abrasives for assigned projects.

**L. Principles of Wood Joinery ..... 9 Hours**

**Outcome:**     *Apply the principles of wood joinery in cabinetmaking.*

1. Describe the principles involved in joining wood, including performance requirements, fit, surface quality and grain orientation.
2. Describe the stresses that affect the performance of a given joint.
3. Describe the selection of appropriate joinery for a given situation.
4. Construct woodworking joints.

**M. Solid Laminated Panels..... 3 Hours**

**Outcome:**     *Produce solid wood panels using lamination process.*

1. Describe lamination process for solid panels.
2. Describe the types of solid laminated panels.
3. Describe the tools and techniques for lamination.

**N. Material Handling ..... 3 Hours**

**Outcome:**     *Handle materials from raw form to finished product*

1. Describe the process for receiving of cabinetmaking materials.
2. Describe process for storing cabinetmaking materials.
3. Describe material handling through the production process.

**SECTION TWO: ..... TOOLS, MACHINES AND EQUIPMENT ..... 100 HOURS**

**A. Measuring and Layout Tools ..... 8 Hours**

**Outcome:**     *Use measuring and layout tools.*

1. Describe the use, maintenance, and storage of measuring, layout, alignment and levelling tools.
2. Use, maintain, and store measuring, layout, alignment and levelling tools.

**B. Hand Planes..... 5 Hours****Outcome: Use hand planes.**

1. Describe hand and specialty planes.
2. Use, maintain and store hand planes.

**C. Scrapers, Chisels, Gouges and Knives ..... 5 Hours****Outcome: Use scrapers, chisels, gouges and knives.**

1. Use, maintain and store scraping tools.
2. Use, maintain and store chisels, gouges and knives.

**D. Assembly, Dismantling and Clamping Tools..... 8 Hours****Outcome: Use assembly, dismantling and clamping tools.**

1. Describe the application, maintenance and storage of assembly, dismantling, and clamping tools.
2. Use, maintain and store assembly, dismantling and clamping tools.
3. Apply clamping techniques.

**E. Hand Drills and Saws ..... 5 Hours****Outcome: Use hand drills and saws.**

1. Describe the maintenance and storage of drilling tools.
2. Describe the maintenance and storage of hand saws.
3. Use, hand drills and saws.

**F. Portable Power Tools ..... 10 Hours****Outcome: Use portable power tools.**

1. Demonstrate the operation, application and maintenance of portable power drills and screw guns.
2. Demonstrate the operation, application and maintenance of portable power saws, including circular, jig (sabre), reciprocating and mitre saws.
3. Demonstrate the operation, application and maintenance of portable power planes.
4. Demonstrate the operation, application and maintenance of portable power sanders.
5. Demonstrate the operation, application and maintenance of routers.
6. Demonstrate the operation, application and maintenance of plate joiners.

**G. Pneumatic Tools and Fasteners..... 5 Hours****Outcome: Use pneumatic tools and equipment.**

1. Describe the operation and maintenance of pneumatic tools and equipment.
2. Demonstrate the operation, application and maintenance of pneumatic nailing and stapling equipment and fasteners.
3. Demonstrate the operation, application and maintenance of pneumatic clamping and assembly equipment and vacuum tables.
4. Demonstrate maintenance procedures for compressors and pneumatic powered equipment.

**H. Table, Panel and Computer Numerical Controlled (CNC) Saws ..... 20 Hours****Outcome: Use table, panel, and CNC saws.**

1. Describe the operation, application and maintenance of stationary power saws.
2. Describe the jigs and safety devices related to table, panel, and CNC saws.
3. Demonstrate the operation, application, maintenance and accessories for table, panel, and CNC saws.

**I. Tooling for Portable and Stationary Equipment ..... 12 Hours****Outcome: Use tooling for table, panel and CNC saws and routers.**

1. Describe the tooling used in saws, including material, tooth designs, dado heads, maintenance and sharpening.
2. Describe the use of tooling used in saws and CNC tooling.
3. Describe the tooling used in routers, including material, profiles, maintenance and sharpening.
4. Use tooling for table, panel, CNC saws and routers.

**J. Band Saws ..... 4 Hours****Outcome: Use band saws.**

1. Describe band saws.
2. Demonstrate applications for band saws.
3. Demonstrate set up procedures for band saws.
4. Use band saws.

**K. Drill Presses ..... 2 Hours****Outcome: Use and maintain drill presses.**

1. Describe drill presses.
2. Demonstrate applications for drill presses.
3. Demonstrate set up procedures for drill presses.
4. Maintain drill presses.
5. Demonstrate the use, maintenance and storage of drill bits.
6. Use drill presses.
7. Demonstrate boring techniques.

**L. Jointers and Thickness Planers ..... 12 Hours****Outcome: Use and maintain jointers and thickness planers.**

1. Describe the operation, application and maintenance of jointers.
2. Demonstrate the operation, application and maintenance of jointers.
3. Describe the operation, application and maintenance of thickness planers.
4. Demonstrate the operation, application and maintenance of thickness planers.
5. Surface solid materials.

