

# **PLAN OF TRAINING**

## **BRICKLAYER**



**Government of Newfoundland and Labrador  
Department of Education  
Institutional and Industrial Education Division**

**MAY 2010**

## **Preface**

This Apprenticeship Standard is based on the 2007 edition of the National Occupational Analysis for the Bricklayer trade.

This document describes the curriculum content for the Bricklayer apprenticeship training program and outlines each of the technical training units necessary for the completion of apprenticeship.

## **Acknowledgements**

Advisory committees, industry representatives, instructors and apprenticeship staff provided valuable input to the development of this Apprenticeship Curriculum Standard. Without their dedication to quality apprenticeship training, this document could not have been produced. We offer you a sincere thank you.

## **Contact Information**

Department of Education  
Institutional and Industrial Education Division  
Tel: 709-729-2729 / 1-877-771-3737  
Email: [app@gov.nl.ca](mailto:app@gov.nl.ca)  
Web: [www.gov.nl.ca/app](http://www.gov.nl.ca/app)

<b>Document Status</b>	<b>Date Distributed</b>	<b>Mandatory Implementation Date</b>	<b>Comments</b>
Approved	May 2010	September 2011	

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## **A. Conditions Governing Apprenticeship Training**

### **1.0 General**

The following general conditions apply to all apprenticeship training programs approved by the Provincial Apprenticeship and Certification Board (PACB) in accordance with the *Apprenticeship Training and Certification Act (1999)*. If an occupation requires additional conditions, these will be noted in the specific Plan of Training for the occupation. In no case should there be a conflict between these conditions and the additional requirements specified in certain Plan of Training.

### **2.0 Entrance Requirements**

2.1 Entry into the occupation as an apprentice requires:

Indenturing into the occupation by an employer who agrees to provide the appropriate training and work experiences as outlined in the Plan of Training.

2.2 Notwithstanding the above, each candidate must have successfully completed a high school program or equivalent, and in addition may be required to have completed certain academic subjects as specified in particular Plan of Training. Mature students, at the discretion of the Director of Institutional and Industrial Education, may be registered. A mature student is defined as one who has reached the age of 19 and who can demonstrate the ability and the interest to complete the requirements for certification.

2.3 At the discretion of the Director of Institutional and Industrial Education, credit toward the apprenticeship program may be awarded to an apprentice for previous work experience and/or training as validated through prior learning assessment.

2.4 An Application for Apprenticeship form must be duly completed.

### **3.0 Probationary Period**

The probationary period for each Memorandum of Understanding will be six

months. Within that period the memorandum may be terminated by either party upon giving the other party and the PACB one week notice in writing.

#### 4.0 Termination of a Memorandum of Understanding

After the probationary period referred to in Section 3.0, the Memorandum of Understanding may be terminated by the PACB by mutual consent of the parties involved, or cancelled by the PACB for proper and sufficient cause in the opinion of the PACB.

#### 5.0 Apprenticeship Progression Schedule and Wage Rates

##### 5.1 Progression Schedule

<b>7200 Hour Programs</b>	<b>Requirements for Progression</b>	<b>Progress To</b>
First Year Apprentice	Completion of entry level (Block 1) courses, plus relevant work experience totaling a minimum of 1800 hours *	Second Year
Second Year Apprentice	Completion of advanced level (Block 2) courses, plus relevant work experience totaling a minimum of 3600 hours	Third Year
Third Year Apprentice	Completion of advanced level (Block 3) courses, plus relevant work experience totaling a minimum of 5400 hours	Fourth Year
Fourth Year Apprentice	Completion of advanced level (Block 4) courses and (Blocks 5 and 6) <i>if applicable</i> , plus sign-off of workplace skills required for certification totaling a minimum of 7200 hours**	Write Certification Examination

<b>5400 Hour Programs</b>	<b>Requirements for Progression</b>	<b>Progress To</b>
First Year Apprentice	Completion of entry level (Block 1) courses, plus relevant work experience totaling a minimum of 1800 hours *	Second Year

Second Year Apprentice	Completion of advanced level (Block 2) courses, plus relevant work experience totaling a minimum of 3600 hours	Third Year
Third Year Apprentice	Completion of advanced level (Block 3) courses, plus sign-off of workplace skills required for certification totaling a minimum of 5400 hours	Write Certification Examination

<b>4800 Hour Programs</b>	<b>Requirements for Progression</b>	<b>Progress To</b>
First Year Apprentice	Completion of entry level courses (Block 1) courses, plus relevant work experience totaling a minimum of 1600 hours *	Second Year
Second Year Apprentice	Completion of advanced level (Block 2) courses, plus relevant work experience totaling a minimum of 3200 hours	Third Year
Third Year Apprentice	Completion of advanced level (Block 3) courses, plus sign-off of workplace skills required for certification totaling a minimum of 4800 hours	Write Certification Examination

\* All direct entry apprentices must meet the **Requirements for Progression** either through Prior Learning Assessment and Recognition or course completion before advancing to the next year.

\*\* Apprentices in a 7200 hour program which incorporates more than four blocks of training are considered fourth year apprentices pending completion of 100% course credits and workplace skills requirements.

5.2 For the duration of each Apprenticeship Training Period, the apprentice who is not covered by a collective agreement shall be paid a progressively increased schedule of wages.

<b>Program Duration</b>	<b>Wage Rates</b>	<b>Comments</b>
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7200 Hours	1 <sup>st</sup> Year	60%	These wage rates are percentages of the prevailing journeyperson's wage rate in the place of employment of the apprentice. No apprentice shall be paid less than the wage rate established by the Labour Standards Act (1988), as now in force or as hereafter amended, or by other Order, as amended from time to time replacing the first mentioned Order.
	2 <sup>nd</sup> Year	70%	
	3 <sup>rd</sup> Year	80%	
	4 <sup>th</sup> Year	90%	
5400 Hours and 4800 Hours	1 <sup>st</sup> Year	60%	
	2 <sup>nd</sup> Year	75%	
	3 <sup>rd</sup> Year	90%	
4000 Hours			(Hairstylist Program) - The apprentice shall be paid no less than the minimum wage for hours worked and a commission agreed upon between the apprentice and the employer.

## 6.0 Tools

Apprentices shall be required to obtain hand tools as and when specified by the PACB.

## 7.0 Periodic Examinations and Evaluation

- 7.1 Every apprentice shall submit to such occupational tests and examinations as the PACB shall direct. If after such occupational tests and examinations the apprentice is found to be making unsatisfactory progress, his/her rate of wage shall not be advanced as provided in Section 5 until his/her progress is satisfactory to the Director of Institutional and Industrial Education and his/her date of completion shall be deferred accordingly. Persistent failure to pass required tests shall be a cause for revocation of his/her Memorandum of Understanding.
- 7.2 Upon receipt of reports of accelerated progress of the apprentice, the PACB may shorten the term of apprenticeship and advance the date of completion accordingly.
- 7.3 For each and every course, a formal assessment is required for which 70% is the pass mark. At the discretion of the instructor, the summative mark may be for completion of a theory examination or a combination of the theory examination and an assigned practical project.



## **8.0 Granting of Certificates of Apprenticeship**

Upon the successful completion of apprenticeship, the PACB shall issue a Certificate of Apprenticeship

## **9.0 Hours of Work**

Any hours employed in the performance of duties related to the designated occupation will be credited towards the completion of the term of apprenticeship. Appropriate documentation of these hours must be provided.

## **10.0 Copies of the Registration for Apprenticeship**

The Director of Institutional and Industrial Education shall provide copies of the Registration for Apprenticeship form to all signatories to the document.

## **11.0 Ratio of Apprentices to Journeypersons**

The ratio of apprentices to journeypersons shall not exceed two apprentices to every one journeyperson employed, with the condition that one of these be a final year apprentice.

## **12.0 Relationship to a Collective Bargaining Agreement**

Collective agreements take precedence over the conditions outlined in the Plan of Training.

## **13.0 Amendments to a Plan of Apprenticeship Training**

A plan of training may be amended at any time by the PACB.

## **14.0 Employment, Re-Employment and Training Requirements**

- 14.1 The Plan of Training requires apprentices to regularly attend their place of employment.
- 14.2 The Plan of Training requires apprentices to regularly attend training programs for that occupation as prescribed by the PACB.
- 14.3 Failure to comply with Sections 14.1 and/or 14.2 will result in cancellation of the Memorandum of Understanding. Apprentices may have their MOUs reinstated by the PACB but would be subject to a commitment to complete the entire program as outlined in the General Conditions of Apprenticeship. An apprentice will be required to pay a reinstatement fee. Permanent cancellation in the said occupation is the result of non-compliance.
- 14.4 Cancellation of the Memorandum of Understanding to challenge journeyperson examinations, if unsuccessful, would require an apprentice to serve a time penalty of two (2) years before reinstatement as an apprentice or registering as a Trade Qualifier.
- 14.5 Under the Plan of Training the employer is required to keep each apprentice employed as long as work is available, and if the apprentice is laid off due to lack of work, to give first opportunity to be hired before another is hired.
- 14.6 The employer will permit each apprentice to regularly attend training programs as prescribed by the PACB.
- 14.7 Apprentices who cannot acquire all the workplace skills at their place of employment will have to be evaluated in a simulated work environment at a training institution and have sign-off done by instructors to meet the requirements for certification.

## **15.0 Appeals to Decisions Based on Conditions Governing Apprenticeship Training**

Persons wishing to appeal any decisions based on the above conditions must do

so in writing to the Minister of Education within 30 days of the decision.

## **B. Requirements for Red Seal Certification**

1. Evidence the required work experiences outlined in this Plan of Training have been obtained. This evidence must be in a format clearly outlining the experiences and must be signed by an appropriate person or persons attesting that these experiences have been obtained to the level required.
2. Successful completion of all required courses in program.
3. A combination of training from an approved training program and suitable work experience totalling 7200 hours.

Or

A total of 9000 hours of suitable work experience for a trade qualifier.

4. Completion of a National Red Seal examination, to be set at a place and time determined by the Institutional and Industrial Education Division.
5. Payment of the appropriate examination fee.

## **C. Roles and Responsibilities of Stakeholders in the Apprenticeship Process**

The apprenticeship process involves a number of stakeholders playing significant roles in the training of apprentices. This section outlines these roles and the responsibilities resulting from them.

### **The Apprentice:**

- completes all required technical training courses as approved by the PACB.
- finds appropriate employment.
- completes all required work experiences in combination with the required hours.
- ensures work experiences are well documented.
- approaches apprenticeship training with an attitude and commitment that fosters the qualities necessary for a successful career as a qualified journeyman.
- obtains the required hand tools as specified by the PACB for each period of training of the apprenticeship program.

### **The Employer:**

- provides high quality work experiences in an environment conducive to learning.
- remunerates apprentices as set out in the Plan of Training or Collective Agreements.
- provides feedback to training institutions, Institutional and Industrial Education Division and apprentices in an effort to establish a process of continuous quality improvement.
- where appropriate, releases apprentices for the purpose of returning to a training institution to complete the necessary technical courses.

- ensures work experiences of the apprentice are documented.

