Pre-Employment
Plan of Training
Welder

Government of Newfoundland and Labrador
Department of Immigration, Population Growth and Skills
Apprenticeship and Trades Certification Division

August 2016

PLAN OF TRAINING

Pre Employment

Welder

APRIL 2016

Government of Newfoundland and Labrador
Department of Advanced Education and Skills
Apprenticeship and Trades Certification Division

Approved by:

Chairperson, Provincial Apprenticeship and Certification Board

Date: June 23, 2016

Preface

This curriculum standard is aligned with the 2016 level 1 Atlantic Apprenticeship Curriculum Standard (AACS) and the 2009 National Occupational Analysis for the Welder trade. It describes the curriculum content for the Welder pre-employment training program.

Acknowledgements

The Provincial Trade Advisory Committee (PTAC), industry representatives, instructors and apprenticeship staff provided valuable input to the development of this provincial plan of training. Without their dedication to quality apprenticeship training, this document could not have been produced.

We offer a sincere thank you.

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Document Status	Date Distributed	Mandatory Implementation Date	Comments
Approved	March 2016	September 2016	Pre-employment Version, AACS Compliant
Approved	October 2016	October 2016	Updated AACS course references
Approved	June 2020		Updated Essential Skills courses to 2019 versions. Applied accessibility formatting.

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C. Program Structure

For each and every course, a formal assessment is required for which 70% is the pass mark. A mark of 70% must be attained in both the theory examination and the practical project assignment, where applicable as documented on an official transcript.

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

Upon completion of the pre-employment program, individuals may be required to complete other certifications (employer or job site specific) in order to gain employment.

A Pre-employment student who becomes an apprentice will also be required to complete Level 2 and 3 in the AACS.

Pre-Employment				
Course No.	**AACS No.**	**Course Name**	**Hours**	**Pre-Requisite(s)**
TS1510	WDF-005	OH&S	6	None
TS1520	WDF-005	WHMIS	6	None
TS1530	-	Standard First Aid	14	None
WD1390	WDF-005	Safety	6	None
WD1190	WDF-010	Tools and Equipment	60	TS1520, TS1530, WD1390
WD1701	WDF-015	Stationary Machinery	12	WD1190
WD1602	WDF-035 WDF-605	Oxy-fuel Cutting, Heating, Gouging and Welding	60	TS1520, TS1530, WD1390
WD1610	WDF-035 WDF-040	SMAW (Shielded Metal Arc Welding) 1-Set-up, Strike and Maintain an Arc	30	WD1190, WD1602
WD1620	WDF-035 WDF-045	SMAW (Shielded Metal Arc Welding) 2-Fillet Weld, All Positions	60	WD1610
WD1631	WDF-035 WDF-050	GMAW (Gas Metal Arc Welding) 1-Set-up and Maintain an Arc	18	WD1190, WD1602
WD1821	WDF-035 WDF-600	GMAW (Gas Metal Arc Welding) 2-Fillet Weld All Positions, Mild Steel	18	WD1631
WD1741	WDF-035	FCAW (Flux Core Arc Welding) 1-Set-Up and Deposit a Weld	18	WD1190, WD1602

Pre-Employment				
Course No.	**AACS No.**	**Course Name**	**Hours**	**Pre-Requisite(s)**
	WDF-055			
WD1360	WDF-035 WDF-060	MCAW (Metal Core Arc Welding) 1-Set-up and Deposit a Weld	18	WD1190, WD1602
WD1641	WDF-035	GTAW (Gas Tungsten Arc Welding) 1-Set-up and Deposit a Weld	18	WD1190, WD1602
WD1651	WDF-035 WDF-615	Plasma Arc Cutting and Gouging	12	WD1190
WD1661	WDF-075	Blue Print Reading 1 (Basic)	30	None
WD1670	WDF-075	Blue Print Reading 2 (Welding Symbols)	30	WD1661
WD3020	WDF-070	Shop Drawings and Structural Components for Fabrication	30	WD1670
WD2910	WDF-085	Layout and Template Development Fundamentals	30	None
WD1682	WDF-630	Metallurgy	18	None
WD1691	-	Quality Control	15	None
WD1721	-	Jigs and Fixtures	12	WD1610 or WD1631 or WD1641 or WD1741 or WD1360
WD1801	WDF-035 WDF-635	SMAW (Shielded Metal Arc Welding) 3-Groove Weld 1G, 2G, 1GF, 2GF, 3GF and 4GF	120	WD1620
WD1815	WDF-035	Fillet and Groove Weld, Medium and High Carbon Steel using FCAW, GMAW, GTAW, MCAW and SMAW	6	WD1610 or WD1631 or WD1641 or WD1741 or WD1360
WD1832	WDF-035 WDF-640	GMAW (Gas Metal Arc Welding) 3-Groove Weld, All Positions, Mild Steel	30	WD1821
WD1871	-	Build Up of Metal Parts	12	WD1610 or WD1631 or WD1641 or WD1741 or WD1360
WD1892	WDF-035	FCAW (Flux Core Arc Welding) 2-Fillet and Groove Weld Plate, All Positions	80	WD1741
WD1900	WDF-035 WDF-610	Air Carbon Arc Cutting and Gouging	15	WD1610

