Apprenticeship and Industry Training

Cabinetmaker

Apprenticeship Course Outline

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Government of Alberta

Apprenticeship and Industry Training

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Cabinetmaker
Table of Contents

Course Outline

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 journeyperson 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 journeypersons, 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 journeyperson 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 and Technology 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. Seerden	Edmonton	Presiding Officer
Mr. T. Loszchuk	Calgary	Employer
Mr. S. Reeb	Edmonton	Employer
Mr. W. Wilson	Lethbridge	Employer
Mr. W. Niddrie	Calgary	Employer
Mr. D. Stokes	Calgary	Employer
Mr. D. Usher	Edmonton	Employer
Mr. J. Strickland	Calgary	Employee

Alberta Government

Alberta Advanced Education and Technology 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

Technical Institutes and Colleges

The technical institutes and colleges are key participants in Alberta's apprenticeship and industry training system. They work with the board, industry committees and Alberta Advanced Education and Technology to enhance access and responsiveness to industry needs through the delivery of the technical training component of apprenticeship programs. They develop lesson plans from the course outlines established by industry and provide technical training to apprentices.

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.gov.ab.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.

Addendum
As immediate implementation of the board's safety policy includes common safety learning outcomes and objectives for all course outlines, this trade's PAC will be inserting these safety outcomes into the main body of their course outline at a later date. In the meantime the addendum below immediately places the safety outcomes and their objectives into this course outline thereby enabling technical training providers to deliver the content of these safety outcomes.

STANDARD WORKPLACE SAFETY

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

Outcome: ***Describe legislation, regulations and practices intended to ensure a safe work place in this trade.***

1. Demonstrate the ability to apply the Occupational Health and Safety Act, Regulation and Code.
2. Explain the role of the employer and employee in regard to 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. Explain industry practices for hazard assessment and control procedures.
4. Describe the responsibilities of workers and employers to apply emergency procedures.
5. Describe positive tradesperson attitudes with respect to housekeeping, personal protective equipment and emergency procedures.
6. Describe the roles and responsibilities of employers and employees with respect to the selection and use of personal protective equipment (PPE).
7. Select, use and maintain appropriate PPE for worksite applications.

B. Climbing, Lifting, Rigging and Hoisting .....

Outcome: ***Describe the use of personal protective equipment (PPE) and safe practices for climbing, lifting, rigging and hoisting in this trade.***

1. Select, use and maintain specialized PPE for climbing, lifting and load moving equipment.
2. Describe manual lifting procedures using correct body mechanics.
3. Describe rigging hardware and the safety factor associated with each item.
4. Select the correct equipment for rigging typical loads.
5. Describe hoisting and load moving procedures.

C. Hazardous Materials & Fire Protection.....

Outcome: ***Describe the safety practices for hazardous materials and fire protection in this trade.***

1. Describe the roles, responsibilities features and practices related to the workplace hazardous materials information system (WHMIS) program.
2. Describe the three key elements of WHMIS.
3. Describe handling, storing and transporting procedures when dealing with hazardous material.
4. Describe safe venting procedures when working with hazardous materials.
5. Describe fire hazards, classes, procedures and equipment related to fire protection.

Workplace 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.

Workplace Health and Safety (Alberta Employment, Immigration and Industry) conducts periodic inspections of workplaces to ensure that safety regulations for industry are being observed.

Additional information is available at www.worksafely.org

Technical Training

Apprenticeship technical training is delivered by the technical institutes and many 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 great emphasis on safe technical practices that complement safe workplace practices and help to develop a skilled, safe workforce.

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 and Technology has prepared this course outline in partnership with the Cabinetmaker Provincial Apprenticeship Committee.