### **The Training Institution:**

- provides a high quality learning environment.
- provides the necessary student support services that will enhance an apprentice's ability to be successful.
- participates with other stakeholders in the continual updating of programs.

### **The Institutional and Industrial Education Division:**

- establishes and maintains program advisory committees under the direction of the PACB.
- promotes apprenticeship training as a viable career option to prospective apprentices and other appropriate persons involved, such as career guidance counselors, teachers, parents, etc.
- establishes and maintains a protocol with training institutions, employers and other appropriate stakeholders to ensure the quality of apprenticeship training programs.
- ensures all apprentices are appropriately registered and records are maintained as required.
- schedules all necessary technical training periods for apprentices to complete requirements for certification.
- administers provincial/inter-provincial examinations.

### **The Provincial Apprenticeship and Certification Board:**

- sets policies to ensure the provisions of the *Apprenticeship and Certification Act (1999)* are implemented.

- ensures advisory and examination committees are established and maintained.
- accredits institutions to deliver apprenticeship training programs.
- designates occupations for apprenticeship training and/or certification.

## D. Glossary of Terms

These definitions are intended as a guide to how language is used in the IPGs.

<b>ADJUST</b>	To put in good working order; regulate; bring to a proper state or position.
<b>APPLICATION</b>	The use to which something is put and/or the circumstance in which you would use it.
<b>CHARACTERISTIC</b>	A feature that helps to identify, tell apart, or describe recognizably; a distinguishing mark or trait.
<b>COMPONENT</b>	A part that can be separated from or attached to a system; a segment or unit.
<b>DEFINE</b>	To state the meaning of (a word, phrase, etc.).
<b>DESCRIBE</b>	To give a verbal account of; tell about in detail.
<b>DIAGNOSE</b>	To analyze or identify a problem or malfunction.
<b>EXPLAIN</b>	To make plain or clear; illustrate; rationalize.
<b>IDENTIFY</b>	To point out or name objectives or types.
<b>INTERPRET</b>	To translate information from observation, charts, tables, graphs, and written material.
<b>MAINTAIN</b>	To keep in a condition of good repair or efficiency.
<b>METHOD</b>	A means or manner of doing something that has procedures attached to it.
<b>OPERATE</b>	How an object works; to control or direct the functioning of.
<b>PROCEDURE</b>	A prescribed series of steps taken to accomplish an end.

<b>PURPOSE</b>	The reason for which something exists or is done, made or used.
<b>SERVICE</b>	Routine inspection and replacement of worn or deteriorating parts.  An act or business function provided to a customer in the course of one's profession. (e.g., haircut).
<b>TEST</b>	v. To subject to a procedure that ascertains effectiveness, value, proper function, or other quality.  n. A way of examining something to determine its characteristics or properties, or to determine whether or not it is working correctly.



## **E. Program Outcomes**

Upon completion of the Apprenticeship Program, apprentices will have the knowledge and skills required to perform the following tasks:

- Task 1 Use tools and equipment
- Task 2 Organize work
- Task 3 Performs routine work practices
- Task 4 Uses scaffolding
- Task 5 Uses mortars, grouts and other bonding agents
- Task 6 Builds non-loadbearing walls and columns
- Task 7 Builds loadbearing walls and columns
- Task 8 Builds horizontal masonry surfaces
- Task 9 Builds and installs prefabricated masonry units
- Task 10 Installs surface bonded masonry units
- Task 11 Installs stone veneer
- Task 12 Installs stone cladding
- Task 13 Lays masonry units to build fireplaces and chimneys
- Task 14 Installs refractory materials for heat resistant applications
- Task 15 Installs corrosion resistant materials for corrosion resistant applications
- Task 16 Rebuilds masonry work
- Task 17 Restores existing masonry work
- Task 18 Cleans and seals masonry surfaces
- Task 19 Installs glass blocks
- Task 20 Installs ornamental and sculptured masonry
- Task 21 Builds arches

## F. Program Structure

For each and every course, a formal assessment is required for which 70% is the pass mark. At the discretion of the instructor, the summative mark may be for completion of a theory examination or a combination of the theory examination and an assigned practical project.

The order of course delivery within each block can be determined by the educational agency, as long as pre-requisite conditions are satisfied.

<b>Block 1 - Entry Level</b>			
<b>Course No.</b>	<b>Course Name</b>	<b>Hours</b>	<b>Pre-Requisite</b>
TS1510	Occupational Health and Safety	6	
TS1520	WHMIS	6	
TS1530	Standard First Aid	14	
TS1101	Shop Fundamentals	60	
BR1101	Laying Brick to The Line	160	BR1121 TS1101
BR1110	Laying Block to the line	90	BR-1120
BR1121	Mortar	65	
BR1201	Veneer Walls	45	BR1101 BR1121
BR2301	Chimneys	70	BR1101 BR1110 BR1121
DR1112	Drawing and Sketching	30	
TS1300	Rigging	45	
BR1210	Load and Non-Load Bearing Walls and Columns	160	
AP1100	Introduction to Apprenticeship	15	
MA1060	Basic Math	60	
CM2150	Workplace Communications	45	

<b>Block 1 - Entry Level</b>			
<b>Course No.</b>	<b>Course Name</b>	<b>Hours</b>	<b>Pre-Requisite</b>
MR1220	Customer Service	30	
SP2330	Quality Assurance/Quality Control	30	
MC1050	Introduction to Computers	30	
SD1700	Workplace Skills	30	
SD1710	Job Search Techniques	15	
SD1720	Entrepreneurial Awareness	15	
Total Hours		1021	

<b>Required Work Experience</b>
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<b>Block 2</b>			
<b>Course No.</b>	<b>Course Name</b>	<b>Hours</b>	<b>Pre-Requisite</b>
BR1501	Stone Facings	80	Block 1
BR2231	Glass Block	70	
BR1550	Restoration	60	
Total Hours		210	

<b>Required Work Experience</b>
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<b>Block 3</b>			
<b>Course No.</b>	<b>Course Name</b>	<b>Hours</b>	<b>Pre-Requisite</b>
BR2401	Conventional Fireplaces	150	Block 2
BR2420	Rumford Fireplaces	60	
DR1131	Introduction to CAD	30	
Total Hours		240	

<b>Required Work Experience</b>
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<b>Block 4</b>			
<b>Course No.</b>	<b>Course Name</b>	<b>Hours</b>	<b>Pre-Requisite</b>
BR1401	Refractory Units	70	Block 3
BR1600	Arches and Sculptured Masonry	80	
Total Hours		150	

<b>Total Course Credit Hours</b>	<b>1621</b>
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## **Entry Level – Block # 1**

### **TS1510 Occupational Health and Safety**

#### **Description:**

This course is designed to give participants the knowledge and skills necessary to interpret the Occupational Health and Safety Act, laws and regulations; understand the designated responsibilities within the laws and regulations; the right to refuse dangerous work; and the importance of reporting accidents.

**Pre-Requisites:** None

**Course Hours:** 6

#### **Course Outcomes:**

Upon successful completion of this unit, the apprentice will be able to:

- prevent accidents and illnesses
- improve health and safety conditions in the workplace

#### **Theory:**

1. Interpret the Occupational Health and Safety Act laws and regulations.
  - i. explain the scope of the act
    - application of the act
    - Federal/Provincial jurisdictions
    - Canada Labour Code
    - rules and regulations
    - private home application
    - conformity of the Crown by the Act
2. Explain responsibilities under the Act and Regulations.
  - i. duties of employer, owner, contractors, sub-contractors, employees, and suppliers
3. Explain the purpose of joint health and safety committees.
  - i. formation of committee

- ii. functions of committee
  - iii. legislated rights
  - iv. health and safety representation
  - v. reporting endangerment to health
  - vi. appropriate remedial action
  - vii. investigation of endangerment
  - viii. committee recommendation
  - ix. employer's responsibility in taking remedial action
4. Examine right to refuse dangerous work.
- i. reasonable grounds for refusal
  - ii. reporting endangerment to health
  - iii. appropriate remedial action
  - iv. investigation of endangerment
  - v. committee recommendation
  - vi. employer's responsibility to take appropriate remedial action
  - vii. action taken when employee does not have reasonable grounds for refusing dangerous work
  - viii. employee's rights
  - ix. assigning another employee to perform duties
  - x. temporary reassignment of employee to perform other duties
  - xi. collective agreement influences
  - xii. wages and benefits
5. State examples of work situations where one might refuse work.
6. Describe discriminatory action.
- i. definition
  - ii. filing a complaint procedure
  - iii. allocated period of time a complaint can be filed with the Commission
  - iv. duties of an arbitrator under the Labour Relations Act
  - v. order in writing inclusion
  - vi. report to commission Allocated period of time to request Arbitrator to deal with the matter of the request
  - vii. notice of application
  - viii. failure to comply with the terms of an order
  - ix. order filed in the court

7. Explain duties of commission officers.
  - i. powers and duties of officers
  - ii. procedure for examinations and inspections
  - iii. orders given by officers orally or in writing
  - iv. specifications of an order given by an officer to owner of the place of employment, employer, contractor, sub-contractor, employee, or supplier
  - v. service of an order
  - vi. prohibition of persons towards an officer in the exercise of his/her power or duties
  - vii. rescinding of an order
  - viii. posting a copy of the order
  - ix. illegal removal of an order
  
8. Interpret appeals of others.
  - i. allocated period of time for appeal of an order
  - ii. person who may appeal order
  - iii. action taken by Commission when person involved does not comply with the order
  - iv. enforcement of the order
  - v. notice of application
  - vi. rules of court
  
9. Explain the process for reporting of accidents.
  - i. application of act
  - ii. report procedure
  - iii. reporting notification of injury
  - iv. reporting accidental explosion or exposure
  - v. posting of act and regulations

**Practical:**

1. Conduct an interview with someone in your occupation on two or more aspects of the act and report results.
  
2. Conduct a safety inspection of shop area.

## **TS1520      Workplace Hazardous Materials Information System-WHMIS**

### **Description:**

This course is designed to give participants the knowledge and skills necessary to define WHMIS, examine hazard identification and ingredient disclosure, explain labeling and other forms of warning, and introduce material safety data sheets (MSDS).

**Pre-Requisites:** None

**Course Hours:**        6

### **Course Outcomes:**

Upon successful completion of this course, the apprentice will be able to:

- Interpret and apply the Workplace Hazardous Materials Information System (WHMIS) Regulation under the Occupational Health and Safety Act.