Pre-Employment				
Course No.	**AACS No.**	**Course Name**	**Hours**	**Pre-Requisite(s)**
WD1430	WDF-020 WDF-025	Hoisting, Lifting, Rigging and Access Equipment	30	WD1390
WD1790	WDF-080	Work Planning	6	All Level I Technical Courses
OT1150	-	Workplace Exposure	80	None
AM1000	-	Introduction to Essential Skills	9	None
AM1101	-	Math Essentials	42	None
AM1321	-	Welding Math Fundamentals	42	AM1101
CM2161	-	Communication Essentials	36	None
SD1761	-	Workplace Essentials	24	None
MC1062	-	Computer Essentials	15	None
AP1102	-	Introduction to Apprenticeship	12	None
Total Hours			1080	

A student who can meet the mathematics requirement through an ACUPLACER® test may be exempted from AM1101 - Math Essentials. Please check with your training institution.

PRE-EMPLOYMENT

TS1510 Occupational Health and Safety

Learning Outcomes:

- Demonstrate knowledge of interpreting the Occupational Health and Safety Act, laws and regulations.
- Demonstrate knowledge of understanding the designated responsibilities within the laws and regulations such as the right to refuse dangerous work; and the importance of reporting accidents.
- Demonstrate knowledge of how to prevent accidents and illnesses.
- Demonstrate knowledge of how to improve health and safety conditions in the workplace.

Duration: 6 Hours

Pre-Requisite(s): None

Objectives and Content:

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 Requirements:

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)

Learning Outcomes:

- Demonstrate knowledge of interpreting and applying the Workplace Hazardous Materials Information System (WHMIS) Regulation under the Occupational Health and Safety Act.

Duration: 6 Hours

Pre-Requisite(s): None

Objectives and Content:

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 Requirements:

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.

TS1530 Standard First Aid

Learning Outcomes:

- Demonstrate knowledge of recognizing situations requiring emergency action.
- Demonstrate knowledge of making appropriate decisions concerning first aid.

Duration: 14 Hours

Pre-Requisite(s): None

Practical Requirements:

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

WD1390 Safety

Learning Outcomes:

- Demonstrate knowledge of safety equipment, their applications, maintenance and procedures for use.
- Demonstrate knowledge of safe work practices.
- Demonstrate knowledge of regulatory requirements pertaining to safety.

Duration: 6 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Identify types of personal protective equipment (PPE) and clothing and describe their applications and limitations.
   - i. respiratory protection
   - ii. hearing protection
   - iii. eye protection
   - iv. fall protection
   - v. head protection
   - vi. foot protection
   - vii. hand protection

2. Describe the procedures used to care for and maintain PPE.

3. Identify hazards and describe safe work practices.
   - i. personal
   - ii. workplace
     - job hazard assessment procedures
     - lockout/tag out
     - confined space awareness
     - trenches and excavations
     - explosion and fire (hot work)
     - heights (fall protection and fall arrest)
     - ventilation/fumes
   - iii. environmental contamination (awareness of)

Practical Requirements:

None.

WD1190 Tools and Equipment

Learning Outcomes:

- Demonstrate knowledge of tools and equipment, their applications, maintenance and procedures for use.