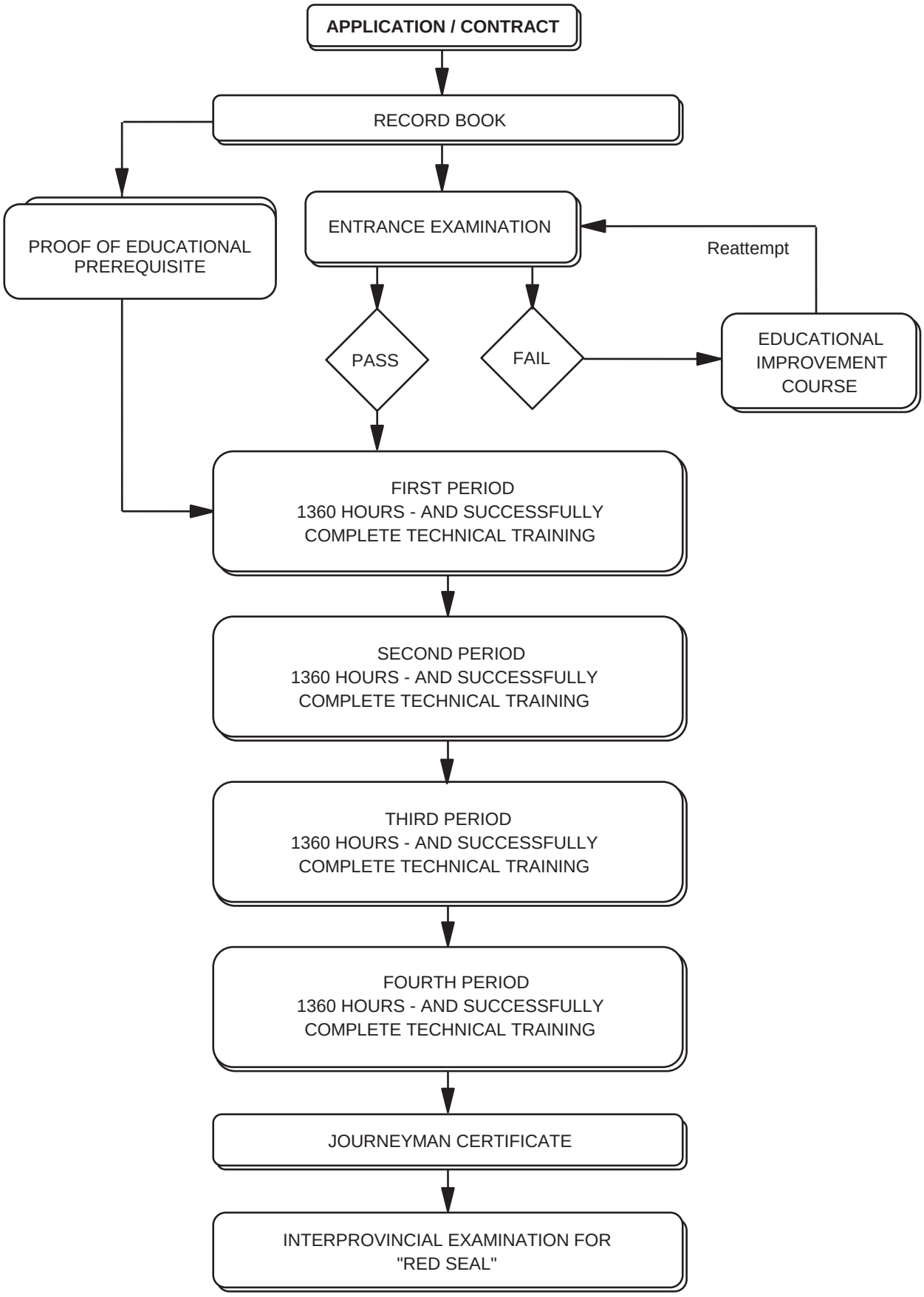
This course outline was approved on March 19, 2010 by the Alberta Apprenticeship and Industry Training Board on a recommendation from the Provincial Apprenticeship Committee. The valuable input provided by representatives of industry and the institutions that provide the technical training is acknowledged.

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 and Technology
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	**A**	**B**	**C**
INTRODUCTION AND SAFETY **20 HOURS**	Introduction to Trades Training 1 Hour	The Cabinetmaking Trade 2 Hours	Trade Safety 8 Hours
	D	**E**	
	Occupational Health and Safety and WHMIS 6 Hours	Safety Committees, Industrial Health Hazards and Safety Inspections 3 Hours	
SECTION TWO	**A**	**B**	**C**
MATERIALS AND JOINERY **60 HOURS**	The Nature and Properties of Wood 15 Hours	Primary Processing of Hard and Soft Wood 9 Hours	Manufactured Sheet and Panel Products 9 Hours
	D	**E**	**F**
	Adhesives 9 Hours	Fasteners 3 Hours	Abrasives 6 Hours
	G		
	Principles of Wood Joinery 9 Hours		
SECTION THREE	**A**	**B**	**C**
TOOLS, MACHINES AND EQUIPMENT **96 HOURS**	Measuring and Layout Tools 5 Hours	Hand Planes 5 Hours	Scrapers, Chisels, Gouges and Knives 5 Hours
	D	**E**	**F**
	Assembly, Dismantling and Clamping Tools 5 Hours	Hand Drills & Saws 5 Hours	Portable Power Tools 10 Hours
	G	**H**	**I**
	Pneumatic Tools and Fasteners 5 Hours	Table, Panel, Radial Arm and CNC Saws 18 Hours	Tooling for Portable and Stationary Equipment 14 Hours
	J	**K**	**L**
	Band Saws and Drill Presses 10 Hours	Jointers and Thickness Planers 10 Hours	Explosive Actuated Tools 4 Hours
SECTION FOUR	**A**	**B**	**C**
SHOP DRAWING **40 HOURS**	Drafting Basics 6 Hours	Orthographic Drawings 8 Hours	Basic Drawing Standards 8 Hours
	D	**E**	**F**
	Interpreting Shop Drawings and Cutting Lists 8 Hours	Orientation to Computers and CAD 6 Hours	Residential Print Reading 4 Hours
SECTION FIVE	**A**	**B**	**C**
TRADE MATH **24 HOURS**	Basic Math Concepts 12 Hours	Area, Perimeter, Board Feet and Volumes 6 Hours	Ratio and Proportion and Percentage 6 Hours

Second Period
(8 Weeks 30 Hours per Week – Total of 240 Hours)

SECTION ONE

MATERIALS AND HARDWARE

36 HOURS

A	B	C
Adhesive Applications 9 Hours	Cabinetmaking Hardware 9 Hours	Plastic Laminates and Solid Surface Materials 9 Hours

D
Moulding, Speciality Products and Veneers 9 Hours

SECTION TWO

EQUIPMENT, MACHINE USE, ASSEMBLY AND PROCEDURES

116 HOURS

A	B	C
Mortising and Tenoning Machines 6 Hours	Profiling Machines and Auto-Feed Devices 10 Hours	Stationary Sanding Machines 12 Hours

D	E	F
Multiple Spindle Boring Machines 6 Hours	Breaks Out Solid and Sheet Material 12 Hours	Machining and Assembly of Case Work 40 Hours

G	H
Interior Door, Frames and Trim 12 Hours	Introduction to CNC Machinery 18 Hours