### **Required Knowledge and Skills:**

1. Define WHMIS safety.
  - i.      rational and key elements
  - ii.     history and development of WHMIS
  - iii.    WHMIS legislation
  - iv.    WHMIS implementation program
  - v.     Definitions of legal and technical terms
  
2. Examine hazard identification and ingredient disclosure
  - i.      prohibited, restricted and controlled products
  - ii.     classification and the application of WHMIS information requirements
  - iii.    responsibilities for classification
    - the supplier
    - the employer
    - the worker - classification: rules and criteria
    - information on classification
    - classes, divisions and subdivision in WHMIS
    - general rules for classification



- class A - compressed gases
    - class B - flammable and combustible materials
    - class C - oxidizing material
    - class D - poisonous and infectious material
    - class E - corrosive material
    - class F - dangerously reactive material
  - iv. products excluded from the application of WHMIS legislation
    - consumer products
    - explosives
    - cosmetics, drugs, foods and devices
    - pest control products
    - radioactive prescribed substances
    - wood or products made of wood
    - manufactured articles
    - tobacco or products of tobacco
    - hazardous wastes
    - products handled or transported pursuant to the Transportation of Dangerous Goods (TDG) Act
  - v. comparison of classification systems - WHMIS and TDG
  - vi. general comparison of classification categories
  - vii. detailed comparison of classified criteria
- 3. Explain labeling and other forms of warning.
  - i. definition of a WHMIS label
    - supplier label
    - workplace label
    - other means of identification
  - ii. responsibility for labels
    - supplier responsibility
    - employer responsibility
    - worker responsibility
  - iii. introduce label content, design and location
    - supplier labels
    - workplace labels
    - other means of identification
- 4. Introduce material safety data sheets (MSDS).
  - i. definition of a material safety data sheet
  - ii. purpose of the data sheet
  - iii. responsibility for the production and availability of data sheets

- supplier responsibility
- employer responsibility
- workers responsibility

**Practical:**

Practical skills enhance the apprentices' ability to meet the objectives of this course. The learning objectives outlined below are mandatory in Newfoundland and Labrador, but are provided as suggestions for Nova Scotia, Prince Edward Island and New Brunswick.

1. Locate WHMIS label and interpret the information displayed.
2. Locate a MSDS sheet for a product used in the workplace and determine what personal protective equipment and other precautions are required when handling this product.

**SUGGESTED RESOURCES:**

1. WHMIS Regulation
2. Sample MSDS sheets

## **TS1530     Standard First Aid**

### **Description:**

This course is designed to give the apprentice the ability to recognize situations requiring emergency action and to make appropriate decisions concerning first aid.

Complete a **St. John Ambulance or Canadian Red Cross** Standard First Aid Certificate course.

**Pre-Requisites:** None

**Course Hours:**     14

## **TS1101    Shop Fundamentals**

### **Description:**

This general studies course requires the use of safety equipment, tools, fasteners, shop equipment and facilities and manuals. It involves the development of safety practices in the operation and maintenance of shop tools, equipment and facilities. It includes information on general safety regulations, occupational health and safety, and fire prevention and suppression.

**Prerequisites:** None

**Course Hours:**        60

### **Course Aims:**

1. To gain an appreciation of the need for safety regulations in the operation and maintenance of shop tools, equipment and facilities.

### **Course Objectives:**

1. Describe the use of the different types of trade related measuring tools.
2. Describe safety requirements for using hand tools and fasteners.
3. Describe the different types of fasteners.
4. Explain oxidation, corrosion, tensile strength and shear strength.
5. Describe types of hydraulic and pneumatic lines and fittings and explain their applications.
6. Describe the types of fastener tools.
7. Describe the different types of power tools.
8. Describe the different types of hydraulic tools.

9. Describe safety requirements for using power tools.
10. Describe the parts of a ^ drill.
11. Describe drill sizes and speed requirements.
12. Describe types of hoisting and lifting equipment such as forklifts, cranes, block and tackle, chain hoist and electric winch.
13. Explain the purpose of cutting power tools.
14. Describe types and explain applications of:
  - i. portable and stationary grinders
  - ii. grinding wheels
  - iii. grinding discs
  - iv. grinder dressers
  - v. rotary wire brushes
  - vi. diamond cutting blades and cups
15. Describe types of compressors and components.
16. Describe the pliers (all types), screwdrivers (all types), wrenches (all types), clamps (all types) and vices (all types) used for fitting and assembling as per assigned information to within specifications required.
17. Describe as per the assigned information, rivets, keys, nuts, screws, pins, splines, studs, bolts, snap rings, bonds (thread locking compounds), washers, lock wires and self-locking nuts.

**Practical:**

1. Use and maintain gripping and turning tools, measuring devices and levels.
  - i. use measuring tools (measuring tapes, rules, scale rules, calipers, micrometers, gauges, straight edges, plumb bobs, squares, and calculators) and levels
  - ii. use pliers, screwdrivers, wrenches, torque multipliers, hammers and mallets and other gripping and turning tools
  - iii. use scribes and markers

2. Use and maintain cutting tools.
  - i. identify, maintain and use punches, chisels, files and saws
  - ii. sharpen chisels and twist drills and drill bits
  - iii. shape and sharpen a cold chisel
  - iv. maintain and store cutting tools
  - v. cut sheet metal
  - vi. make bench projects
  - vii. cut bolts
  - viii. drill ^ holes
  
3. Install fasteners.
  - i. use and identify fasteners such as rivets, nails, wood screws, sheet metal screws, bolts, nuts, washers, masonry anchors and shields
  - ii. describe specific uses for each fastener
  - iii. recognize sizes of fasteners
  - iv. rivet ^ lap joint in galvanized sheet
  - v. identify bolt grades
  - vi. identify miscellaneous anchoring devices
  
4. Use power tools.
  - i. operate portable power tools
  - ii. operate power cleaning equipment
  - iii. operate hydraulic cutters and spreaders
  
5. Drill materials.
  - i. safely and effectively operate power drilling equipment (hammer and portable drill)
  - ii. select and use cutting fluids
  - iii. identify and select clamping devices
  - iv. maintain drilling equipment
  
6. Cut metals (power).
  - i. safely and effectively use power operated saws, friction cut-off equipment and shears
  - ii. maintain metal cutting power tools
  - iii. identify and use abrasives
  
7. Grind and finish metals.
  - i. install grinding wheel disc and brush

- ii. adjust tool rest
  - iii. dress grinding wheel
  - iv. safely and effectively operate stationary and portable grinders
  - v. maintain equipment
8. Use explosive actuated tools.
- i. select the proper tool for a specific use
  - ii. follow occupational health and safety regulations
  - iii. choose the correct shot and fastener for the job
  - iv. apply safety practices while using explosive actuated tools
  - v. fasten construction material to masonry and steel
  - vi. maintain and clean explosive actuated tools
9. Use and maintain compressed air system.
- i. demonstrate safety precautions when using and maintaining compressors
  - ii. identify components of air controller (transformer)
  - iii. use and maintain air controller (transformer)
  - iv. use and maintain air and fluid hoses
10. Use and maintain shop equipment.
- i. jacks
  - ii. chain hoists
  - iii. steam cleaner

## **BR1101    Laying Brick to the Line**

### **Description:**

This course in bricklaying and masonry fundamentals requires the use of tools and equipment and materials and supplies. It involves laying out a brick wall, constructing corners and filling in between corners to line. It includes information on safety, types of brick walls, building techniques and brick panels.

**Prerequisites:** BR1121, TS1101

**Course Hours:**        160

### **Course Aims:**

1. To develop the skills and knowledge required for laying brick with respect to various codes and regulations.
2. To practice safety in potentially harmful situations.
3. To develop an appreciation for conservation and environmental issues.

### **Course Objectives:**

1. Describe use of safety nets.
2. Describe electrical hazards on job locations.
3. Explain brick laying techniques.
4. Describe types of brick walls.

### **Practical:**

1. Lay brick to the line.
  - i. use a chalk line
  - ii. establish horizontal coursing



- iii. spread mortar for bed joints
- iv. butter bricks
- v. attach line blocks
- vi. set trig brick
- vii. lay masonry units to a line
- viii. lay closure bricks
- ix. plumb jambs
- x. cut brick in half and to length
- xi. joint brick

**Note:** Brick walls should include stretcher bond and common bond

2. Build common type leads.

- i. construct straight brick lead
- ii. construct brick outside corner lead
- iii. construct brick inside corner lead
- iv. construct concrete block straight lead
- v. construct concrete block outside corner lead
- vi. construct concrete block inside corner lead

3. Use safety equipment and procedures.

- i. wear appropriate clothing and equipment
  - clothing
  - boots and shoes
  - headgear
  - goggles and glasses
  - gloves
  - tuck hair under hard hat securely
- ii. arrange materials safely in the work area
- iii. use tools safely and maintain in good repair
- iv. use ladders safely
- v. remove nails from lumber
- vi. avoid hazards of overhead falling objects
- vii. suspend work in immediate area while materials are being moved by crane
- viii. avoid hazards of protruding objects
- ix. exercise care on scaffolding
- x. lift objects safely
- xi. avoid chemical burns
- xii. keep work path, under-feet, clear

4. Build 100mm veneer panel walls in stretcher bond.
  - i. estimate materials
  - ii. establish and set up work area
  - iii. make a dry layout
  - iv. build specified leads
  - v. lay brick to a line
  - vi. allow for structural particulars such as chases, offsets pilasters and openings
  - vii. parge back of face wythe
  - viii. set steel lintels
  - ix. install flashing
  - x. lay soldier courses
  - xi. lay rowlock sills
  - xii. joint work to specifications

## **BR1110    Laying Block to the Line**

### **Description:**

This course in bricklaying and masonry fundamentals requires the use of tools and equipment and materials and supplies. It involves laying out block walls, constructing corners and filling in between corners to the line. It includes information on types of block walls, special leads, block panels and construction techniques.

**Prerequisites:** BR1121

**Hours:**        90

### **Course Aims:**

1. To develop the skills and knowledge required for laying block with respect to various codes and regulations.
2. To practice safety in potentially harmful situations.
3. To develop an appreciation for conservation and environmental issues.

### **Course Objectives:**

1. Describe types of block walls.
2. Describe types of special leads.
3. Explain block laying techniques.

### **Practical:**

1. Lay block to the line.
  - i. establish horizontal coursing
  - ii. spread mortar for bed joints
  - iii. butter blocks
  - iv. lay concrete blocks to line

- v. lay closure blocks
  - vi. cut concrete blocks
  - vii. cut hole in blocks
  - viii. finish joints as required
2. Build special type leads.
- i. lay out leads
  - ii. construct block leads in various bonds
  - iii. construct block leads using a concrete block backup

## **BR1121 Mortar**

### **Description:**

This course in bricklaying and masonry fundamentals requires the use of tools and equipment, cement, sand and water. It involves mixing sand, cement, water and additives in the correct proportions for different conditions. It includes information on types of mixes and preparation techniques.

**Prerequisites:** None

**Course Hours:** 65

### **Course Aims:**

1. To develop the skills and knowledge required for mixing mortar with respect to various codes and regulations.
2. To practice safety in potentially harmful situations.
3. To develop an appreciation for conservation and environmental issues.

### **Course Objectives:**

1. Describe types of mortar mixes.
2. Explain preparation techniques for mortar.

### **Practical:**

1. Prepare mortar.
  - i. select and identify mix materials
  - ii. select and determine ratios
  - iii. use hand mixing equipment
  - iv. use power mixing equipment
  - v. care for and maintain mixing equipment
  - vi. prepare mortar to specifications
  - vii. spread mortar

## **BR1201 Veneer Walls**

### **Description:**

This course in veneer wall construction requires the use of tools and equipment and materials and supplies. It involves wall layout; installation of masonry ties, accessories and insulation; and laying brick to the line. It includes information on building techniques.