Duration: 60 Hours

Pre-Requisite(s): TS1520, TS1530, WD1390

Objectives and Content:

1. Interpret regulations pertaining to tools and equipment.

2. Identify types of hand tools and describe their applications and procedures for use.

3. Describe the procedures used to inspect, maintain and store hand tools.

4. Identify types of power tools and describe their applications and procedures for use.
   i. electric
   ii. hydraulic
   iii. pneumatic

5. Identify power tool attachments and consumables and describe their applications and procedures for use.

6. Describe the procedures used to inspect, maintain and store power tools.

7. Identify types of layout and measuring tools and equipment and describe their applications and procedures for use.

8. Describe the procedures used to inspect, maintain and store layout and measuring tools and equipment.

Practical Requirements:

1. Layout lines on flat bar.
2. Layout drill gauge.
3. Use tools to cut outlines laid out on flat bar and cut out drill gauge.
4. Layout and fabricate drilling and threading exercise as per assigned project.
5. Layout and fabricate circle cutting attachment.
6. Install grinding wheels on stationary grinder.
7. Grind metals with stationary grinders.
8. Demonstrate use of wheel dresser.
9. Grind metals with a portable grinder.

WD1701 Stationary Machinery

Learning Outcomes:

- Demonstrate knowledge of stationary machinery, their applications, maintenance and procedures for use.

Duration: 12 Hours

Pre-Requisite(s): WD1190

Objectives and Content:

1. Define terminology associated with stationary machinery.
   i. capacity
   ii. rake angle
   iii. blade clearance
   iv. back gauge calibration
   v. lateral guide squaring
   vi. punching
   vii. shearing
   viii. notching
   ix. coping
   x. bending

2. Identify hazards and describe safe work practices pertaining to stationary machinery.

3. Identify types of stationary machinery and describe their characteristics and applications.
   i. presses
   ii. drill presses
   iii. stationary grinders
   iv. shears
   v. saws
   vi. press brakes
   vii. ironworkers
   viii. plate rollers

4. Describe the procedures used to set-up and operate stationary machinery.

5. Describe the procedures used to inspect and maintain stationary machinery.

Practical Requirements:

1. Set-up and operate stationary for:
   i. punching
   ii. notching
   iii. shearing

WD1602 Oxy-fuel Cutting, Heating Gouging and Welding

Learning Outcomes:

- Demonstrate knowledge of oxy-fuel equipment and accessories.
- Demonstrate knowledge of the procedures used to cut with oxy-fuel equipment.
- Demonstrate knowledge of the procedures used to gouge with oxy-fuel equipment.
- Demonstrate knowledge of the procedures used to weld with oxy-fuel equipment.
- Demonstrate knowledge of the procedures used to braze with oxy-fuel equipment.

Duration: 60 Hours

Pre-Requisite(s): TS1520, TS1530, WD1390

Objectives and Content:

1. Define terminology associated with oxy-fuel cutting, gouging and welding.

2. Identify hazards and describe safe work practices pertaining to oxy-fuel cutting, gouging and welding.
   i. personal
   ii. shop/facility
   iii. fire and explosion
   iv. equipment
   v. ventilation/fumes
   vi. storage, handling and transportation

3. Identify and interpret codes and regulations pertaining to oxy-fuel cutting, gouging and welding equipment and operations.

4. Identify oxy-fuel equipment and accessories and describe their applications and limitations.
   i. cutting
   ii. gouging
   iii. welding

iv. brazing/braze-welding
v. heating

5. Identify types of flames and describe their application and the procedures for flame adjustment.
   i. oxidizing
   ii. carburizing
   iii. neutral

6. Describe the procedures used to set-up, adjust and shut down oxy-fuel equipment.
   i. manufacturers' recommendations

7. Describe the procedures used to inspect and maintain oxy-fuel equipment.

8. Describe the procedures used to cut materials using oxy-fuel equipment.
   i. free hand
   ii. guided
      - straight edge
      - pattern
   iii. automated/semi-automated

9. Identify common cutting faults and describe the procedures to prevent and correct them.

10. Describe the procedures used to gouge using oxy-fuel equipment.

11. Describe the procedures used to weld using oxy-fuel equipment.

12. Describe the procedures used to braze/braze-weld using oxy-fuel equipment.

Practical Requirements:

1. Cutting.
   i. straight cutting
   ii. bevel cutting

2. Gouging.
    i. gouge groove in flat plate

3. Fusion Welding.
    i. closed corner
    ii. horizontal lap joint
    iii. square butt joint

4. Bronze Welding.
    i. horizontal lap joint
    ii. square butt joint

5. Silver Brazing.
    i. copper/steel tee joint
    ii. copper tee and tubing
    iii. copper to copper (silfos)

WD1610 SMAW (Shielded Metal Arc Welding) 1-Set-up, Strike and Maintain an Arc

Learning Outcomes:

- Demonstrate knowledge of shielded metal arc welding (SMAW) welding equipment, consumables and accessories.
- Demonstrate knowledge of the procedures used to set - up, adjust, operate, inspect and maintain SMAW welding equipment.
- Demonstrate knowledge of the procedures used to deposit a weld bead using SMAW welding equipment.
- Demonstrate knowledge of the procedures used to perform visual weld inspections.