SECTION THREE

WOOD FINISHING

24 HOURS

A	B	C
Wood Finishing Safety 7 Hours	Surface Preparation 10 Hours	Top Coatings 7 Hours

SECTION FOUR

SHOP DRAWING AND PRINT INTERPRETATION

40 HOURS

A	B	C
Drawing Standards 5 Hours	Commercial Print Reading 10 Hours	Free-Hand Sketches 4 Hours

D	E	F
Pictorial Drawing and Sketching 4 Hours	Kitchen and Casework Drawings 4 Hours	Material Cutting Lists and Procedural Plans 5 Hours

G
CAD Shop Drawing 8 Hours

SECTION FIVE

TRADE MATH

24 HOURS

A	B	C
Material Quantity Calculations 7 Hours	Bulk Material Costs 7 Hours	Integrated Trade Calculations 10 Hours

Third Period
(8 Weeks 30 Hours per Week – Total of 240 Hours)

SECTION ONE

MATERIALS, PACKAGING AND SHIPPING

12 HOURS

A	B	C
Acrylics and Plastics in Cabinetmaking 2 Hours	Glass in Cabinetmaking 2 Hours	Metals in Cabinetmaking 2 Hours

D
Packaging and Shipping of Millwork 6 Hours

SECTION TWO

DESIGN THEORY AND SHOP PROCEDURES

80 HOURS

A	B	C
Principles and Elements of Design 9 Hours	Ergonomics 2 Hours	Joinery Techniques 11 Hours
D	**E**	**F**
Curved Elements in Wood 16 Hours	Furniture Design and Architectural Terms 9 Hours	Wall and Ceiling Treatments 11 Hours
G	**H**	**I**
Custom Veneer Matches and Production Applications 12 Hours	Prototypes 5 Hours	Dry fit 5 Hours

SECTION THREE

MACHINES AND EQUIPMENT PROCEDURES

72 HOURS

A	B	C
Custom Shaper and CNC Machining Centre Production Applications 13 Hours	Moulders 13 Hours	Specialized Industrial Machines 13 Hours
D	**E**	**F**
Wood Turning Machines 6 Hours	Advanced Table Saw Applications and Procedures 13 Hours	CNC Manufacturing 14 Hours

SECTION FOUR

STAIRS

12 HOURS

A	B	C
Stair Design and Codes 3 Hours	Stair Construction 4 Hours	Stair and Handrail Installation 5 hours

SECTION FIVE

SHOP DRAWING - PRINTS FOR COMMERCIAL BUILDING

40 HOURS

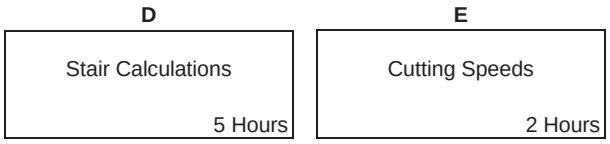
A	B	C
Print Reading Principles 2 Hours	Plans, Elevations, Sections and Details 5 Hours	Specialized Plan Views 2 Hours
D	**E**	**F**
Integrated Print Reading Skills 2 Hours	Interpret Commercial Prints 8 Hours	Shop Drawings From Commercial Prints 6 Hours
G	**H**	**I**
Advanced Free-Hand Sketching 2 Hours	Stair Drawings 2 Hours	Computer Assisted Drafting and Computer Assisted Manufacturing (CAD, CAM) 11 Hours

SECTION SIX

TRADE MATH

24 HOURS

A	B	C
Mechanical Advantage 2 Hours	Takeoffs and Layout 8 Hours	Job Costing 7 Hours


D
Stair Calculations
5 Hours
E
Cutting Speeds
2 Hours

Fourth Period
(8 Weeks 30 Hours per Week – Total of 240 Hours)

SECTION ONE

RELATED TRADE PROCEDURES

46 HOURS

A	B	C
Principles of Advanced Furniture Joinery 8 Hours	Marquetry, Parquetry, Intarsia Inlay and Special Veneer Matches 2 Hours	Fire Retardant Materials and Practices 2 Hours
D	**E**	**F**
Basic Woodcarving 2 Hours	Commercial Millwork 7 Hours	Integrated CNC 15 Hours
G	**H**	
Handling, Shipping and Installation 2 Hours	Custom Millwork Installation Tools and Techniques 8 Hours	

SECTION TWO

INDUSTRY PRACTICES AND PROCEDURES

12 HOURS

A	B	C
Job Roles and Responsibilities 2 Hours	Contract Law 2 Hours	Business Structures and Practices 2 Hours
D	**E**	**F**
Large and Small Shop Practices 2 Hours	Production Scheduling 2 Hours	Machine Maintenance 2 Hours