**Prerequisites:** BR1101, BR1121

**Course Hours:** 45

### **Course Aims:**

1. To develop the skills and knowledge required for veneer walls with respect to various codes and regulations
2. To practice safety in potentially harmful situations
3. To develop an appreciation for conservation and environmental issues

### **Course Objectives:**

1. Describe a veneer wall
2. Explain construction techniques for veneer walls

### **Practical:**

1. Build a veneer wall on a wooden frame with openings.
  - i. install flashings such as PVC, rigid, self-adhesive and rubber
  - ii. install vapour barrier
  - iii. layout
    - dry bonding
    - weep hole placement
    - vertical and horizontal tie locating
    - height spacing (gauging)
  - iv. install brick and stone
  - v. install lintels
  - vi. install veneer ties using anti-rust fasteners

- vii. install decorative detailing as desired
2. Build extensions to masonry walls and brick up openings.
  - i. protect existing finished areas
  - ii. layout extension and align with existing wall
  - iii. tie by toothing, blocking or metal ties and anchors
  - iv. bond new wall, matching old masonry
  - v. joint finish and match old masonry
  - vi. remove, as necessary, frames, lintels, etc, before bricking up openings and shore as may be necessary
  - vii. brick up opening, matching existing finished areas as close as practicable
3. Cut openings and build frames in masonry.
  - i. protect existing finished areas
  - ii. cut openings and tooth
  - iii. salvage old units
  - iv. shore old masonry as required
  - v. check doors and window frames before installation for
    - alignment with wall
    - jambs being plumb
    - header being level
    - frame being square
    - spacers being present in centre frame
    - header reinforcement
    - anchors present (metal frame)
  - vi. install frames and lay masonry units to match existing finished areas

## **BR2301 Chimneys**

### **Description:**

This course in chimney construction requires the use of tools and equipment and materials and supplies. It involves layout; preparing mortar; installing clean-out doors, thimbles, flue liners, flashings and tops; and laying brick. It includes information on high temperature cement, types of tops, types of chimneys and construction techniques.

**Prerequisites:** BR1101, BR1110, BR1121

**Course Hours:** 70

### **Course Aims:**

1. To develop the skills and knowledge required for building chimneys with respect to various codes and regulations
2. To practice safety in potentially harmful situations
3. To develop an appreciation for conservation and environmental issues

### **Course Objectives:**

1. Explain the action of high temperature cement.
2. Describe types of chimney tops.
3. Describe types of chimneys.
4. Explain construction techniques.

### **Practical:**

1. Construct chimneys with single flues.
  - i. set a clean-out
  - ii. cut chimney liner to receive a thimble
  - iii. cut clay and stainless steel chimney liners
  - iv. calculate offsets on flue linings
  - v. set a thimble
  - vi. cut flashing to fit pitch of roofs
  - vii. cut lines to construct chimney
  - viii. set clay and stainless steel liners in chimney



- ix. install flue thimble in breastwork
- x. install chimney flashing
- xi. install flue thimble and clean-out door
- xii. install chimney tops (brick and concrete)

**Note:** Single flue chimney construction should include the following:

- above thimble heights
- exposed above thimble heights
- exposed on gable end
- unexposed on slope roof
- unexposed on ridge of roof

2. Construct chimneys with multiple flues.

- i. cut offset flue liners for multiple flue chimneys
- ii. corbel brickwork
- iii. set liners in multiple flue chimneys
- iv. install chimney tops (brick and concrete)

**Note:** Chimney construction should include:

- multiple flue chimney containing clean-outs and thimbles
- multiple flue chimney topped out and flashed on a flat roof with a projected masonry cap
- multiple flue chimney containing offsets

## **BR1210 Load and Non-Load Bearing Walls and Columns**

### **Description:**

Load bearing walls, columns and pilasters are designed to carry loads in addition to their own load. Load bearing walls include structural and cavity walls which are above grade and foundation walls which are below grade. They also include retaining walls which resist lateral forces. Reinforcing systems in load bearing walls are always included and are critical as they carry or resist stresses and forces.

**Prerequisites:** None

**Course Hours:** 160

### **Course Aims:**

1. To develop the skills and knowledge required for building load and non-load bearing walls with respect to various codes and regulations.
2. To practice safety in potentially harmful situations.
3. To develop an appreciation for conservation and environmental issues.

### **Course Objectives:**

1. Describe types of mortar.
2. Describe cavity wall system components such as membrane, insulation, ties.
3. Describe types of lintels.
4. Describe types and sizes of blocks.
5. Describe types of accessories.
6. Describe load and non-load points.
7. Describe horizontal and vertical coursing.
8. Describe foundation membrane and drainage systems.
9. Describe reinforcing systems.
10. Identify bonds and patterns.
11. Identify codes and regulations from N.B.C.
12. Identify ground conditions.

**Practical:**

1. Builds cavity walls and structural walls.
  - i. build back-up wall
  - ii. brace and support walls
  - iii. lay units to the top of the line
  - iv. set lines
  - v. build leads
  - vi. stay on bond
  
2. Builds foundation walls.
  - i. brace and support walls
  - ii. lay units to the top of the line
  - iii. set lines
  - iv. build leads
  - v. stay on bond
  
3. Builds retaining walls.
  - i. corbel, batter and slope retaining walls
  - ii. install drainage systems
  - iii. install membranes
  - iv. lay units to design
  - v. Install reinforcement and tie backs
  
4. Installs reinforcing systems.
  - i. place reinforcing materials in specific location
  - ii. confine grout to cells
  - iii. prevent excessive mortar fins in interior
  - iv. place clean-outs
  
5. Builds columns and pilasters.
  - i. lay masonry units to bond
  - ii. align columns and pilasters
  - iii. set anchor plates and bolts

## **DR1112 Drawing and Sketching**

### **Description:**

This drafting course requires the use of basic drawings, specifications, bills of materials, drawing instruments and facilities, and CAD software and hardware. It involves reading basic drawings and diagrams, sketching, interpretation of specifications, and operating the CAD system. It includes information on sketching techniques, types of drawings, and CAD commands.

**Prerequisites:** None

**Course Hours:** 30

### **Course Aims:**

1. To develop the skills and knowledge required to read drawings and sketch views.

### **Course Objectives:**

1. Describe the alphabet of lines.
2. Identify the basic drawing symbols.
3. Explain what is meant by quality of lines.
4. Describe metric, mechanical, architectural and civil scales.
5. Identify the contents and purpose of mechanical, electrical, architectural and structural drawings.
6. Describe the different types of pencil lead grades.
7. Describe letter types.
8. Describe lettering instrument types.
9. Explain spacing, sizes and lettering techniques.
10. Describe different view orientations.
11. Describe obliques, isometrics and perspectives.
12. Explain sketching techniques.
13. Explain main view and possible views.
14. Describe the six principle views.
15. Explain association of surfaces.
16. Explain matching pictorials.
17. Describe types of dimensions and lines used.

18. Explain the rules of dimensioning.
19. Explain the various methods of producing lines.
20. Describe the purpose and types of sectional views.
21. Explain conventions associated with sectional views such as symbols, cutting plane lines, broken-out lines, etc.
22. Identify standard drawing symbols used on electrical, hydraulic and pneumatic drawings.
23. Identify colour codes used for electrical, hydraulic and pneumatic schematics.
24. Explain the purpose and methods of dimensioning.
25. Explain intersections and developments.
26. Explain graphs reticulation.

**Practical:**

1. Construct geometric shapes and lines.
  - i. draw lines to scale
  - ii. scale lines
  - iii. divide lines into equal parts
  - iv. bisect lines
  - v. construct angles
  - vi. bisect angles
  - vii. construct concave and convex curves
  - viii. construct circles, arcs, tangents, ellipses, polygons, etc.
2. Sketch orthographic projections
  - i. visualize object
  - ii. select views
  - iii. layout sketch
  - iv. sketch projection
  - v. dimension sketch
  - vi. make notations
3. Sketch sectional views.
  - i. locate section
  - ii. select type of view
  - iii. determine scale
  - iv. sketch view
  - v. dimension sketch
  - vi. make notations

4. Sketch primary auxiliary views.
  - i. visualize the view
  - ii. layout the sketch
  - iii. sketch view
  - iv. dimension sketch
  - v. make notations
  
5. Identify information from blueprints and drawings.
  - i. visualize views and projections
  - ii. identify information from schematic diagrams, assembly drawings, views, feeder maps, etcetera
  - iii. identify sequence of fabrication according to blueprint
  - iv. identify cut of materials from sketches
  - v. interpret horizontal, vertical, curved, inclined lines, fillets, and radii on working drawings
  - vi. identify dimensions of holes, cylinders, circles, angles and arcs
  
6. Identify information from bill of materials.

## **TS1300 Rigging**

### **Description:**

This general studies course requires the use of rigging equipment, ladders, block and tackle, and safety equipment. It involves installing, testing and maintaining rigging; and tying knots and splicing rope. It includes information on safety requirements, types of ropes, types of knots, slings, types of scaffolds, and types of ladders.

**Prerequisites:** None

**Course Hours:** 45

### **Course Aims:**

1. To develop the skills and knowledge required to install safe rigging

### **Course Objectives:**

1. List the Occupational Health and Safety Regulations for rigging.
2. Describe the different types of ropes.
3. List the different kinds of knots.
4. Describe slings.
5. Describe the different types of scaffolds.
6. Describe the different types of ladders.
7. Describe methods of lead balancing.
8. Describe the safety factors to be considered when using swing staging.
9. Describe the proper procedures and equipment for handling heavy objects.
10. Describe power scaffolding.

11. Describe types and conditions of approved work platforms.
12. Specify the use of screw jacks versus hydraulic units.
13. Specify the use of elevators.
14. Explain how suspended scaffolding is erected and when and how it is used.
15. List safety rules for erecting and working on scaffolding (safety in structural components).
  - i. footboards
  - ii. putlogs
  - iii. braces
  - iv. ties
  - v. planking
  - vi. scaffold brackets
16. Describe special problems of rolling and suspended scaffolding.

**Practical:**

1. Use and maintain rigging equipment.
  - i. recognize and use hand signals
  - ii. recognize lifting capabilities
  - iii. recognize necessity for swing staging
  - iv. interpret occupational health and safety regulations
  - v. select and install ladders
  - vi. install scaffolds
  - vii. demonstrate the safe and proper use of lifting equipment such as come-a-longs, chain falls, jacks, winches, overhead cranes, jacks, skids, cable tuggers, reeve blocks, slings and rope
  - viii. demonstrate proper use of knots
  - ix. use lifting attachments such as eye bolts and lifting lugs, beam clamps and crawlers, snatch blocks, spreader bars, shackles and screw jacks
  - x. transfer loads using lifting equipment
2. Use and maintain forklift.
  - i. safely and effectively use forklift
  - ii. use proper lifting procedures



- iii. use hoisting signals
  - iv. use slings
3. Use scaffolding and rigging.
- i. erect section of tubular steel sectional scaffold
  - ii. describe adjustable tower scaffolding and advantages
  - iii. inspect scaffolding before using
  - iv. direct/assist in loading/unloading masonry units from trucks
  - v. direct/assist hoisting masonry units to work stations

## **AP1100 Introduction to Apprenticeship**

### **Description:**

This course is designed to give participants the knowledge base and skills necessary to understand and successfully navigate the apprenticeship/red seal program.