**M. Explosive Actuated Tools ..... 4 Hours**

**Outcome: Use and maintain explosive actuated tools.**

1. Describe explosive actuated tool power loads, power load strength and safety requirements.
2. Describe explosive actuated tool fasteners, accessories and applications.
3. Describe base material suitability and related fastening requirements.
4. Demonstrate explosive actuated system safety and firing procedure.
5. Perform tool maintenance.
6. Use an explosive actuated tool safely.

**SECTION THREE: .....SHOP DRAWING .....44 HOURS**

**A. Drafting Basics ..... 6 Hours**

**Outcome: Use drawing instruments.**

1. Describe the functions of drawing instruments.
2. Describe the applications of geometry in trade situations.
3. Demonstrate the use of drafting equipment to complete geometric exercises.
4. Produce shapes, angles and drawings to scale with the basic drafting instruments.

**B. Orthographic Drawings ..... 8 Hours**

**Outcome: Produce orthographic drawings.**

1. Describe the concepts of orthographic presentation.
2. Demonstrate the concepts of orthographic projections.
3. Describe line types used in orthographic drawings.
4. Demonstrate correct dimensioning methods and techniques.

**C. Shop Drawings ..... 8 Hours**

**Outcome: Produce a shop drawing.**

1. Describe section and details and the use of material symbols.
2. Describe page layout and centering techniques.
3. Produce a three view drawing of an assigned (shop) project.

**D. Shop Drawing Interpretation and Cutting Lists ..... 8 Hours**

**Outcome: Interpret a shop drawing.**

1. Interpret shop drawings.
2. Develop a cutting list for a shop project from a working drawing.

**E. Orientation to Computers and Computer Aided Design (CAD) ..... 6 Hours**

**Outcome: Use computer based drafting programs.**

1. Describe the basic computer systems and CAD.
2. Describe the basic CAD 2D system and commands.
3. Draw joints with horizontal and vertical lines using CAD.

**F. Residential Drawing Interpretation ..... 8 Hours**

**Outcome:** *Interpret residential drawings and apply residential codes.*

1. Interpret residential drawings to isolate the cabinetmakers work.
2. Interpret residential drawings to determine the interaction of other related building trades.
3. Identify residential building code requirements relative to the cabinetmaker trade.
4. Identify standards pertaining to the cabinetmaker trade

**SECTION FOUR: ..... TRADE MATH ..... 24 HOURS**

**A. Math Concepts ..... 12 Hours**

**Outcome:** *Solve trade-related math problems in both the metric and imperial systems of measurement.*

1. Perform math concepts and operations.
2. Perform calculator functions and operations.
3. Describe the use of metric measurement system.
4. Describe the use of the imperial measurement system.
5. Perform calculations involving fractions.
6. Convert measurements between metric and imperial systems.
7. Perform calculations with equations.
8. Perform calculations using the Pythagorean Theorem.

**B. Area, Perimeter, Board Feet and Volumes ..... 6 Hours**

**Outcome:** *Calculate area and volume for various shapes and objects.*

1. Use formulas to calculate area and perimeter.
2. Use formulas to calculate board feet and volume.

**C. Ratio, Proportion and Percentage ..... 6 Hours**

**Outcome:** *Solve trade-related problems involving ratio, proportion and percentage.*

1. Perform calculations to solve ratio and proportion to solve trade-related problems.
2. Perform percentage calculations to solve trade-related problems.

**SECOND PERIOD TECHNICAL TRAINING  
CABINETMAKER TRADE  
COURSE OUTLINE**

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

**SECTION ONE:..... MATERIALS AND HARDWARE ..... 36 HOURS**

**A. Apply Adhesives..... 3 Hours**

**Outcome:**     ***Describe the characteristics and application of adhesives.***

1. Describe common adhesives and related properties, applications and equipment.
2. Describe the use of specialty gluing clamps and equipment.
3. Describe adhesive selection.
4. Demonstrate lay-up assembly procedures.

**B. Millwork Hardware ..... 9 Hours**

**Outcome:**     ***Install millwork hardware.***

1. Describe specialty hardware and applications.
2. Install hinges and their applications.
3. Install pulls, knobs, catches, locks and latches and their applications.
4. Install drawer hardware and their applications.
5. Install shelf systems and their applications.

**C. Plastic Laminates and Solid Surface Materials ..... 9 Hours**

**Outcome:**     ***Install laminate composites and solid surface materials.***

1. Describe plastic laminates and the methods used in their manufacture.
2. Describe the use of adhesives for plastic laminate sheets.
3. Describe methods and techniques used for fabricating items with plastic laminates.
4. Describe the manufacture of post-formed countertops.
5. Describe on-site installation techniques.
6. Describe types and sizes of solid surface materials.
7. Demonstrate methods and techniques used for fabricating items with plastic laminates.
8. Demonstrate the use of adhesives for use with plastic laminate sheets.