SECTION THREE

WOOD FINISHING

24 HOURS

A	B
Wood Finishing Applications 14 Hours	Specialized Wood Finishing 10 Hours

SECTION FOUR

PRINT READING SHOP DRAWINGS

69 HOURS

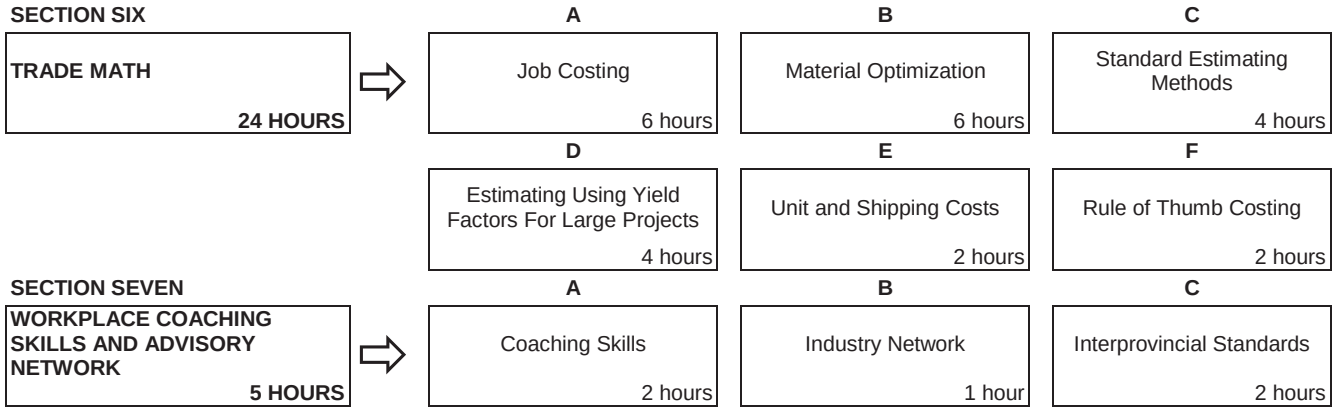
A	B	C
Commercial Prints with Complex Architectural Elements 9 Hours	Print Conflicts and Resolution 3 Hours	Two Point Perspective Drawing 3 Hours
D	**E**	**F**
Advanced Sketching 6 Hours	Commercial Layouts 6 Hours	Draw Shop Projects 24 Hours
G		
CAD Shop Drawings 18 Hours		

SECTION FIVE

CONSTRUCTION OF INDUSTRY PROJECT

60 HOURS

A
Construct Industry Project 60 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: ..... INTRODUCTION AND SAFETY ..... 20 HOURS

A. Introduction to Trades Training .....1 Hours

Outcome: ***Describe the roles and responsibilities of those involved in the cabinetmaking trade and apprenticeship training.***

1. Describe the role of training institutions and regulatory bodies, and identify resources, people and facilities designed to promote apprentice success.
2. Describe acceptable standards of attendance, classroom and shop behaviour.
3. Describe the role of, and the means of communicating with, the Apprenticeship Liaison Officer.
4. Describe appropriate available study resources and methods.

B. The Cabinetmaking Trade .....2 Hours

Outcome: ***Describe the past and present scope of the cabinetmaking trade and current expectations of a qualified tradesperson.***

1. Describe the history of the Cabinetmaking trade as it developed from ancient to modern times.
2. Describe current trends in the cabinetmaking 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 Cabinetmaking trade.

C. Trade Safety .....8 Hours

Outcome: ***Describe safe working practices in the workplace.***

1. Describe basic theory related to the use of electrical equipment and apply general electrical maintenance and safety procedures.
2. Describe fire prevention and identify the main classes of fires and the appropriate extinguisher.
3. Describe and apply safe use of ladders, step ladders and scaffolds.
4. Describe the process of hearing and describe personal hearing conservation program.
5. Describe professional accident prevention procedures and attitudes with respect to housekeeping, personal protective equipment and emergency procedures.
6. Describe the roles and responsibilities of employers, suppliers and workers with respect to Personal Protective Equipment and Safety Equipment.
7. Describe hazard assessments and controls.

D. Occupational Health and Safety and WHMIS .....6 Hours

Outcome: Describe the Occupational Health and Safety and WHMIS regulations related to the Cabinetmaking.

1. Describe the sections of the Occupational Health and Safety Act pertaining to Cabinetmaking.
2. Describe the first aid responsibilities of workers and employers.
3. Describe the roles and responsibilities of employers, suppliers and workers with respect to Workplace Hazardous Materials Information System (WHMIS).

E. Safety Committees, Safety Inspections and Industrial Health Hazards .....3 Hours

Outcome: Describe the safety committees, safety inspections and less obvious health hazards encountered by cabinetmakers.

1. Describe safety committees and their structure and responsibilities.
2. Describe the role of the safety inspector.
3. Describe less obvious industrial health hazards and illness.
4. Demonstrate safe workplace practices.

SECTION TWO: .....MATERIALS AND JOINERY.....60 HOURS

A. The Nature and Properties of Wood.....15 Hours

Outcome: Describe the classification, properties and defects of solid woods commonly used in Cabinetmaking.

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

B. Primary Processing of Hard and Soft Wood .....9 Hours

Outcome: Describe the processing of lumber form harvesting to manufacturing finished items.

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

C. Manufactured Sheet and Panel Products .....9 Hours

Outcome: Describe manufactured sheet products used in cabinetmaking.

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.

D. Adhesives .....9 Hours

Outcome: Describe the use of adhesives.

1. Describe the principles of adhesion and cohesion.
2. Describe common adhesives and their application.

E. Fasteners .....3 Hours

Outcome: Describe the use of fasteners.

1. Describe the fasteners used in Cabinetmaking and their applications.
2. Demonstrate the use of fasteners used in Cabinetmaking and their applications.

F. Abrasives .....6 Hours

Outcome: Describe the use of abrasives.

1. Describe the abrasives used in Cabinetmaking and their applications.
2. Describe the properties, grits and usage of abrasives.
3. Demonstrate the use of abrasives used in Cabinetmaking.

G. Principles of Wood Joinery.....9 Hours

Outcome: Describe the principles of wood joinery and the factors effecting common joints for various applications.

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. Demonstrate the use of common woodworking joints.