Duration: 30 Hours

Pre-Requisite(s): WD1190, WD1602

Objectives and Content:

1. Describe the purpose, applications and advantages of SMAW.

2. Define terminology associated with SMAW welding.
   - i. mild steel and low alloy steel electrodes
   - ii. AC (Alternating Current)
   - iii. DC (Direct Current) (polarity)
   - iv. arc Blow
   - v. duty cycle
   - vi. rated amperage
   - vii. general precautions
   - viii. electrodes
   - ix. equipment and accessories
     - personal protective equipment
     - ground clamps
     - terminal lugs
     - electrode holders

3. Identify hazards and describe safe work practices pertaining to SMAW welding.
   i. personal
   ii. shop/facility
   iii. fire and explosion
   iv. equipment
   v. ventilation/fumes
   vi. storage/handling

4. Identify codes and standards pertaining to SMAW welding.
   i. Canadian Standards Association (CSA)
   ii. American Society of Mechanical Engineers (ASME)
   iii. American Welding Society (AWS)

5. Identify SMAW welding equipment, consumables and accessories and describe their applications.

6. Describe the procedures used to set- up and adjust SMAW welding equipment.

7. Describe the procedures used to strike and maintain an arc using SMAW welding equipment.

8. Describe the procedures and techniques used to deposit a weld bead using SMAW welding equipment
   i. arc length
   ii. travel speed
   iii. work and travel angles
   iv. visual inspection

9. Describe the procedures used to inspect and maintain SMAW welding equipment.

Practical Requirements.

1. Set-up welding equipment check the various external components.

2. Tack weld with (6011) 4311 and (7018) 4918 electrodes.

3. Deposit stringer and weave beads with (6011) 4311 and (7018) 4918 electrodes.

4. Perform padding with 4311 and 4918 electrodes.

5. Perform a visual weld inspection.

WD1620 SMAW (Shielded Metal Arc Welding) 2-Fillet Weld, All Positions

Learning Outcomes:

- Demonstrate knowledge of the procedures used to prepare base metals and joints for shielded metal arc welding (SMAW) fillet welds.
- Demonstrate knowledge of the procedures used to perform fillet welds on low carbon steel in all positions using the SMAW process.
- Demonstrate knowledge of the procedures used to perform visual weld inspections.

Duration: 60 Hours

Pre-Requisite(s): WD1610

Objectives and Content:

1. Define terminology associated with SMAW fillet welds.
   - i. tee
   - ii. lap
   - iii. corner
   - iv. composite
   - v. single-pass
   - vi. multi-pass
   - vii. plug
   - viii. slot

2. Identify the considerations when selecting consumables and determining equipment set-up for performing SMAW fillet welds in all positions.
   - i. specification requirements
   - ii. base metal
     - composition
     - thickness
   - iii. power source
   - iv. welding position
   - v. joint type and design

3. Identify the requirements and describe the procedures to store consumables used for SMAW fillet welds on low carbon steel.

4. Describe the procedures used to prepare base metals and joints for SMAW fillet welds.

5. Describe the procedures used to fillet weld on mild steel in all positions.
   i. identify position
      - limitations
   ii. identify material
   iii. determine thickness of material
   iv. determine fillet size
   v. select electrode
   vi. select current

6. Describe the procedures used to prevent and correct weld faults.

Practical Requirements:

1. Perform fillet welds in all positions on low carbon steel.
   i. tee joint
   ii. lap joint

2. Perform a visual weld inspection.

WD1631 GMAW (Gas Metal Arc Welding) 1-Set-up and Maintain an Arc

Learning Outcomes:

- Demonstrate knowledge of gas metal arc welding (GMAW) welding equipment, consumables and accessories.
- Demonstrate knowledge of the procedures used to set-up, adjust, operate, inspect and maintain GMAW welding equipment.
- Demonstrate knowledge of the procedures used to deposit a weld bead using GMAW welding equipment.
- Demonstrate knowledge the procedures used to perform visual weld inspections.