**D. Moulding and Millwork Products ..... 3 Hours**

**Outcome:**     ***Describe mouldings and millwork specialty products.***

1. Describe the application of mouldings.
2. Describe specialty millwork products.

**E. Veneer..... 12 Hours**

**Outcome:**      *Select veneers for cabinetmaking.*

1. Describe manufacturing process for veneer.
2. Describe storage procedures for veneer.
3. Describe the selection process for veneer.
4. Describe the use of veneer in the cabinetmaker trade.

**SECTION TWO:..... EQUIPMENT, MACHINE USE, ASSEMBLY AND PROCEDURES ..... 104 HOURS**

**A. Mortising and Tenoning Machines ..... 2 Hours**

**Outcome:**      *Use tools and procedures for making mortising and tenons.*

1. Describe mortising and tenoning machines.
2. Describe the use of common mortising machines, their parts, set up and operation.
3. Demonstrate the use of common tenoning machines, their parts, set-up and operation.
4. Demonstrate mortising straight stock and machining a tenon.

**B. Profiling Machines and Auto-Feed Devices..... 10 Hours**

**Outcome:**      *Use specialized profiling equipment and auto-feed devices.*

1. Describe the use and maintenance of overhead and inverted routers and related accessories.
2. Demonstrate the use and maintenance of shapers and related accessories.
3. Demonstrate the set up and use of auto feed and spring-loaded helps and devices.

**C. Stationary Sanding Machines ..... 12 Hours**

**Outcome:**      *Use stationary sanding machines.*

1. Describe stationary sanding machines and the main parts and functions.
2. Use stationary sanding machines and related accessories.

**D. Dowel Boring and Insertion Machines ..... 4 Hours**

**Outcome:**      *Use dowel boring and insertion machines.*

1. Describe dowel boring and insertion machines.
2. Describe applications for dowel boring and insertion machines.

**E. Breakout Solid and Sheet Materials ..... 12 Hours**

**Outcome:**      *Select and breakout solid and sheet materials.*

1. Describe the criteria for selecting solid stock.
2. Describe the criteria for selecting sheet materials.
3. Demonstrate the proper sequence of lumber breakout.
4. Demonstrate how to break out sheet materials to ensure sheet optimization.



**F. Machining and Assembly of Case Work, Drawers and Doors ..... 40 Hours**

**Outcome:**     *Plan, fabricate and install casework.*

1. Describe casework assembly procedures.
2. Describe casework joinery, drawer and door techniques.
3. Describe custom and mass production applications.
4. Describe the procedures and techniques for the installation of casework.
5. Describe machines for constructing drawers and doors.
6. Demonstrate tray and drawer construction.
7. Demonstrate cabinet door construction.
8. Demonstrate machining requirements for installing drawer and door hardware.
9. Demonstrate the assembly of casework.
10. Demonstrate the machining sequence in a casework job.
11. Demonstrate handling of assembled goods and labelling.
12. Demonstrate applications for stationary industrial dovetailers, portable routers and dovetail templates and related equipment.

**G. Doors, Frames and Trim ..... 6 Hours**

**Outcome:**     *Install doors and frames.*

1. Describe typical door types and their use.
2. Describe door hardware and accessories.
3. Describe the installation of doors and related hardware.
4. Describe window and door trim installation.

**H. Introduction to CNC Machinery..... 10 Hours**

**Outcome:**     *Use computer operated machinery.*

1. Describe types of CNC machinery.
2. Describe types of CNC accessories.

**I. Process for Operation of CNC Equipment..... 8 Hours**

**Outcome:**     *Perform CNC operations.*

1. Describe procedures for transferring data from screen to CNC machine.
2. Demonstrate applications for CNC machines.
3. Demonstrate CNC machining and cutting of sheet materials.

**SECTION THREE: ..... WOOD FINISHING ..... 36 HOURS**

**A. Wood Finishing Safety..... 6 Hours**

**Outcome:**     *Apply knowledge of hazards of wood finishing equipment to avoid unsafe practices.*

1. Describe the safety considerations involved in all aspects of wood finishing.
2. Use personal protective equipment for preparation and finishing.

**B. Prepare Surfaces for Finishing ..... 15 Hours**

**Outcome:** *Prepare wood for finishing.*

1. Describe surface preparation procedures and processes.
2. Describe the use of wood stains and their applications.
3. Demonstrate surface preparation procedures and processes.
4. Demonstrate the use of wood stains and their applications.

**C. Application of Finishing Materials ..... 15 Hours**

**Outcome:** *Finish wood products.*

1. Describe the components of and techniques for using spraying equipment.
2. Describe the use of top coating materials and application techniques.
3. Use top coating materials and application techniques.
4. Demonstrate the cleaning and maintenance of finishing equipment.