SECTION THREE: ..... TOOLS, MACHINES AND EQUIPMENT .....96 HOURS

A. Measuring and Layout Tools .....5 Hours

Outcome: Describe measuring and layout tools used in Cabinetmaking.

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

B. Hand Planes.....5 Hours

Outcome: Describe hand planes used in Cabinetmaking.

1. Describe assorted basic hand and specialty planes.
2. Demonstrate the use, maintenance and storage of hand planes.

C. Scrapers, Chisels, Gouges and Knives .....5 Hours

Outcome: Describe scrapers, chisels, gouges and knives used in Cabinetmaking.

1. Describe the preparation, use maintenance and storage of scraping tools.
2. Demonstrate the preparation, use maintenance and storage of chisels, gouges and knives.

D. Assembly, Dismantling and Clamping Tools .....5 Hours

Outcome: Demonstrate assembly, dismantling and clamping tools used in Cabinetmaking.

1. Describe the use, maintenance and storage of assembly, dismantling, and clamping tools.
2. Demonstrate the use, maintenance and storage of assembly, dismantling, and clamping tools.

E. Hand Drills and Saws.....5 Hours

Outcome: Demonstrate the use of hand saws.

1. Describe the use, maintenance and storage of hand drills and saws.
2. Demonstrate the use, maintenance and storage of drills and hand saws.

F. Portable Power Tools .....10 Hours

Outcome: Demonstrate the operation and maintenance of portable power tools.

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

G. Pneumatic Tools and Fasteners .....5 Hours

Outcome: Demonstrate the operation and maintenance of pneumatic tools and equipment.

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

H. Table, Panel, Radial Arm and CNC Saws.....18 Hours

Outcome: Demonstrate the operation, application and regular maintenance of table, panel, radial arm 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, radial arm and CNC saws.
3. Demonstrate the operation, application, regular maintenance and accessories for table, panel, radial arm and CNC saws.

I. Tooling for Portable and Stationary Equipment .....14 Hours

Outcome: ***Describe the design and use of tooling for table, panel and radial arm 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, including their use.
3. Describe the tooling used in routers, including material, profiles, maintenance and sharpening.
4. Demonstrate the use of tooling used in routers including maintenance.

J. Band Saws and Drill Presses.....10 Hours

Outcome: ***Demonstrate the operation, application and regular maintenance of band saws and drill presses.***

1. Describe band saws and drill presses.
2. Demonstrate typical applications for band saws and drill presses.
3. Demonstrate the set up procedures for band saws and drill presses.
4. Demonstrate the maintenance of band saws and drill presses.
5. Demonstrate the maintenance and storage of drill bits.

K. Jointers and Thickness Planers .....10 Hours

Outcome: ***Demonstrate the operation, application and maintenance of jointers and thickness planers.***

1. Describe the operation, application and maintenance of jointers and thickness planers.
2. Demonstrate the operation, application and maintenance of jointers and thickness planers.

L. Explosive Actuated Tools .....4 Hours

Outcome: ***Demonstrate the operation of 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 and use an explosive actuated tool safely.

SECTION FOUR.....SHOP DRAWING .....40 HOURS

A. Drafting Basics.....6 Hours

Outcome: ***Demonstrate the use of basic drawing instruments.***

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

B. Orthographic Drawings .....8 Hours

Outcome: ***Demonstrate the principles of orthographic drawing to produce a three view drawing of a shop project.***

1. Describe the concepts of orthographic presentation.
2. Demonstrate the concepts of orthographic projections.

C. Basic Drawing Standards.....8 Hours

Outcome: ***Demonstrate the use of basic drawing guidelines and interpretation skills to create the orthographic views, sectional views, details and cutting list required for a project.***

1. Describe line types used in orthographic drawings.
2. Demonstrate correct dimensioning methods and techniques.
3. Describe section and details and the use of material symbols.
4. Describe page layout and centering techniques

D. Interpreting Shop Drawings and Cutting Lists .....8 Hours

Outcome: ***Describe shop drawings and develop cutting lists for basic projects.***

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

E. Orientation to Computers and CAD .....6 Hours

Outcome: ***Draw simple objects using CAD.***

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

F. Residential Print Reading.....4 Hours

Outcome: ***Interpret residential prints.***

1. Interpret residential prints to isolate the cabinetmakers work.
2. Interpret residential plans to determine the interaction of other related building trades.

SECTION FIVE:..... TRADE MATH ..... 24 HOURS

A. Basic Math Concepts.....12 Hours

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

1. Perform basic math concepts and operations.
2. Perform the basic calculator functions and operations.
3. Describe the use of metric measurement system (SI).
4. Describe the use of 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 and Proportion, and Percentage .....6 Hours

Outcome: ***Solve various trade-related problems involving ratio and 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. Adhesive Applications ..... 9 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 appropriate adhesive selection.
4. Describe proper lay-up assembly procedures.

B. Cabinetmaking Hardware..... 9 Hours

Outcome: ***Demonstrate the use of different types of hardware for all types of millwork installation.***

1. Describe the types of hardware used for typical millwork installation.
2. Describe specialty hardware and application.
3. Demonstrate the installation of hinges and their applications.
4. Demonstrate the installation of pulls, knobs, catches, locks and latches and their applications.
5. Demonstrate the installation of drawer hardware and their applications.
6. Demonstrate the installation of shelf systems and their applications.