Duration: 18 Hours

Pre-Requisite(s): WD1190, WD1602

Objectives and Content:

1. Describe the purpose, applications and advantages of GMAW.

2. Define terminology associated with GMAW welding.
   - i. general precautions
   - ii. equipment and accessories
     - shielding gas and regulators
     - electrode wire
     - gun
     - feeder
     - power source
     - nozzle
     - cable connections
     - cables
     - pulsed arc machines
   - iii. metal transfers
   - iv. polarity
   - v. arc voltage
   - vi. slope and adjustment

vii. inductance
viii. travel speed
ix. wire feed speed
x. penetration
xi. travel and work angles
xii. manipulation
xiii. guide tubes
xiv. contact tips
xv. liners

3. Identify codes and standards pertaining to GMAW welding.
   i. Canadian Standards Association (CSA)
   ii. American Society of Mechanical Engineers (ASME)
   iii. American Welding Society (AWS)

4. Identify GMAW welding equipment, consumables and accessories and describe their applications.

5. Describe the procedures used to assemble and disassemble GMAW welding equipment.

6 Describe the procedures used to establish and maintain an arc using GMAW welding equipment.
   i. starting and stopping the weld
      - finishing end of the joint
   ii. filler metal
   iii. adjustment
   iv. shielding gases (pre and post weld)
   v. drive rolls
   vi. gun
   vii. stick-out
   viii. speed

7. Identify the modes of transfer relating to GMAW welding and describe their characteristics and applications.
   i. short circuiting
   ii. globular
   iii. spray
   iv. pulse

8. Describe the procedures and techniques used to deposit a weld bead using GMAW welding equipment.
   i. electrode extension
   ii. travel speed
   iii. work and travel angles
   iv. flow rates
   v. stringer
   vi. weave
   vii. stick-out
   viii. travel speed
   ix. work and travel angles
   x. visual inspection

9. Describe the procedures used to inspect, maintain and troubleshoot GMAW welding equipment.

Practical Requirements:

1. Set-up GMAW equipment.

2. Change electrode wire guide.

3. Adjust and check flow meter.

4. Deposit fillet welds on mild steel, various thickness.

5. Perform a visual weld inspection.

WD1821 GMAW (Gas Metal Arc Welding) 2-Fillet Weld All Positions, Mild Steel

Learning Outcomes:

- Demonstrate knowledge of the procedures used to prepare base metals and joints for gas metal arc welding (GMAW) fillet welds.
- Demonstrate knowledge of the procedures used to perform fillet welds on mild steel plate in all positions using the GMAW process.
- Demonstrate knowledge of the procedures used to perform visual weld inspections.

Duration: 18 Hours

Pre-Requisites: WD1631

Objectives and Content:

1. Define terminology associated with GMAW fillet welds.
   - i. conventional and pulse
   - ii. identification of position
   - iii. modes of transfer
     - short circuiting
     - globular
     - spray
     - pulse spray
   - iv. shielded gas selection
   - v. filler metals
   - vi. troubleshooting
   - vii. work and travel angles
   - viii. gun manipulation

2. Identify the considerations when selecting consumables and determining equipment set-up for performing GMAW fillet welds on mild steel in all positions.
   - i. specification requirements

ii. base metal
- composition
- thickness

iii. shielding gas selection
iv. power source
v. welding position
vi. joint type and design

3. Identify the requirements and describe the procedures to store consumables used for GMAW fillet welds on mild steel plate.

4. Describe the procedures used to prepare base metals and joints for GMAW fillet welds.

5. Describe the procedures used to perform fillet welds on mild steel plate in all positions using the GMAW process.

6. Describe the procedures used to prevent and correct weld faults.

Practical Requirements:

1. Perform fillet welds on mild steel plate.
   i. flat
   ii. vertical down
   iii. overhead

2. Perform a visual weld inspection.

WD1741 FCAW (Flux Core Arc Welding) 1- Set-up and Deposit a Weld

Learning Outcomes:

- Demonstrate knowledge of flux core arc welding (FCAW) welding equipment, consumables and accessories.
- Demonstrate knowledge of the procedures used to set- up, adjust, operate, inspect and maintain FCAW welding equipment.
- Demonstrate knowledge of the procedures used to deposit a weld bead using FCAW welding equipment.
- Demonstrate knowledge of the procedures used to perform visual weld inspections.