**SECTION FOUR: ..... DRAWING INTERPRETATION ..... 40 HOURS**

**A. Drawing Standards ..... 5 Hours**

**Outcome:** *Use drawing standards.*

1. Describe shop drawing fundamentals.
2. Demonstrate the fundamentals of shop drawing techniques.

**B. Commercial Drawing Interpretation..... 10 Hours**

**Outcome:** *Interpret commercial drawings.*

1. Describe how to interpret commercial drawings and building codes.
2. Describe the use of manufacturer's printed materials.
3. Interpret commercial drawings to isolate cabinets and millwork.
4. Interpret elevations, sectional views, room finish schedules and cabinet casework and furniture details.
5. Interpret specifications.

**C. Free-Hand Sketches ..... 4 Hours**

**Outcome:** *Produce free-hand sketches.*

1. Develop sketches to show joinery, layout and other details.
2. Develop freehand sketches to solve construction problems.
3. Develop freehand sketches to make choices about construction methods.

**D. Pictorial Drawing and Sketching..... 4 Hours**

**Outcome:** *Produce isometric and oblique drawings.*

1. Describe pictorial drawing methods.
2. Describe the isometric and oblique principles.
3. Describe how isometric angles and oblique's are shown and drawn.

- 4. Describe how to develop isometric circles and arcs.
- 5. Demonstrate pictorial drawing methods including digital renderings.

**E. Kitchen and Casework Drawings..... 3 Hours**

**Outcome:      *Develop kitchen and casework drawings.***

- 1. Interpret shop drawings (plans, elevations, sections and details).
- 2. Develop full-size layouts and layout rods.

**F. Material Cutting Lists and Procedural Plans ..... 5 Hours**

**Outcome:      *Develop a cutting list and procedural plan.***

- 1. Develop material orders, cutting lists and detailed hardware lists.
- 2. Develop procedural plans for a shop project.

**G. CAD Shop Drawing..... 6 Hours**

**Outcome:      *Develop shop drawings using CAD programs.***

- 1. Draw a project with lines, curves and angles.

**H. Digital Renderings ..... 3 Hours**

**Outcome:      *Produce digital renderings.***

- 1. Produce rendered drawings using CAD software.

**SECTION FIVE: ..... MATERIAL CALCULATIONS ..... 24 HOURS**

**A. Cut List Calculations..... 7 Hours**

**Outcome:      *Calculate cutting lists from shop drawings.***

- 1. Produce cutting lists by standard reduction method.

**B. Bulk Material Requirements ..... 7 Hours**

**Outcome:      *Calculate bulk material requirements from shop drawings.***

- 1. Develop a bulk material list for a large millwork job.

**C. Material Estimate ..... 10 Hours**

**Outcome:      *Prepare a material estimate.***

- 1. Use trade related area and volume and conversion calculations.
- 2. Calculate yield and waste factors for solid, sheet goods, veneers and finishes.

**THIRD PERIOD TECHNICAL TRAINING  
CABINETMAKER TRADE  
COURSE OUTLINE**

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

**SECTION ONE:.....MATERIALS, PACKAGING, SHIPPING AND STAIRS..... 24 HOURS**

**A. Plastics in Cabinetmaking ..... 2 Hours**

**Outcome:**     *Use plastic products in the cabinetmaker trade.*

1. Describe the application of plastic products related to the cabinetmaker trade.

**B. Glass in Cabinetmaking ..... 2 Hours**

**Outcome:**     *Use glass in the cabinetmaker trade.*

1. Describe types and applications of glass used in the cabinetmaker trade.
2. Describe the procedures and tools for cutting and installing glass, mirrors and related hardware.

**C. Metals in Cabinetmaking ..... 2 Hours**

**Outcome:**     *Describe the different types of metals used in the cabinetmaker trade.*

1. Describe specialized metal products and applications in the cabinetmaker trade.

**D. Packaging and Shipping of Millwork ..... 2 Hours**

**Outcome:**     *Apply packaging and shipping procedures.*

1. Describe the preparation of millwork items for shipping.
2. Describe carton handling and loading practices.
3. Describe methods of transportation.

**E. Correct Deficiencies ..... 4 Hours**

**Outcome:**     *Correct deficiencies.*

1. Describe industry quality standards.
2. Describe inspection process.
3. Describe remediation process for correcting deficiencies.