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

Outcome: ***Describe the properties and applications of laminate composites and the properties and applications of adhesives.***

1. Describe plastic laminates and the methods used in their manufacture.
2. Describe the use of appropriate adhesives for use with plastic laminate sheets.
3. Describe the 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 the common types and sizes of solid surface materials.
7. Demonstrate the methods and techniques used for fabricating items with plastic laminates.
8. Demonstrate the use of appropriate adhesives for use with plastic laminate sheets.

D. Mouldings, Specialty Products and Veneers ..... 9 Hours

Outcome: Describe mouldings, millwork specialty products and veneer.

1. Describe the application of commonly used mouldings.
2. Describe specialty millwork products.
3. Describe veneer and its use in Cabinetmaking.

SECTION TWO: ..... EQUIPMENT, MACHINE USE, ASSEMBLY AND PROCEDURES ..... 116 HOURS

A. Mortising and Tenoning Machines ..... 6 Hours

Outcome: Demonstrate use of the 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 procedures for mortising straight stock and machining a tenon.
5. Demonstrate procedures for machining a tenon.

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

Outcome: Demonstrate the use of 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 the shaper 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: Demonstrate the use of stationary sanding machines.

1. Describe stationary sanding machines and the main parts and functions.
2. Demonstrate the use and maintenance of stationary sanding machines and related accessories.

D. Multiple Spindle Boring Machines ..... 6 Hours

Outcome: Demonstrate the set up and maintenance of multiple spindle boring machines.

1. Describe multiple spindle boring machines.
2. Describe typical applications for multiple spindle boring machines.
3. Describe the set-up procedures for multiple spindle boring machines.
4. Describe the maintenance of multiple spindle boring machines.
5. Demonstrate the set up procedures and maintenance for multiple spindle boring machines.

E. Breaks Out Solid and Sheet Materials ..... 12 Hours

Outcome: Describe the selection and breakout of 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 and ensure sheet optimization.

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

Outcome: Plan, fabricate and install casework.

1. Describe casework assembly procedure.
2. Describe casework joinery, drawer, and door techniques.
3. Describe how to compare custom and mass production situations.
4. Describe the procedures and techniques for the installation of casework.
5. Describe machines for constructing drawers and doors.
6. Demonstrate the machining sequence in a typical casework job.
7. Demonstrate proper handling of assembled goods and labelling.
8. Demonstrate the assembly of casework.
9. Demonstrate the applications for stationary industrial dovetailers, portable router and dovetail templates and other machines.
10. Demonstrate the machining requirements for installing drawer and door hardware.
11. Demonstrate CNC machining and cutting of sheet materials.
12. Demonstrate cabinet door construction.
13. Demonstrate tray and drawer construction.

G. Interior Door, Frames and Trim ..... 12 Hours

Outcome: Describe the fabrication, application and installation procedures of interior passage doors and frames, including related hardware and trim.

1. Describe the fabrication and installation of passage doors.
2. Demonstrate the installation of interior doors and related hardware.
3. Demonstrate the installation of frames.
4. Demonstrate the installation of trim.

H. Introduction to (Computer Numeric Controlled) CNC Machinery ..... 18 Hours

Outcome: Describe computer operated machinery.

1. Describe the types of CNC machinery.
2. Describe the types of CNC accessories.
3. Describe the different types of applications for CNC machines.

SECTION THREE: ..... WOOD FINISHING ..... 24 HOURS

A. Wood Finishing Safety ..... 7 Hour

Outcome: Describe the hazards and safety equipment required for wood finishing.

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

B. Surface Preparation ..... 10 Hours

Outcome: Describe the use of products, techniques and equipment for preparing 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. Top Coatings ..... 7 Hours

Outcome: Describe the use of products, techniques and equipment for wood finishing.

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

SECTION FOUR: ..... SHOP DRAWING AND PRINT INTERPRETATION ..... 40 HOURS

A. Drawing Standards ..... 5 Hours

Outcome: Describe drawing standards and fundamentals of drawings.

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

B. Commercial Print Reading ..... 10 Hours

Outcome: Interpret commercial prints.

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

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

Outcome: Develop 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: Demonstrate the drawing techniques and principles used to 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.

E. Kitchen and Casework Drawings ..... 4 Hours

Outcome: Develop kitchen and casework drawings.

1. Describe the use of a set of 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. Describe how to produce material orders, cutting lists and detailed hardware lists.
2. Develop procedural plans for a typical shop project.

G. Computer Assisted Drafting (CAD) Shop Drawing ..... 8 Hours

Outcome: Develop shop drawings using CAD programs.

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

SECTION FIVE: ..... TRADE MATH ..... 24 HOURS

A. Material Quantity Calculations ..... 7 Hours

Outcome: Calculate cutting lists from shop drawings.

1. Produce cutting lists by standard reduction method.

B. Bulk Material Costs ..... 7 Hours

Outcome: Calculate bulk material requirements from shop drawings.

1. Calculate bulk material costs for a large millwork job.

C. Integrated Trade Calculations ..... 10 Hours

Outcome: Perform trade related calculations involving ratio, proportion, volume, area, pressure and waste factors.

1. Use trade related ratio and proportion calculations.
2. Use trade related area / volume and conversion calculations.
3. Calculate 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 AND SHIPPING ..... 12 HOURS

A. Acrylics and Plastics in Cabinetmaking ..... 2 Hours

Outcome: ***Describe the different types of acrylics and plastics used in Cabinetmaking.***

1. Describe the procedures for cutting, shaping, bending and installing acrylics and plastic sheet materials.
2. Describe extruded plastic and mouldings by type and application.