**Prerequisites:** None

**Course Hours:** 15

### **Course Outcomes:**

Upon successful completion of this course, the apprentice will be able to:

- Identify the requirements for registering in an Apprenticeship Program.
- Describe the registration process.
- Explain the steps to complete the Apprenticeship Program.
- Articulate the roles of the Apprentice, Journeyperson, Training Institutions, Industry and Governing Bodies in the Apprentice Program.
- Explain the significance of the Red Seal Program.

**Pre-Requisites:** None

### **Objective and Content:**

1. Define Apprenticeship.
  - i. define Apprenticeship and Red Seal Certification
  - ii. discuss the definition of Apprenticeship and Red Seal Certification
  - iii. distinguish between Red Seal and Provincial Certification
2. Explore how Apprenticeship is governed and administered
  - i. explain who is responsible for administrating apprenticeship
    - Department of Education
    - Provincial Apprenticeship and Certification Board
3. Explore the roles and responsibilities of those involved in the apprenticeship

- process.
- i. Apprentice
  - ii. Employer/Journey person
  - iii. Industrial Training Division
    - explain when and where to take the in-class portion of advance training
    - discuss Class Calls
  - iv. Training Institutions
    - Various Delivery Methods
  - v. Provincial Apprenticeship and Certification Board
4. List and explain the steps in the apprenticeship process.
- i. explain the Registration Process
  - ii. describe apprenticeship as an agreement between employee, employer and Provincial Government
  - iii. review a Memorandum of Understanding
  - iv. legal document
  - v. review an Application of Apprenticeship
    - original High School Certificate or equivalent
    - original transcript from the applicants Training Institution
  - vi. describe the roles of Institutional and Industrial Education Division of the Department of Education in Apprenticeship
  - vii. explain the role of the Program Development Officer
    - define probation period
    - discusses what constitutes a cancellation of apprenticeship
    - explain the consequences of an Apprenticeship cancellation
    - discuss the purpose of the Record of Occupational Progress (Log Book)
    - explore how to maintain your log book
      - discuss who is responsible for tracking and signing-off on trade skills
      - explain how and where to record hours worked
      - identify the importance of updating your file with your Program Development Officer
  - viii. differentiate between Provincial and Interprovincial exams
5. Describe the training and education requirements.
- i. discuss the factors affecting on-the-job and in class portions of your training
  - ii. define in school and on the job training

- review a Plan of Training
  - identify the percentage of on-the-job and in class training time
  - current labour market implications on completing an apprenticeship program
6. Explain Plans of Training.
- i. identify what is included in the Plan of Training
    - entrance requirements
    - duration of in-school and on-the-job training
    - course content
    - entry level or advanced level
  - ii. explain how a Journeyperson Certificate is achieved
    - discuss Certificate of Qualification
    - discuss Certificate of Apprenticeship
    - discuss Red Seal endorsement
7. Discuss the Red Seal Program.
- i. define designated trade
  - ii. explore the National Occupational Analysis for your trade
  - iii. explain Interprovincial Standards Red Seal Program and how it works
    - labor mobility
    - qualification recognition
  - iv. discuss the range of careers possible in your chosen trade
8. Explain apprenticeship progression schedule and wage rates.
- i. review a Record of Occupational Progress (Log Book)
  - ii. hours per program
  - iii. requirements for progression
  - iv. wage rates per year of apprenticeship
9. Identify the examinations and evaluation process used in Apprenticeship.
- i. discuss occupational tests and examinations as directed by the Provincial Apprenticeship and Certification Board
    - Theory
    - Practical
  - ii. explain formal assessment and the pass mark of 70%
10. Examine some of the financial incentives available to apprentices.
- i. employment insurance (E.I.) Benefits
  - ii. government sponsored student loans

- iii. apprenticeship incentive Federal and Provincial
  - iv. scholarships
11. Continuing Training outside the Province of Newfoundland and Labrador.
- i. training in other provinces and territories
    - procedure for registration and recognition of hours and skills in other provinces
  - ii. options for Dual Certification
    - transfer of credits
12. Review and define the following terms:
- i. Apprenticeship Program Accreditation
  - ii. Cancellation of Apprenticeship
  - iii. Certificate of Apprenticeship
  - iv. Certificate of Qualification
  - v. Certification Renewal
  - vi. Criteria for Eligibility
  - vii. Journeyperson
  - viii. Practical Examination
  - ix. Prior Learning
  - x. Record of Occupational Progress (Logbook)
  - xi. Red Seal Certification
  - xii. Registered Apprentice
  - xiii. Theoretical Examination
  - xiv. National Occupational Analysis (NOA)
  - xv. Class Call
  - xvi. Dual certification

**Practical:**

1. Review the Provincial Apprenticeship web site: [www.gov.nl.ca/app](http://www.gov.nl.ca/app)
  - i. identify the requirements for registering as an apprentice and the registration process
  - ii. explain the steps to complete an apprenticeship program
  - iii. identify who is responsible for tracking and signing-off on trade skills
  - iv. identify the nearest Industrial Training Office to your community
  - v. identify the current incentives available to apprentices

2. Review a plan of training on the Provincial Apprenticeship web site.
  - i. identify the hours for your trade (in-school and on-the-job)
  - ii. explain the roles and responsibilities of the following stakeholders in the apprenticeship process: employer, apprentice, training institution and the Industrial Training Division
  
3. Visit the Red Seal Web site <http://www.red-seal.ca>, review the National Occupational Analyses for your trade.
  - i. review the scope of work for your occupation and identify the industry sectors and job types requiring your trade
  - ii. identify the trends of your trade
  - iii. provide a list of Personal Protective Equipment required for your trade

## **MA1060 Basic Math**

### **Description:**

This course in Basic Math requires knowledge of general mathematical concepts and processes to enable trades persons to function in the institutional setting by developing numeracy skills required for technical courses. This math course should also provide a foundation for experiential learning through knowledge of math relating to on-the-job skills and practices. A detailed course outline is available from Institutional and Industrial Education, Standards and Curriculum Division to training institutions upon request.

**Prerequisites:** None

**Course Hours:** 60

### **Course Outcomes:**

- To develop numeracy skills and knowledge required for institutional and on-the-job learning.
- To develop the capability to apply mathematical concepts in the performance of trade practices.
- To develop an appreciation for mathematics as a critical element of the learning environment.
- To use mathematical principles accurately for the purposes of problem solving, job and materials estimation, measurement, calculation, system conversion, diagram interpretation and scale conversions, formulae calculations, and geometric applications.

**Pre-Requisites:** None

### **Course Objectives:**

1. Define and calculate using whole number operations.

2. Define and demonstrate use of correct orders of operations.
3. Demonstrate examples of operations with fractions and mixed numbers.
4. Demonstrate examples of operations with decimals.
5. Demonstrate examples of operations with percentages.
6. Employ percent/decimal/fraction conversion and comparison.
7. Define and calculate with ratios and proportions.
8. Use the Imperial Measurement system in relevant trade applications.
9. Use the Metric Measurement system in relevant trade applications.
10. Perform Imperial/Metric conversions.
11. Define and demonstrate the formulation of variables.
12. Demonstrate and define the various properties of angles and make relevant calculations.

**Major Tasks/Sub-tasks (Skills):**

**Note:** To emphasize or further develop specific knowledge objectives, students may be asked to complete practical demonstrations which confirm proper application of mathematical theory to job skills.



## CM2150 Workplace Communications

### Description:

This course is designed to introduce students to the principles of effective communication including letters, memos, short report writing, oral presentations and interpersonal communications.

**Prerequisites:** None

**Course Hours:** 45

### Course Outcomes:

Upon completion of the course, students will be able to:

- Understand and apply communication skills as outlined in the Employability Skills 2000, Conference Board of Canada.
- Understand the importance of well-developed writing skills in business and in career development.
- Understand the purpose of the various types of business correspondence.
- Examine the principles of effective business writing.
- Examine the standard formats for letters and memos.
- Write effective letters and memos.
- Examine the fundamentals of informal reports and the report writing procedure.
- Produce and orally present an informal report.
- Examine effective listening skills and body language in communication.

**Pre-Requisites:** None

### Objectives and Content:

1. Apply rules and principles for writing clear, concise, complete sentences which adhere to the conventions of grammar, punctuation, and mechanics.

2. Explain the rules of subject-verb agreement.
3. Define and describe the major characteristics of an effective paragraph.
4. Examine the value of Business Writing Skills.
  - i. describe the importance of effective writing skills in business
  - ii. describe the value of well-developed writing skills to career success as referenced in the Employability Skills
5. Examine principles of Effective Business Writing.
  - i. discuss the rationale and techniques for fostering goodwill in business communication, regardless of the circumstances
  - ii. review the importance of revising and proofreading
  - iii. differentiate between letter and memo applications in the workplace and review samples
  - iv. identify the parts of a business letter and memo
  - v. Review the standard formats for business letters and memos
  - vi. Examine samples of well-written and poorly written letters and memos
  - vii. examine guidelines for writing sample letters and memos which convey: acknowledgment, routine request, routine response, complaint, refusal, persuasive request and letters of appeal
6. Examine the fundamentals of Informal Business Reports.
  - i. Identify the purpose of the informal report
  - ii. Identify the parts and formats of an informal report
  - iii. Identify methods of information gathering
  - iv. Describe the methods of referencing documents
  - v. Review the importance of proof reading and editing
7. Examine types of presentations.
  - i. review and discuss components of an effective presentation
  - ii. review and discuss delivery techniques
  - iii. review and discuss preparation and use of audio/visual aids
  - iv. discuss and participate in confidence building exercises used to prepare for giving presentations
8. Interpersonal Communications.
  - i. Examine and apply listening techniques
  - ii. Discuss the importance of body language

**Practical:**

1. Write well-developed, coherent, unified paragraphs which illustrate the following: a variety of sentence arrangements; conciseness and clarity; and adherence to correct and appropriate sentence structure, grammar, punctuation, and mechanics.
2. Write sample letters and memos which convey: acknowledgment, routine request, routine response, complaint, refusal, persuasive request and letters of appeal.
3. Gather pertinent information, organize information into an appropriate outline and write an informal report with documented resources.
  - i. edit, proofread, and revise the draft to create an effective informal report and present orally using visual aids
  - ii. participate in confidence building exercises
4. Present an effective presentation.
5. Evaluate presentations.

## **MR1220 Customer Service**

### **Description:**

This course focuses on the role of providing quality customer service. It is important to have a positive attitude and the necessary skills to effectively listen and interpret customer concerns about a product, resolve customer problems, and determine customer wants and needs. Students will be able to use the skills and knowledge gained in this course to effectively provide a consistently high level of service to the customer.

**Prerequisites:** None

**Course Hours:** 30

### **Course Outcomes:**

Upon successful completion of this course, students will be able to:

- Define customer service.
- Explain why service is important.
- Describe the relationship between “service” and “sales.”
- Demonstrate an understanding of the importance of a positive attitude.
- Demonstrate methods of resolving customer complaints.