**F. Stair Design and Codes ..... 3 Hours**

**Outcome:**     *Describe the design of various types of stairs.*

1. Describe the stair design process.
2. Describe stair safety and building code considerations.

**G. Stair Construction ..... 4 Hours**

**Outcome:**     *Describe the construction of various types of stairs.*

1. Describe stair construction methods.

**H. Stair and Handrail Installation..... 5 Hours**

**Outcome:** *Describe the installation of stairs, guards and handrails.*

1. Describe the installation and alignment process for pre-manufactured architectural stair parts.

**SECTION TWO:..... DESIGN THEORY AND SHOP PROCEDURES ..... 74 HOURS**

**A. Principles and Elements of Design ..... 9 Hours**

**Outcome:** *Apply elements and principles of design.*

1. Describe the elements and principles of design.
2. Describe the colour wheel and colours.

**B. Ergonomics ..... 2 Hours**

**Outcome:** *Describe the principles of ergonomics.*

1. Describe standard heights, depths, widths and clearances derived from studies of human anatomy.

**C. Joinery Techniques ..... 11 Hours**

**Outcome:** *Use advanced joinery techniques.*

1. Describe advanced joinery techniques.

**D. Curved Elements in Wood ..... 16 Hours**

**Outcome:** *Produce curved elements in wood and sheet materials.*

1. Describe the techniques used to produce curved panels and curved laminations.
2. Demonstrate the techniques for producing curved wood products.

**E. Furniture Design and Architectural Terms ..... 9 Hours**

**Outcome:** *Apply knowledge of furniture styles and terminology.*

1. Describe the history of furniture design.
2. Describe architectural woodworking terms and definitions.

**F. Wall and Ceiling Treatments ..... 11 Hours**

**Outcome:** *Apply wall and ceiling treatments.*

1. Describe the preparation of walls and ceilings to receive panelling.
2. Describe panel assemblies and typical applications for each.
3. Describe different matching patterns used in wall and ceiling panelling.
4. Describe spacing, layout and planning for wall and ceiling panelling.
5. Describe pre-assembled panels and mounting methods.
6. Demonstrate different matching patterns used in wall and ceiling panelling.
7. Demonstrate spacing, layout and planning for wall and ceiling panelling.

**G. Custom Veneer Matches and Production Applications..... 12 Hours**

**Outcome:**     *Apply custom veneering.*

1. Describe the selection and preparation of core materials for custom veneering.
2. Describe the selection and preparation of veneers for custom work.
3. Describe the specialized machinery used for manufacturing custom veneer matches.
4. Describe assorted veneer matches.
5. Demonstrate the techniques for veneering applications.

**H. Prototypes ..... 2 Hours**

**Outcome:**     *Build prototypes.*

1. Describe the function of building prototypes.
2. Describe the layout and design of prototypes.
3. Describe the selection of materials and finish for prototypes.

**I. Dry Fit ..... 2 Hours**

**Outcome:**     *Demonstrate dry fitting of components.*

1. Describe the purpose for dry fitting components.
2. Describe clamping procedures for dry fitting components.
3. Demonstrate dry fitting components.
4. Correct defects/faults in construction.

**SECTION THREE: .....MACHINES AND EQUIPMENT PROCEDURES ..... 68 HOURS**

**A. Custom Shaper and CNC Machine Production Applications ..... 18 Hours**

**Outcome:**     *Use shapers and CNC machines.*

1. Describe all of the component parts of a shaper and CNC machines and describe their set-up, function and maintenance.
2. Describe spindle speed control and braking systems.
3. Describe how to determine acceptable chip thickness and surface quality.
4. Describe the use of advanced cutter techniques, jigs and accessories.
5. Use shapers, CNC machines, jigs and accessories.

**B. Moulders ..... 4 Hours**

**Outcome:**     *Use moulding machines.*

1. Describe component parts of multiple-head moulders.
2. Describe set up procedure for multiple-head moulders.
3. Describe how to operate and maintain multiple-head moulders.

**C. Specialized Industrial Machines ..... 8 Hours**

**Outcome:**     *Use specialized millwork machines.*

1. Describe specialized industrial machines found in the cabinetmaking industry.

2. Describe standard attachments.
3. Describe operating procedures for specialized industrial machines.
4. Describe maintenance procedures for specialized industrial machines.

**D. Wood Turning ..... 6 Hours**

**Outcome:**     *Use woodturning equipment.*

1. Describe the wood lathe and its main parts and functions.
2. Describe the use of a wood lathes.
3. Demonstrate the use of wood lathes.
4. Use and maintain woodturning hand tools.
5. Demonstrate the use of duplicating lathes and their main parts and functions.

**E. Advanced Table Saw Applications and Procedures ..... 18 Hours**

**Outcome:**     *Use advanced table saws.*

1. Describe jigs and fixtures used in advanced table saw operations.
2. Describe blades used for cutting and profiling.
3. Demonstrate advanced table saw operations.
4. Use table saws jigs and fixtures.

**F. CNC Manufacturing ..... 14 Hours**

**Outcome:**     *Use a CNC manufacturing centre.*

1. Describe screen-to-machine operations.
2. Describe nesting and bridge nesting.
3. Describe seamless integration.
4. Describe software applications for manufacturing centres.
5. Describe machining centre operations.