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

Outcome: ***Describe the different types of glass used in Cabinetmaking.***

1. Describe various types and applications of glass encountered in Cabinetmaking.
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 Cabinetmaking.***

1. Describe specialized metal products and applications in Cabinetmaking.

D. Packaging and Shipping of Millwork ..... 6 Hours

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

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

SECTION TWO: ..... DESIGN THEORY AND SHOP PROCEDURES ..... 80 HOURS

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

Outcome: ***Describe the elements and principles of design.***

1. Describe the elements of design.
2. Describe the principles of design.
3. 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: Describe advanced joinery techniques.

1. Describe advanced joinery techniques.

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

Outcome: Demonstrate the techniques used to make 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: Describe styles of furniture and terminology.

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

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

Outcome: Describe the application of wall and ceiling treatments.

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

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 hand and portable power tools used in veneering.
6. Demonstrate the techniques for veneering applications.

H. Prototypes ..... 5 Hours

Outcome: Describe how to build prototypes.

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

I. Dry Fit.....5 Hours

Outcome: Demonstrate the ability to dry fits components.

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

SECTION THREE: .....MACHINES AND EQUIPMENT PROCEDURES..... 72 HOURS

A. Custom Shaper and CNC Machining Centre Production Applications.....13 Hours

Outcome: Demonstrate the set up and maintenance of shapers and CNC machining centres.

1. Describe all of the basic parts of a shaper and CNC machining centres 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. Describe the use of shapers, CNC machining centres, jigs and accessories.
6. Demonstrate the use of shapers, jigs and accessories.

B. Moulders.....13 Hours

Outcome: Describe the set up, operation and maintenance of moulding machines.

1. Describe the basic parts of a multiple head moulders.
2. Describe the set up procedure of multiple head moulders.
3. Describe how to operate and maintain multiple head moulders.

C. Specialized Industrial Machines.....13 Hours

Outcome: Describe various specialized millwork machines.

1. Describe specialized industrial machines found in the cabinetmaking industry.
2. Describe standard attachments.
3. Describe how to make common adjustments and correctly operate the specialized industrial machines.
4. Describe routine maintenance of specialized industrial machines.

D. Wood Turning.....6 Hours

Outcome: Demonstrate the use of 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. Demonstrate the use of woodturning hand tools, their use and maintenance.
5. Demonstrate the use of duplicating lathes and their main parts and functions.

E. Advanced Table Saw Applications and Procedures ..... 13 Hours

Outcome: Describe the applications and procedures for the advanced use of 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 table saw operations.
4. Demonstrate the use of jigs and fixtures using table saws.

F. CNC Manufacturing ..... 14 Hours

Outcome: Describe the set up, operation and maintenance of 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 simple machining.

SECTION FOUR: ..... STAIRS ..... 12 HOURS

A. Stair Design and Codes ..... 3 Hours

Outcome: Describe the design and manufacture of various types of stairs.

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

B. Stair Construction ..... 4 Hours

Outcome: Describe the design and manufacture of various types of stairs.

1. Describe stair construction methods.

C. 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 FIVE: ..... SHOP DRAWING – PRINTS FOR COMMERCIAL BUILDINGS ..... 40 HOURS

A. Print Reading Principles ..... 2 Hours

Outcome: Describe the language of lines, symbols, abbreviations and dimensioning styles used in a set of commercial prints.

1. Describe the different lines styles used in a set of working drawings.
2. Describe the common symbols used in a set of working drawings.
3. Describe the abbreviations commonly used on working drawings.
4. Describe the page layout for drawings.
5. Describe different dimensioning techniques.
6. Make shop drawings which apply the principles and elements of design.

B. Plans, Elevation, Sections and Details ..... 5 Hours

Outcome: ***Describe the types of drawings contained in a set of commercial prints and the relationship between them.***

1. Describe the different views (drawings) and how they are viewed and describe the paths between views.

C. Specialized Plan Views ..... 2 Hours

Outcome: ***Interpret the information contained in the different views presented within a set of working drawings (prints).***

1. Describe the different views found in a set of plans.

D. Integrated Print Reading Skills ..... 2 Hours

Outcome: ***Interpret the information contained in the different views presented within a set of working drawings (prints).***

1. Describe the steps used to navigate through a set of working drawings.

E. Interpret Commercial Prints ..... 8 Hours

Outcome: ***Interpret commercial prints for Cabinetmaking and related trade information.***

1. Demonstrate how to isolate the cabinetmakers work out of a set of commercial prints.
2. Describe the inter-related information pertaining to other trades.

F. Shop Drawings from Commercial Prints ..... 6 Hours

Outcome: ***Develop shop drawings and sketches for commercial prints.***

1. Interpret architectural drawings, specifications, site measurements and integrate the information into useable shop drawings.
2. Describe the design of an efficient case goods layout.
3. Make freehand sketches of typical millwork as a preliminary step in producing shop drawings.
4. Draft auxiliary views or details as needed to fully explain a complex object.

G. Advanced Free-Hand Sketching ..... 2 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. Stair Drawings ..... 2 Hours

Outcome: ***Demonstrate the ability to layout a drawing for a set of stairs.***

1. Develop the layout of common straight flight stairs.
2. Develop the layout of winder stairs.
3. Develop the layout of stair routing templates.
4. Develop the layout of balusters, handrails and newels.

I. 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. Describe and use CAD commands including offset, ellipse, dimension, quick leader, text and object properties.
2. Describe CAD interface with CAM.
3. Draw a shape suitable for CNC machining.