**Pre-Requisites:** None

### **Objectives and Content:**

1. Define quality service.
  - i. identify and discuss elements of customer service.
  - ii. explain the difference between service vs. sales or selling
  - iii. explain why quality service is important
  - iv. identify the various types of customers and challenges they may present
  - v. describe customer loyalty
  - vi. examine barriers to quality customer service

2. Explain how to determine customer wants and needs.
  - i. identify customer needs
  - ii. explain the difference between customer wants and needs
  - iii. identify ways to ensure repeat business
  
3. Demonstrate an understanding of the importance of having a positive attitude.
  - i. identify and discuss the characteristics of a positive attitude
  - ii. explain why it is important to have a positive attitude
  - iii. explain how a positive attitude can improve a customer's satisfaction
  - iv. define perception and explain how perception can alter us and customers
  - v. describe methods of dealing with perception
  
4. Communicating effectively with customers.
  - i. describe the main elements in the communication process
  - ii. identify some barriers to effective communication
  - iii. explain why body language is important
  - iv. define active listening and state why it is important
  - v. identify and discuss the steps of the listening process
  - vi. identify and discuss questioning techniques
  
5. Demonstrate using the telephone effectively.
  - i. explain why telephone skills are important
  - ii. describe the qualities of a professional telephone interaction
  
6. Demonstrate an understanding of the importance of asserting oneself.
  - i. define assertiveness
  - ii. discuss assertive techniques
  - iii. explain the use of assertiveness when dealing with multiple customers
  
7. Demonstrate techniques for interacting with challenging customers in addressing complaints and resolving conflict.
  - i. examine and discuss ways to control feelings
  - ii. examine and discuss ways to interact with an upset customer
  - iii. examine and discuss ways to resolve conflict/customer criticism
  - iv. examine and discuss ways to prevent unnecessary conflict with customers

**Practical:**

1. Participate in activities to demonstrate knowledge of the course objectives.

## **SP2330      Quality Assurance/Quality Control**

### **Description:**

This course is designed to give students an understanding of the concepts and requirements of QA/QC such as, interpreting standards, controlling the acceptance of raw materials, controlling quality variables and documenting the process. It includes information on quality concepts, codes and standards, documentation, communications, human resources, company structure and policy, teamwork and responsibilities.

**Prerequisites:**        None

**Course Hours:**        30

### **Course Outcomes:**

Upon completion of this course, students will be able to:

- Develop the skills and knowledge required to apply quality assurance/quality control procedures as related to the trade.
- Develop an awareness of quality principles and processes.
- Apply quality assurance/quality control procedures in a shop project.

**Pre-Requisites:** None

### **Objectives and Content:**

1. Describe the reasons for quality assurance and quality plans.
2. Explain the relationship between quality assurance and quality control.
3. Describe quality control procedures as applied to the production and checking of specifications and processes in applicable occupations.
4. Describe quality control procedures as applied to the acceptance and checking of raw materials.
5. Explain the role of communications in a quality environment.

6. Explain why it is important for all employees to understand the structure of the company and its production processes.
7. Explain how human resource effectiveness is maximized in a quality managed organization.
8. Explain the role of company policy in quality management.
9. Explain the purpose of codes and standards in various occupations.
10. Explain the concepts of quality.
  - i. cost of quality
  - ii. measurement of quality
  - iii. elements of quality
  - iv. elements of the quality audit
  - v. quality standards
  - vi. role expectations and responsibilities
11. Explain the structure of quality assurance and quality control.
  - i. describe organizational charts
  - ii. identify the elements of quality assurance system such as ISO, CSA,
  - iii. WHMIS, Sanitation Safety Code (SSC)
  - iv. explain the purpose of the quality assurance manual
  - v. describe quality assurance procedures
12. Examine quality assurance/quality control documentation.
  - i. describe methods of recording reports in industry
  - ii. describe procedures of traceability (manual and computer-based recording)
  - iii. identify needs for quality control procedures

**Practical:**

1. Apply quality control to a project.
  - i. follow QA/QC procedures for drawings, plans and specifications in applicable occupations
  - ii. calibrate measuring instruments and devices in applicable occupations
  - iii. interpret required standards



- iv. follow QA/QC procedures for accepting raw materials
- v. carry out the project
- vi. control the quality elements (variables)
- vii. complete QA/QC reports

## **MC1050 Introduction to Computers**

### **Description:**

This course is designed to give the student an introduction to computer systems. Particular emphasis is given to word processing, spreadsheet, e-mail and the Internet and security issues.

### **Course Outcomes:**

Upon completion of this course, students will have a basic understanding of:

- Computer systems and their operation.
- Popular software packages, their applications.
- Security issues of computers.

**Pre-Requisites:** None

### **Objectives and Content:**

1. Identify the major components of microcomputer system hardware and software system.
2. Describe the functions of the microprocessor.
  - i. describe and give examples of I/O DEVICES
  - ii. describe primary storage (RAM, ROM, Cache)
  - iii. define bit, byte, code and the prefixes k.m. and g.
  - iv. describe secondary storage (diskettes and hard disks, CD ROMS, Zip drives, etc.)
  - v. describe how to care for a computer and its accessories
3. Describe microcomputer software.
  - i. define software
  - ii. describe types of operational and application software
  - iii. define file and give the rules for filenames and file extensions

4. Describe windows software.
  - i. start and quit a program
  - ii. demonstrate how to use the help function
  - iii. locate a specific file using the find function
  - iv. identify system settings: wall paper, screen saver, screen resolution, background
  - v. start a program by using the run command
  - vi. shutting down your computer
  
5. Identify file management commands.
  - i. create folders
  - ii. maximize and minimize a window
  - iii. describe windows task bar
  
6. Describe keyboards.
  - i. identify and locate alphabetic and numeric keys
  - ii. identify and locate function key and special keys
  
7. Describe word processing.
  - i. describe windows components
  - ii. menu bar
  - iii. menu indicators
  - iv. document window
  - v. the status bar
  - vi. the help feature
  - vii. insertion point movements
  
8. Describe the procedure used to develop a document.
  - i. enter text
  - ii. change the display
  
9. Describe the procedure for opening, saving and exiting documents.
  - i. saving a document
  - ii. closing a document.
  - iii. starting a new document Window
  - iv. opening a document
  - v. exiting word processor
  
10. Describe the procedure for editing a document.
  - i. adding new text

- ii. deleting text
  - iii. using basic format enhancement (split and join paragraphs, insert text)
11. Describe the main select features.
- i. identify a selection
  - ii. moving a selection
  - iii. copying a selection
  - iv. deleting a selection
  - v. saving a selection
12. Explain how to change layout format.
- i. changing layout format: (margins, spacing, alignment, paragraph indent, tabs, line spacing, page numbering)
13. Explain how to change text attributes.
- i. changing text attributes: (bold, underline, font, etc.)
14. Describe the auxiliary tools.
- i. using spell check and thesaurus
15. Describe print features.
- i. selecting the print feature: (i.e. number of copies and current document)
  - ii. identifying various options in print screen dialogue box
16. Examine and discuss electronic spreadsheet.
- i. spreadsheet basics
  - ii. the worksheet window
17. Describe menus.
- i. menu bar
  - ii. control menu
  - iii. shortcut menu
  - iv. save, retrieve form menus
18. Describe the components of a worksheet.
- i. entering constant values and formulas
  - ii. using the recalculation feature

19. Describe use ranges.
  - i. typing a range for a function
  - ii. pointing to a range for a function
  - iii. selecting a range for toolbar and menu commands
  
20. Describe how to print a worksheet.
  - i. printing to the screen
  - ii. printing to the printer
  - iii. printing a selected range
  
21. Describe how to edit a worksheet.
  - i. replacing cell contents
  - ii. inserting and deleting rows and columns
  - iii. changing cell formats
  - iv. changing cell alignments
  - v. changing column width
  - vi. copying and moving cells
  
22. State major security issues in using computers.
  - i. pass words
  - ii. accessing accounts
  - iii. viruses and how they can be avoided
  - iv. identity theft and ways to protect personal information
  - v. demonstrate how to view directory structure and folder content
  - vi. organize files and folders
  - vii. copy, delete, and move files and folders
  
23. Describe how to use electronic mail.
  - i. e-mail etiquette
  - ii. e-mail accounts
  - iii. e-mail messages
  - iv. e-mail message with attachments
  - v. e-mail attachments
  - vi. print e-mail messages
  - vii. deleting e-mail messages
  
24. Explain the internet and its uses.
  - i. the world wide web(www)
  - ii. accessing web sites
  - iii. internet web browsers

- iv. internet search engines
- v. searching techniques
- vi. posting documents on-line

**Practical:**

1. Create a document using word processing.
2. Complete word processing exercises to demonstrate proficiency in word processing.
3. Prepare and send e-mails with attachments.
4. Retrieve documents and e-mail attachments and print copies.
5. Develop and print a spread sheet.
6. Post a document on-line.

## **SD1700    Workplace Skills**

### **Description:**

This course involves participating in meetings, information on formal meetings, unions, workers' compensation, employment insurance regulations, workers' rights and human rights.

**Prerequisites:**        None

**Course Hours:**        30

### **Course Outcomes:**

Upon completion of this course, students will be able to:

- Participate in meetings.
- Define and discuss basic concepts of:
  - unions
  - workers' compensation
  - employment insurance
  - workers' rights
  - human rights
  - workplace diversity
  - gender sensitivity

**Pre-Requisites:**    None

### **Objectives and Content:**

1. Meetings.
  - i. identify and discuss meeting format and preparation required for a meeting
  - ii. explain the purpose of an agenda
  - iii. explain the roles and responsibilities of meeting participants
  - iv. explain the purpose of motions and amendments and withdrawals
  - v. explain the procedure to delay discussion of motions
  - vi. explain the voting process

2. Unions.

- i. state why unions exist
- ii. give a concise description of the history of Canadian labour
- iii. explain how unions function
- iv. explain labour's structure
- v. describe labour's social objectives
- vi. describe the relationship between Canadian labour and the workers
- vii. describe the involvement of women in unions

3. Worker's Compensation.

- i. describe the aims, objectives, benefits and regulations of the Workplace Health, Safety and Compensation Commission
- ii. explain the internal review process

4. Employment Insurance.

- i. explain employment insurance regulations
- ii. describe how to apply for employment insurance
- iii. explain the appeal process
- iv. identify the components of a letter of appeal

5. Worker's rights.

- i. define labour standards
- ii. explain the purpose of the Labour Standards Act
- iii. identify regulations pertaining to:
  - hours of work
  - minimum wages
  - employment of children
  - vacation pay
- iv. explain the purpose of the Occupational Health and Safety Act as it refers to  
workers' rights

6. Human rights.

- i. describe what information cannot be included on an employment application
- ii. describe what information cannot be included in an interview
- iii. examine the Human Rights Code and explain the role of the Human Rights Commission
- iv. define harassment in various forms and identify strategies for prevention



7. Workplace diversity.
  - i. define and explore basic concepts and terms related to workplace inclusively including age, race, culture, religion, socio-economic, sexual orientation with an emphasis on gender issues and gender stereotyping
  
8. Gender sensitivity.
  - i. explore gender and stereotyping issues in the workplace by identifying strategies for eliminating gender bias

**Practical:**

1. Prepare an agenda.
2. Participate in a meeting.
3. Analyze a documented case of a human rights complaint with special emphasis on the application, time frame, documentation needed, and legal advice available.