**SECTION FOUR: ..... COMMERCIAL DRAWINGS..... 42 HOURS**

**A. Drawing Interpretation Principles ..... 2 Hours**

**Outcome:**     *Interpret the lines, symbols, abbreviations and dimensioning styles used in a set of commercial drawings.*

1. Describe the line styles used in a set of commercial working drawings.
2. Describe symbols used in a set of working drawings.
3. Describe abbreviations used on working drawings.
4. Describe page layout for drawings.
5. Describe dimensioning techniques.
6. Produce shop drawings.

- B. Plans, Elevation, Sections and Details.....5 Hours**
- Outcome:** *Interpret drawings contained in a set of commercial drawings.*
1. Describe the different views in commercial drawings and the relationship between them.
- C. Specialized Plan Views .....2 Hours**
- Outcome:** *Interpret the information contained in the different views presented within a set of working drawings.*
1. Describe the different views found in a set of drawings.
- D. Integrated Drawing Interpretation Skills .....2 Hours**
- Outcome:** *Interpret the information contained within a set of working drawings.*
1. Describe the steps used to navigate through a set of working drawings.
- E. Interpret Commercial Drawings .....8 Hours**
- Outcome:** *Interpret commercial drawings for cabinetmaker and related trade information.*
1. Describe the inter-related information pertaining to other trades.
  2. Demonstrate how to isolate the cabinetmakers work out of a set of commercial prints.
- F. Shop Drawings from Commercial Drawings .....6 Hours**
- Outcome:** *Develop shop drawings and sketches from commercial drawings.*
1. Confirm site measurements.
  2. Describe the design of an efficient case goods layout.
  3. Draw freehand sketches of typical millwork as a preliminary step in producing shop drawings.
  4. Produce auxiliary views or details as needed to fully explain a complex object.
  5. Develop a shop drawing integrating information from architectural drawings, specifications and site measurements.
- G. Advanced Free-Hand Sketching .....6 Hours**
- Outcome:** *Develop free-hand sketches.*
1. Draw irregular, curved or elliptical shapes.
  2. Evaluate designs with regard to the principles of design.
  3. Sketch auxiliary views or details as needed to fully explain a complex object.
- H. Computer Assisted Drafting (CAD) and Computer Assisted Manufacturing (CAM) .....11 Hours**
- Outcome:** *Use a computer to produce drawings, optimize material use and produce cutting lists.*
1. Use CAD commands including offset, ellipse, dimension, leader, text and object properties.
  2. Describe CAD interface with CAM.
  3. Draw a shape suitable for CNC machines.
  4. Demonstrate the process from CAD to CAM.



**SECTION FIVE: .....STAIRS AND INDUSTRY RELATED CALCULATIONS ..... 32 HOURS**

**A. Mechanical Advantage ..... 2 Hours**

**Outcome:**     *Perform math problem solving skills using mechanical advantage.*

1. Perform calculations for percentage and mechanical advantage.

**B. Takeoffs and Layout ..... 8 Hours**

**Outcome:**     *Perform calculations from material takeoffs.*

1. Perform quantity calculations for millwork.
2. Perform spacing and layout calculations.

**C. Job Costing ..... 7 Hours**

**Outcome:**     *Perform job costing calculations and estimating.*

1. Perform material costing calculations.
2. Perform labour costing calculations.
3. Perform overhead costing calculations.

**D. Straight Flight Stair Calculations ..... 3 Hours**

**Outcome:**     *Perform straight stair calculations.*

1. Perform straight flight stair calculations.

**E. Multi Flight Stair Calculations ..... 3 Hours**

**Outcome:**     *Perform multi flight stair calculations.*

1. Perform multi flight stair calculations.

**F. Winder Stair Calculations ..... 3 Hours**

**Outcome:**     *Perform winder stair calculations.*

1. Perform winder stair calculations.

**G. Circular Stair Calculations ..... 3 Hours**

**Outcome:**     *Perform circular stair calculations.*

1. Perform circular stair calculations.

**H. Cutting Speeds ..... 3 Hours**

**Outcome:**     *Perform machine and cutter speed calculations.*

1. Perform RPM, feed and rim speed calculations for typical wood working machines.

**FOURTH PERIOD TECHNICAL TRAINING  
CABINETMAKER TRADE  
COURSE OUTLINE**

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

**SECTION ONE:.....BUSINESS PRACTICES, WORKPLACE COACHING SKILLS ..... 57 HOURS  
AND ADVISORY NETWORK**

**A. Principles of Advanced Furniture Joinery ..... 6 Hours**

**Outcome:**     ***Apply advanced joinery techniques.***

1. Describe the construction methods of various grades of cabinets and case work.
2. Describe construction methods for various furniture items.
3. Describe construction methods for various types and styles of tables.
4. Describe construction methods for various types and styles of chairs.
5. Demonstrate construction methods for various types and styles of tables.
6. Demonstrate construction methods for various types and styles of chairs.