SECTION SIX:..... TRADE MATH..... 24 HOURS

A. Mechanical Advantage ..... 2 Hours

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

1. Perform calculations for mechanical advantage.

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

Outcome: ***Perform problem solving in material takeoff from prints.***

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

C. Job Costing ..... 7 Hours

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

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

D. Stair Calculations..... 5 Hours

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

1. Perform straight flight stair calculations.
2. Perform multiple flight stair calculations.
3. Perform winder/circular stair calculations.

E. Cutting Speeds..... 2 Hours

Outcome: ***Describe 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:.....RELATED TRADE PROCEDURES ..... 46 HOURS

A. Principles of Advanced Furniture Joinery .....8 Hours

Outcome: Describe 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. Demonstrate specialty veneer matches.

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

Outcome: Describe materials and techniques used by cabinetmakers 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 associated with the cabinetmaking trade.

D. Basic Woodcarving.....2 Hours

Outcome: Describe wood carving tools and techniques.

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

E. Commercial Millwork ..... 7 Hours

Outcome: Describe requirements for commercial millwork projects.

1. Describe millwork requirements such as churches, courthouses, restaurants and offices.
2. Describe fixtures and related hardware and installation.

F. Integrated CNC ..... 15 Hours

Outcome: Demonstrate the use of CNC equipment.

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

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

Outcome: Describe considerations for millwork sizes and spacing.

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

H. Custom Millwork Installation Tools and Techniques ..... 8 Hours

Outcome: Describe millwork installation techniques.

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

SECTION TWO: ..... INDUSTRY PRACTICES AND PROCEDURES ..... 12 HOURS

A. Job Roles and Responsibilities ..... 2 Hours

Outcome: Describe 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.

B. Contract Law ..... 2 Hours

Outcome: Describe basic contracts and regulations related to the trade.

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

C. Business Structures and Practices ..... 2 Hours

Outcome: Describe business structures and practices common in the trade.

1. Describe employee-employer arrangements.
2. Describe basic business and company structures.
3. Describe business planning and effective supervision and leadership.
4. Describe financial and legal obligations of businesses.

D. 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.

E. Production Scheduling ..... 2 Hours

Outcome: Describe production scheduling methods.

1. Describe the planning and scheduling for cabinet making operations.
2. Describe spreadsheets, critical path methods and computer integrated scheduling methods.
3. Adapt production scheduling to typical work settings.

F. Machine Maintenance ..... 2 Hours

Outcome: Demonstrate the installation and maintenance of cutters and knives.

1. Describe the installation and alignment of cutters and knives.
2. Demonstrate the installation and alignment of cutters and knives.

SECTION THREE: ..... WOOD FINISHING ..... 24 HOURS

A. Wood Finishing Applications ..... 14 Hours

Outcome: Describe 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 commonly used top coatings.
6. Demonstrate the materials and techniques used in paste filling.

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

Outcome: Describe 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.

SECTION FOUR: .....PRINT READING AND SHOP DRAWING ..... 69 HOURS

A. Commercial Prints with Complex Architectural Elements ..... 9 Hours

Outcome: Interpret advanced architectural drawings and prints.

1. Interpret advanced architectural drawings and prints.

B. Print Conflicts and Resolution ..... 3 Hours

Outcome: Describe the standards for resolving 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 ..... 3 Hours

Outcome: Develop two point perspective drawings.

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

D. Advanced Sketching ..... 6 Hours

Outcome: Develop advanced sketching skills.

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 plans.

1. Interpret information from commercial prints to produce layouts for custom woodwork
2. Use information from commercial prints to produce layouts for custom woodwork.

F. Draw Shop Projects ..... 24 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 ..... 18 Hours

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

1. Use 2D CAD commands including grips, layers and plotting.

SECTION FIVE: ..... 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 SIX: ..... TRADE MATH ..... 24 HOURS

A. Job Costing ..... 6 Hours

Outcome: Calculate job costs for various typical Cabinetmaking jobs.

1. Calculate costs based on material grade.

B. Material Optimization ..... 6 Hours

Outcome: ***Calculate material optimized sizes and quantities for various 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 Using Yield Factors For Large Projects ..... 4 Hours

Outcome: ***Perform calculations for area, volume and capacity and calculate material lists from drawings.***

1. Use yield factors to calculate costs for a large millwork job.

E. Unit and Shipping Costs ..... 2 Hours

Outcome: ***Perform calculations for area, volume and capacity and calculate material lists from drawings.***

1. Calculate unit material costs for a large millwork job.
2. Calculate volumes and costs for shipping.

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

Outcome: ***Perform 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.

SECTION SEVEN: ..... WORKPLACE COACHING SKILLS AND ADVISORY NETWORK ..... 5 HOURS

A. Coaching Skills ..... 2 Hours

Outcome: ***Describe workplace coaching and mentoring.***

1. Describe the coaching skills used for training apprentices.

B. Industry Network ..... 1 Hour

Outcome: ***Describe the Industry Network and its function.***

1. Describe the role and the purpose of the Advisory Network, Local Apprenticeship Committee and Provincial Apprenticeship Committee.

C. Interprovincial Standards ..... 2 Hours

Outcome: ***Discuss Red Seal / Interprovincial standards.***

1. Describe the National Occupational Analysis (NOA).
2. Describe the relationship between the NOA and Red Seal / Interprovincial examinations.
3. Discuss the roles of federal and provincial government in the development of Red Seal standards.
4. Discuss the role of industry in the development of Red Seal standards.
5. Explain the intent of the Red Seal exam as it relates to interprovincial mobility.
6. Describe sources of information on Red Seal standards and practice examinations.

Excellence through training and experience

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