## **SD1710 Job Search Techniques**

### **Description:**

This course is designed to give students an introduction to the critical elements of effective job search techniques.

**Prerequisites:** None

**Course Hours:** 15

### **Course Outcomes:**

Upon completion of this course, students will be able to:

- Demonstrate effective use of job search techniques.

**Pre-Requisites:** None

### **Objectives and Content:**

1. Identify and examine employment trends and opportunities.
2. Identify sources that can lead to employment.
3. Access and review information on the Newfoundland and Labrador Apprenticeship and Certification Web site and the Apprenticeship Employment Gateway.
4. Analyze job ads and discuss the importance of fitting qualifications to job requirements.
5. Identify and discuss employability skills as outlined by the Conference Board of Canada.
6. Discuss the necessity of fully completing application forms.
7. Establish the aim/purpose of a resume.

8. Explore characteristics of effective resumes, types of resumes, and principles of resume format.
9. Explore characteristics of an effective cover letter.
10. Identify commonly asked questions in an interview.
11. Explore other employment related correspondence.
12. Explore the job market to identify employability skills expected by an employer.
13. Conduct a self-analysis and compare with general employer expectations.
14. Discuss the value of establishing and maintaining a portfolio.

**Practical:**

1. Complete sample application forms.
2. Write a resume.
3. Write an effective cover letter.
4. Establish a portfolio.
5. Write out answers to commonly asked questions asked during interviews.
6. Identify three potential employers from the Apprenticeship Employment gateway, Apprenticeship and Certification website.

## **SD1720 Entrepreneurial Awareness**

### **Description:**

This course is designed to introduce the student to the field of entrepreneurship, including the characteristics of the entrepreneur, the pros and cons of self-employment, and some of the steps involved in starting your own business.

**Prerequisites:** None

**Course Hours:** 15

### **Course Outcomes:**

Upon completion of this course, the student will be able to:

- Identify the various types of business ownership, the advantages and disadvantages of self-employment and identify the characteristics of an entrepreneur.
- State the purpose and identify the main elements of a business plan.

**Pre-Requisites:** None

### **Objectives and Content:**

1. Explore Self-Employment: An alternative to employment.
  - i. identify the advantages and disadvantages of a self-employment vs. regular employment
  - ii. differentiate between an entrepreneur and a small business owner
  - iii. evaluate present ideas about business people
2. Identify and discuss various types of business ownership.
  - i. explore the characteristics of entrepreneurs
  - ii. identify characteristics common to entrepreneurs
  - iii. compare one's own personal characteristics with those of entrepreneurs
  - iv. examine one's present ideas about business people

3. Identify business opportunities.
  - i. distinguish between an opportunity and an idea
  - ii. examine existing traditional and innovative business ventures
  - iii. identify and summarize the role of various agencies that support business development
  
4. Review the entrepreneurial process.
  - i. explain the entrepreneurial process
  - ii. describe the purpose of a business plan

## **Block 2**

### **BR1501 Stone Facings**

#### **Description:**

This course in stone construction requires the use of tools and equipment and materials and supplies. It involves layout, installing flashings and accessories, cutting stone, mixing mortar and laying stone. It includes information on types of stone, types of mortar, and installation and construction techniques.

**Prerequisites:** Block 1

**Course Hours:** 80

#### **Course Aims:**

1. To develop the skills and knowledge required for installing stone facings with respect to various codes and regulations.
2. To practice safety in potentially harmful situations.
3. To develop an appreciation for conservation and environmental issues.

#### **Course Objectives:**

1. Describe types of stone.
2. Describe types of mortars.
3. Describe types of stone cladding.
4. Explain construction and installation techniques.

**Practical:**

1. Lay artificial and cut stone facings.
  - i. cut stone, using hand tools
  - ii. cut stone with saw
  - iii. lay stone to line
  - iv. establish horizontal coursing patterns
  - v. install accessories
  - vi. point, joint and clean stone masonry
  
2. Lay field stone facings.
  - i. provide a masonry backup
  - ii. split stone using feathers and plugs
  - iii. cut stone using hand tools
  - iv. point and joint stone masonry
  - v. clean field stone facings
  
3. Install stone cladding.
  - i. prepare wall
  - ii. prepare stone for cladding
  - iii. install stone

## **BR2231 Glass Block**

### **Description:**

This course in constructing glass block walls requires the use of tools and equipment and materials and supplies. It involves layout, wall reinforcement, waterproofing, mixing mortar and laying block. It includes information on types of mortar, adhesives, types of caulking and construction techniques.

**Prerequisites:** Block 1

**Course Hours:** 70

### **Course Aims:**

1. To develop the skills and knowledge required for glass block wall construction with respect to various codes and regulations.
2. To practice safety in potentially harmful situations.
3. To develop an appreciation for conservation and environmental issues.

### **Course Objectives:**

1. Describe types of mortar.
2. Describe types of adhesives.
3. Describe types of caulking.
4. Explain construction techniques.

### **Practical:**

1. Construct glass block panels.
  - i. establish horizontal and vertical coursing of glass block panels
  - ii. prepare opening for installations of glass blocks
  - iii. install accessories
  - iv. joint and clean glass block
  - v. caulk glass block panels



2. Repair glass block panels.
  - i. protect existing finished areas
  - ii. remove broken units
  - iii. align and install new units
  - iv. joint units
  - v. caulk units
  - vi. clean units

## **BR1550    Restoration**

### **Description:**

This course describes the process of removing and reinstalling selected areas of masonry work. It includes using proper equipment, support and bracing, as well as matching the existing structure. It also includes non-destructive methods of restoring masonry work, and the cleaning of masonry surfaces before and after restoration work has been performed.

**Prerequisites:**        Block 1

**Course Hours:**        60

### **Course Aims:**

1. To develop the skills and knowledge required for restore masonry work.
2. To practice safety in potentially harmful situations.
3. To develop an appreciation for conservation and environmental issues.

### **Course Objectives:**

1. Describe methods to rebuild masonry work.
2. Describe methods to restore masonry work.
3. Describe methods to clean and seal masonry surfaces.

### **Practical:**

1. Disassemble unit masonry surfaces.
  - i. identify causes of deterioration
  - ii. assess support and anchoring requirements
  - iii. remove mortar and units
  - iv. salvage reusable materials
2. Prepare restoration work area.
  - i. remove mortar from standing wall and back up wall

- ii. repair backup wall
  - iii. clean and restore components
3. Reinstall masonry and accessories.
  - i. reinstall components such as flashings, electrical and plumbing units
  - ii. colour mortar
  - iii. match existing or previous work
4. Remove deteriorated components.
  - i. remove deteriorated components back to solid masonry
  - ii. identify failures in material
5. Repoint joints.
  - i. clean and dampen joints
  - ii. fill, compress and tool joints
  - iii. hydrate masonry surfaces
  - iv. add adhesives to mortar
  - v. protect surfaces from environmental conditions such as rain, wind and sun
6. Reface masonry units.
  - i. drill and dowel masonry surfaces
  - ii. apply sufficient mortar for re-facing
  - iii. support refaced units for curing
7. Repair masonry units.
  - i. drill masonry for pinning and stitching
  - ii. mix and apply patching material
  - iii. set dowels
8. Prepare surfaces.
  - i. apply chemical cleaner
  - ii. protect surrounding areas
9. Apply sealants and coating materials for restoration.
  - i. seal penetrations
  - ii. protect surround areas

## **Block 3**

### **BR2401 Conventional Fireplaces**

#### **Description:**

This course in fireplace construction requires the use of tools and equipment and materials and supplies. It involves layout; installation of clean out doors, bases, firebrick, dampers and flue liners; constructing smoke chambers, smoke shelves and tops; mixing mortar; laying brick and setting tiles. It includes information on types of mortar, high temperature cement, types of tops and construction techniques.

**Prerequisites:** Block 2

**Course Hours:** 150

#### **Course Aims:**

1. To develop the skills and knowledge required for constructing conventional fireplaces with respect to various codes and regulations.
2. To practice safety in potentially harmful situations.
3. To develop an appreciation for conservation and environmental issues.

#### **Course Objectives:**

1. Describe types of mortar.
2. Explain the action of high temperature cement.
3. Describe types of tops.
4. Explain construction techniques.
5. Describe multi opening fireplaces.

#### **Practical:**

1. Construct single opening fireplaces.
  - i. verify or determine dimensions of single opening fireplaces
  - ii. construct interior fireplace foundation
  - iii. pour hearth slabs
  - iv. rough fireplace brickwork or exterior masonry
  - v. construct fireplace fire chambers
  - vi. face fireplaces to specifications with bricks
  - vii. lay masonry hearths
  - viii. install fireplace accessories
  
2. Construct outdoor fireplaces and barbecues.
  - i. layout various outdoor fireplaces and barbecues
  - ii. interpret manufacturer's specifications
  - iii. estimate materials
  - iv. interpret blueprints and specifications
  - v. construct with a picture as a guide

## **BR2420 Rumford Fireplaces**

### **Description:**

This course in fireplace construction requires the use of tools and equipment and materials and supplies. It involves layout; mixing mortar; installing clean out doors, firebrick base, accessories, angle irons, flue liners, tops and hearths; laying brick and setting tiles. It includes information on types of mortar, high temperature cements types of tops and installation and construction techniques.

**Prerequisites:** Block 2

**Course Hours:** 60

### **Course Aims:**

1. To develop the skills and knowledge required for Rumford fireplaces with respect to various codes and regulations.
2. To practice safety in potentially harmful situations.
3. To develop an appreciation for conservation and environmental issues.

### **Course Objectives:**

1. Describe types of mortar.
2. Describe types of tops.
3. Explain the action of high temperature cement.
4. Explain installation and construction techniques.

### **Practical:**

1. Construct Rumford fireplace.
  - i. estimate materials
  - ii. establish and set up work area
  - iii. make dry layouts
  - iv. lay up masonry to opening heights

- v. build firebox
  - vi. pour reinforced concrete header
  - vii. install metal accessories
  - viii. joint exposed masonry
  - ix. lay masonry hearth
2. Set tiles.
- i. identify different types of tile
  - ii. identify and select tile patterns
  - iii. lay tile in mortar bed (wet and dry pack)
  - iv. set tile in tile cement (epoxy)
  - v. grout tile
  - vi. clean tile

## **DR1131 Introduction to CAD**

### **Description:**

This drafting course requires the use of basic drawings, specifications, bills of materials, drawing instruments and facilities, within CAD software. It involves reading basic drawings and diagrams, sketching, interpretation of specifications, through the operation of the CAD system.

**Prerequisites:** Block 2

**Course Hours:** 30

### **Course Aims:**

1. To develop the skills and knowledge required to read drawings and sketch views.

### **Course Outcomes:**

Upon completion of this course, the apprentice will be able to:

- demonstrate knowledge of computer aided drafting.