**B. Marquetry, Parquetry, Intarsia and Inlay Special Veneer Matches..... 2 Hours**

**Outcome:**     ***Demonstrate advanced veneering techniques.***

1. Describe veneer materials, tools, techniques and various matches.
2. Describe the use of metal, wood, multi-layered veneer banding and inlays.
3. Describe the materials and methods employed in the art of marquetry, parquetry and intarsia.
4. Use specialty veneer matches.

**C. Fire Retardant Materials and Practices ..... 2 Hours**

**Outcome:**     ***Use materials and techniques to produce products for public spaces to enhance fire safety.***

1. Describe fire separation as defined by code.
2. Describe flame spread rating, smoke generation and the methods for testing materials, surfaces and finishes.
3. Describe fire retardant material used by the cabinetmaker trade.

**D. Woodcarving..... 2 Hours**

**Outcome:**     ***Use wood carving tools and techniques.***

1. Describe types of carving.
2. Describe the use and maintenance of woodcarving tools.
3. Describe carving a cabriole leg.
4. Describe chip carving.
5. Demonstrate types of wood carving.

**E. Commercial Millwork..... 3 Hours**

**Outcome:** *Prepare for commercial millwork projects.*

1. Describe millwork requirements such as churches, courthouses, restaurants and offices.
2. Describe fixtures and related hardware and installation.
3. Describe curved elements used in formal, ceremonial or large public buildings.

**F. Integrated CNC Procedures..... 15 Hours**

**Outcome:** *Use CNC equipment.*

1. Develop a program to run on CNC equipment.
2. Describe how to run a program on CNC equipment.
3. Run a program on CNC equipment.

**G. Handling, Shipping and Installation ..... 2 Hours**

**Outcome:** *Describe considerations for millwork sizes and spacing.*

1. Describe logistical considerations for ease of installation.
2. Describe standard limitations of lifts, trucks, freight elevators, staircases and door openings.

**H. Custom Millwork Installation..... 8 Hours**

**Outcome:** *Install millwork.*

1. Describe the equipment needed for a typical millwork installation.
2. Describe typical installation problems and solutions.
3. Describe the typical methods of installation.
4. Describe the inspection of an installed millwork job.
5. Describe the effects of environmental site conditions on millwork.

**I. Job Roles and Responsibilities ..... 2 Hours**

**Outcome:** *Work within the structure of job roles and regulations for building projects.*

1. Describe the roles of federal, provincial and municipal regulatory authorities.
2. Describe the roles of owners, architects, engineers, designers, general contractors, subcontractors and suppliers.

**J. Contract Law ..... 2 Hours**

**Outcome:** *Work within the parameters of contracts and regulations related to the cabinetmaker trade.*

1. Describe legal contracts.
2. Describe the process for documenting “scope of work”.
3. Describe correct change of work procedure.
4. Describe when, why and how to file a builder’s lien.
5. Describe the legal relationship that exists between general contractors and sub-contractors.
6. Describe the job tendering systems and processes.
7. Describe bonds, insurance and construction risk management.

**K. Business Structures and Practices ..... 2 Hours**

**Outcome:** *Apply business structures and practices common in the cabinetmaker trade.*

1. Describe employee-employer arrangements.
2. Describe basic business and company structures.
3. Describe business planning and effective supervision and leadership.
4. Identify industry organizations related to the cabinetmaker trade.
5. Describe financial and legal obligations of businesses.

**L. Large and Small Shop Practices ..... 2 Hours**

**Outcome:** *Describe the business operations of large and small cabinetmaking businesses.*

1. Describe costs encountered in running a woodworking business.
2. Compare the business practices of small and large shops.
3. Describe shop layouts and workflow.
4. Develop a maintenance schedule.

**M. Production Scheduling ..... 2 Hours**

**Outcome:** *Use production scheduling methods.*

1. Describe the planning and scheduling for cabinetmaking operations.
2. Describe spreadsheets, critical path methods and computer integrated scheduling methods.
3. Adapt production scheduling to typical work settings.
4. Produce a production schedule.

**N. Machine Maintenance ..... 2 Hours**

**Outcome:** *Perform machine maintenance.*

1. Describe how to maintain machinery.
2. Describe reconditioning and changing knives in jointers, planers and shapers.

**O. Alberta's Industry Network ..... 2 Hours**

**Outcome:** *Describe the role of the network of industry committees that represent trades and occupations in Alberta.*

1. Describe Alberta's Apprenticeship and Industry Training system.
2. Describe roles and responsibilities of the Alberta Apprenticeship and Industry Training Board, the Government of Alberta and post-secondary institutions.
3. Describe roles and responsibilities of the Provincial Apprenticeship Committees (PACs), Local Apprenticeship Committees (LACs) and Occupational Committees (OCs).

**P. Workplace Coaching Skills ..... 1 Hour**

**Outcome:** *Use coaching skills when training an apprentice.*

1. Describe the process for coaching an apprentice.

**Q. Interprovincial Standards Red Seal Program ..... 2 Hours**

**Outcome:** *Use Red Seal products to challenge an Interprovincial examination.*

1. Identify Red Seal products used to develop Interprovincial examinations.
2. Identify Red Seal products to prepare for an Interprovincial examination.

**SECTION TWO:..... WOOD FINISHING ..... 30 HOURS**

**A. Wood Finishing Applications ..... 10 Hours**

**Outcome:** *Apply wood finishing methods and materials.*

1. Describe the correct selection of finishing materials and equipment.
2. Describe surface preparation, bleaching, staining, filling, and sealing.
3. Describe material and processes used to lighten wood.
4. Describe the materials and techniques used in paste filling.
5. Demonstrate the application of top coatings.
6. Demonstrate the materials and techniques used in paste filling.

**B. Specialized Wood Finishing ..... 10 Hours**

**Outcome:** *Apply specialized wood finishing treatments.*

1. Describe the application of a high quality finish.
2. Describe pre-staining or sap staining.
3. Describe shading, toning and glazing.
4. Describe distressing.

**C. Refinishing Wood Surfaces..... 10 Hours**

**Outcome:** *Perform refinishing procedures for wood surfaces.*

1. Describe refinishing techniques.
2. Perform touch-ups.

**SECTION THREE: .....DRAWING INTERPRETATION AND SHOP DRAWINGS..... 69 HOURS**

**A. Commercial Drawings with Complex Architectural Elements ..... 9 Hours**

**Outcome:** *Interpret complex architectural drawings.*

1. Interpret complex architectural drawings.

**B. Drawing Conflicts and Resolution ..... 3 Hours**

**Outcome:** *Resolve discrepancies between drawings and specifications.*

1. Describe the procedures for conflict resolution within a set of prints and contract documents.
2. Describe confusing and contradictory information sometimes found in a set of prints and contract documents.

**C. Two Point Perspective Drawing ..... 8 Hours**

**Outcome:**     *Develop 2-point perspective drawings.*

1. Define the terms used in 2-point perspective drawing.
2. Layout and label the guidelines for 2-point perspective drawing.
3. Produce a 2-point perspective drawing of a shop project.

**D. Advanced Sketching ..... 6 Hours**

**Outcome:**     *Develop clear and accurate sketches.*

1. Sketch details for accuracy and clarification.
2. Draw profiles for accuracy and clarification.
3. Develop millwork patterns for accuracy and clarification.

**E. Commercial Layouts ..... 6 Hours**

**Outcome:**     *Develop custom woodwork layouts from commercial drawings.*

1. Interpret information from commercial drawings to produce layouts for custom woodwork.
2. Produce layouts for custom woodwork using information from commercial prints.

**F. Draw Shop Projects ..... 13 Hours**

**Outcome:**     *Develop drawings and details for shop projects.*

1. Produce the shop drawings and related layouts for the trade final shop project.
2. Produce a cutting list and work schedule for the trade final shop project.

**G. CAD Shop Drawings ..... 24 Hours**

**Outcome:**     *Use CAD skills to manipulate drawings for printing, detail clarity and editing.*

1. Describe CAD skills to manipulate drawings for printing, detail clarity and editing.
2. Use 2D CAD commands including grips, layers and plotting.

**SECTION FOUR: ..... CONSTRUCTION OF INDUSTRY PROJECT ..... 60 HOURS**

**A. Construct Industry Project ..... 60 Hours**

**Outcome:**     *Construct final project using details for the trade final shop project.*

1. Construct the trade final shop project from drawings.

**SECTION FIVE: ..... JOB COSTING AND MATERIAL ESTIMATING ..... 24 HOURS**

**A. Job Costing ..... 6 Hours**

**Outcome:**     *Calculate job costs for typical cabinetmaking jobs.*

1. Calculate costs based on material grade.
2. Describe the detailed estimation of labour costs.

**B. Material Optimization ..... 6 Hours**

**Outcome:**     **Calculate material optimized sizes and quantities for cabinetmaking jobs.**

1. Describe the process of material optimization.
2. Perform calculations to optimize solid and sheet stock requirements.

**C. Standard Estimating Methods..... 4 Hours**

**Outcome:**     **Calculate material estimates from shop drawings.**

1. Describe the standard methods for producing material estimates.

**D. Estimating For Large Projects ..... 4 Hours**

**Outcome:**     **Calculate material lists from drawings.**

1. Develop a material list for a large millwork job.

**E. Shipping Costs ..... 2 Hours**

**Outcome:**     **Calculate shipping costs from drawings.**

1. Calculate shipping costs.

**F. Rule of Thumb Costing ..... 2 Hours**

**Outcome:**     **Perform rule of thumb calculations from shop drawings.**

1. Describe the Rule-of-Thumb Costing Method.
2. Calculate the rule of thumb cost for typical millwork and case work projects.



# Apprenticeship and Industry Training

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