### **Course Objectives:**

1. Describe drafting tools and materials used for drawing plans.
2. Describe the use of:
  - i. computer assisted drawings
  - ii. computer spreadsheets
  - iii. computer estimating software
3. Describe the procedures in generating computer drawings, including:
  - i. orthographic views
  - ii. isometric views
4. Describe how to use computer assisted drafting to draw or complete.
  - i. load bearing walls



- ii. non-load bearing walls
  - iii. chimneys, fireplaces
  - iv. veneer walls
  - v. glass block walls
  - vi. arches and sculptured masonry elements
  - vii. view elevation, perspective and bird=s eye view
  - viii. set up of rendering graphics(customizing the color and texture specifications)
  - ix. cut list and modifications
  - x. job costing
  - xi. accessories
  - xii. estimates
  - xiii. set up multi-draw
5. Describe the procedure to save and print plans.
6. Describe the different types of computer software available to the bricklaying industry.

**Practical:**

1. Use computer assisted drafting to draw plans with the following elements.
  - i. load bearing walls
  - ii. non-load bearing walls
  - iii. chimneys, fireplaces
  - iv. veneer walls
  - v. glass block walls
  - vi. arches and sculptured masonry elements
  - vii. view elevation, perspective and bird=s eye view
  - viii. set up of rendering graphics(customizing the color and texture specifications)
  - ix. cut list and modifications
  - x. accessories
  - xi. set up multi-draw
  
2. Use computer assisted drafting to complete the tasks of:
  - i. job costing
  - ii. estimating

## **Block 4**

### **BR1401 Refractory Units**

#### **Description:**

This course in refractory construction requires the use of tools and equipment and materials and supplies. It involves layout; installation of accessories, insulation, special ties and temporary arch forms; and laying brick. It includes information on types of mortars and refractory materials and installation and construction techniques.

**Prerequisites:** Block 3

**Course Hours:** 70

#### **Course Aims:**

1. To develop the skills and knowledge required for installing refractory materials. with respect to various codes and regulations.
2. To practice safety in potentially harmful situations.
3. To develop an appreciation for conservation and environmental issues.

#### **Course Objectives:**

1. Describe types of refractory materials.
2. Describe types of mortars.
3. Explain installation and construction techniques.

#### **Practical:**

1. Line/reline furnaces or other installations with refractory materials.
  - i. reviews drawings and specifications to determine locations of installation, type of material and other requirements
  - ii. remove or supervise the removal of existing brickwork or lining
  - iii. lay refractory or acid-resistant brick *and tile*
    - layout location of walls and expansion joints

- install brickwork in specified manner (dry, thick joint, thin joint)
- incorporate control joints
- build in steel lintels or frames
- build in or make provisions for mechanical/electrical units
- iv. line/reline using castable refractories
  - dampen/lubricate forms or surfaces
  - bolt anchors at pre-determined locations
- v. line/reline using plastic refractories
  - bolt anchors of pre-determined locations
  - install temporary supports for arches or ceiling
  - place plastic slabs on surfaces
  - follow specifications for setting process

## **BR1600    Arches and Sculptured Masonry**

### **Description:**

This course requires the use of tools and equipment and materials and supplies. It involves wall layout; installation of masonry ties, accessories and insulation; preparing for temporary arch forms; laying out arches; laying brick to the line; installing decorative additions to buildings.

**Prerequisites:**        Block 3

**Course Hours:**        80

### **Course Aims:**

1. To develop the skills and knowledge required for arch construction and the installation of ornamental and sculptured masonry units.
2. To practice safety in potentially harmful situations.
3. To develop an appreciation for conservation and environmental issues.

### **Course Objectives:**

1. Describe methods to install ornamental and sculptured masonry.
2. Describe types of arches.
3. Explain construction techniques for arches.

### **Practical:**

1. Build masonry walls containing arches.
  - i. gauge arches
  - ii. adjust centers
  - iii. cut and lay skewbacks
  - iv. cut and lay creepers
  - v. cut and set keys

2. Prepare surfaces for ornamental and sculptured masonry.
  - i. refer to sketch or numbered unit
  - ii. match mortar to material
  - iii. calculate dimensions
  - iv. determine gauge of mortar joints
  - v. sketch bond and pattern
3. Install ornamental and sculptured masonry units.
  - i. determine and lay out location
  - ii. maintain, bond and erect pier

**APPENDIX**

## Profile Chart

Occupational Skills			
TS1101 Shop Fundamentals	TS1300 Rigging	BR1101 Laying Brick to the Line	BR1110 Laying Block to the Line
BR1121 Mortar	BR1201 Veneer Walls	DR1112 Drawing and Sketching	DR1131 Introduction to CAD
Masonry Systems			
BR1101 Laying Brick to the Line	BR1110 Laying Block to the Line	BR1121 Mortar	BR1501 Stone Facings
BR1210 Load and Non-Load Bearing Walls			
Stone Systems			
BR1501 Stone Facings			
Chimneys, Fireplaces, and Refractory Materials			
BR1121 Mortar	BR1401 Refractory Units	BR2301 Chimneys	BR2401 Conventional Fireplaces
BR2420 Rumford Fireplaces			

Restoration		
BR1550 Restoration		
Specialized Masonry Work		
BR1600 Arches and Sculptured Masonry	BR2231 Glass Block	



## NOA Comparison Table

NOA Sub-task		Plan of Training Unit	
<b>Task 1 – Uses tools and equipment</b>			
1.01	Uses hand tools	TS1101	Shop Fundamentals
1.02	Uses power tools		
1.03	Uses powder actuated tools		
1.04	Uses pneumatic and hydraulic tools		
1.05	Performs basic welding (not common core)	Not addressed in the provincial plan of training	
1.06	Uses torch cutting equipment (not common core)		
1.07	Uses hoisting, lifting and layout equipment	TS1300	Rigging
1.08	Uses measuring and layout equipment	TS1101	Shop Fundamentals
1.09	Uses PPE		
1.10	Uses safety equipment		
<b>Task 2 – Organizes Work</b>			
2.01	Uses documentation	TS1101	Shop Fundamentals
2.02	Communicates with others		
2.03	Organizes material	DR1112	Drawing and Sketching
2.04	Performs inspections		
2.05	Maintains safe work environment	DR1131	Introduction to CAD
<b>Task 3 – Performs Routine Work Practices</b>			
3.01	Prepares vertical substrates	BR1101	Laying Brick to the Line
3.02	Lays out wall and coursing		
3.03	Winterizes job site	BR1110	Laying Block to the Line
3.04	Applies parging		
3.05	Waterproofs/dampproofs masonry surfaces	BR1121	Mortar
3.06	Cleans new masonry surfaces	BR1201	Veneer Walls
3.07	Finishes joints	BR1101	Laying Brick to the Line
3.08	Installs insulation		
3.09	Install membrane	BR1110	Laying Block to the Line
3.10	Install anchoring / tie systems		
3.11	Levels / Plumbs masonry work	BR1121	Mortar

NOA Sub-task		Plan of Training Unit	
		BR1201	Veneer Walls
Task 4 – Uses scaffolding			
4.01	Erects scaffolding	TS1300	Rigging
4.02	Maintains scaffolding		
4.03	Dismantles scaffolding		
Task 5 – Uses mortars, grouts and other bonding agents			
5.01	Uses mortars	BR1121	Mortar
5.02	Uses concrete or grout for block fill		
5.03	Uses bonding agents		
Task 6 – Builds non-load bearing walls			
6.01	Installs flashings	BR1210	Load and Non-Load Bearing Walls
6.02	Install masonry units for non-load bearing walls		
Task 7 – Builds load bearing walls and columns			
7.01	Builds cavity walls and structural walls	BR1210	Load and Non-Load Bearing Walls
7.02	Builds foundation walls		
7.03	Builds retaining walls		
7.04	Installs reinforcing systems		
7.05	Builds columns and pilasters		
Task 8 – Builds horizontal masonry surfaces			
8.01	Prepares horizontal substrate	BR1110	Laying Block to the line
8.02	Prepares masonry units for horizontal surfaces		
8.03	Lays masonry units on horizontal surfaces		
Task 9 – Builds and installs prefabricated masonry units			
9.01	Builds prefabricated masonry	BR1101	Laying Brick to the line

NOA Sub-task		Plan of Training Unit	
9.02	Erects prefabricated masonry	BR1110	Laying Block to the line
		BR1121	Mortar
Task 10 – Installs surface bonded masonry units			
10.01	Prepares surfaces for surface bonded masonry units	BR1501	Stone Facings
10.02	Applies surface bonded masonry units		
Task 11 – Installs stone veneer			
11.01	Prepares stones for veneer	BR1501	Stone Facings
11.02	Lays stones		
Task 12 – Installs stone cladding			
12.01	Prepares wall	BR1501	Stone Facings
12.02	Prepares stone for cladding		
12.03	Installs Stones		
Task 13 – Lays masonry units to build fireplaces and chimneys			
13.01	Builds foundation supports for fireplaces and chimneys	BR2301	Chimneys
13.02	Builds hearth and firebox	BR2401	Conventional Fireplaces
13.03	Builds chimney, damper and flue lining	BR2420	Rumford Fireplaces
13.04	Installs prefabricated masonry heater/stove unit		
13.05	Faces fireplaces and masonry heaters		
Task 14 – Installs refractory materials for heat resistant applications			
14.01	Removes existing heat resistant material	BR1401	Refractory Units
14.02	Prepares for installation of heat resistant materials		
14.03	Prepares mortar and accessories for heat resistant materials		
14.04	Installs heat resistant materials		
Task 15 – Installs corrosion resistant materials for corrosion resistant applications			
15.01	Removes existing corrossions resistant materials	BR1121	Mortar
15.02	Prepares for installation of corrosion resistant materials		
15.03	Prepares mortar and accessories		

NOA Sub-task		Plan of Training Unit	
	for corrosion resistant materials		
15.04	Installs corrosion resistant materials		
Task 16 –Rebuilds masonry work			
16.01	Disassembles unit masonry construction	BR1550	Restoration
16.02	Prepares restoration work area		
16.03	Reinstalls masonry and accessories		
Task 17 – Restores existing masonry work			
17.01	Removes deteriorated components	BR1550	Restoration
17.02	Repoints joints		
17.03	Refaces masonry units		
17.04	Repairs masonry units		
Task 18 – Cleans and seals masonry surfaces			
18.01	Prepares surfaces	BR1550	Restoration
18.02	Applies sealants and coating materials for restoration work		
Task 19 – Installs glass blocks			
19.01	Prepares site	BR2231	Glass Block
19.02	Lays glass blocs		
Task 20 – Installs ornamental and sculptured masonry			
20.01	Prepares surface for ornamental and sculptured masonry	BR1600	Arches and Sculptured Masonry
20.02	Installs ornamental and sculptured masonry units		
Task 21 – Builds Arches			
21.01	Prepares site for arches	BR1600	Arches and Sculptured Masonry
21.02	Builds template		
21.03	Places template		
21.04	Installs arch masonry units		
21.05	Removes templates		