Duration: 18 Hours

Pre-Requisite(s): WD1190, WD1602

Objectives and Content:

1. Describe the purpose, applications and advantages of FCAW.

2. Define terminology associated with FCAW welding.
   - i. general precautions
   - ii. equipment and accessories
     - shielding gas and regulators
     - electrode wire
       - flux cored
       - metal cored
     - gun
     - feeder
     - power source
     - nozzle
     - cable connections
     - cables
   - iii. metal transfers
   - iv. polarity
   - v. arc voltage
   - vi. slope and adjustment
   - vii. inductance

viii. travel speed
ix. wire feed speed
x. penetration
xi. travel and work angles
xii. manipulation
xiii. guide tubes
xiv. contact tips
xv. liners

3. Identify codes and standards pertaining to FCAW welding.
   i. Canadian Standards Association (CSA)
   ii. American Society of Mechanical Engineers (ASME)
   iii. American Welding Society (AWS)

4. Identify FCAW welding equipment, consumables and accessories and describe their applications.

5. Describe the procedures used to assemble and disassemble FCAW welding equipment.

6. Describe the procedures and techniques used to deposit a satisfactory weld.
   i. starting and stopping the weld
   ii. filler metal
   iii. adjustment
   iv. shielded gases (pre and post weld)
   v. drive rolls
   vi. gun
   vii. stick-out
   viii. speed

7. Describe the procedures used to inspect, maintain and troubleshoot FCAW welding equipment.

Practical Requirements:

1. Set-up FCAW equipment, establish and maintain an arc.

2. Perform a visual weld inspection.

WD1360 MCAW (Metal Core Arc Welding) 1- Set-up and Deposit a Weld

Learning Outcomes:

- Demonstrate knowledge of metal core arc welding (MCAW) welding equipment, consumables and accessories.
- Demonstrate knowledge of the procedures used to set-up, adjust, operate, inspect and maintain MCAW welding equipment.
- Demonstrate knowledge of the procedures used to deposit a weld bead using MCAW welding equipment.
- Demonstrate knowledge of the procedures used to perform visual weld inspections.

Duration: 18 Hours

Pre-Requisite(s): WD1190, WD1602

Objectives and Content:

1. Describe the purpose, applications and advantages of MCAW.

2. Define terminology associated with MCAW welding.
   - i. general precautions
   - ii. equipment and accessories
     - shielding gas and regulators
     - electrode wire
       - flux cored
       - metal cored
     - gun
     - feeder
     - power source
     - nozzle
     - cable connections
     - cables
   - iii. metal transfers
   - iv. polarity
   - v. arc voltage
   - vi. slope and adjustment
   - vii. inductance
   - viii. travel speed

ix. wire feed speed
x. penetration
xi. travel and work angles
xii. manipulation
xiii. guide tubes
xiv. contact tips
xv. liners

3. Identify codes and standards pertaining to MCAW welding.
   i. Canadian Standards Association (CSA)
   ii. American Society of Mechanical Engineers (ASME)
   iii. American Welding Society (AWS)

4. Identify MCAW welding equipment, consumables and accessories and describe their applications.

5. Describe the procedures used to assemble and disassemble MCAW welding equipment.

6. Describe the procedures and techniques used to deposit a satisfactory weld.
   i. starting and stopping the weld
   ii. filler metal
   iii. adjustment
   iv. shielded gases (pre and post weld)
   v. drive rolls
   vi. gun
   vii. stick-out
   viii. speed

7. Describe the procedures used to inspect, maintain and troubleshoot MCAW welding equipment.

Practical Requirements:

1. Set-up MCAW equipment, establish and maintain an arc.

2. Perform a visual weld inspection.

WD1641 GTAW (Gas Tungsten Arc Welding) 1-Set-up and Deposit a Weld

Learning Outcomes:

- Demonstrate knowledge of gas tungsten arc welding (GTAW) equipment, consumables and accessories.
- Demonstrate knowledge of the procedures used to set-up, adjust, operate, inspect and maintain GTAW welding equipment.
- Demonstrate knowledge of the procedures used to deposit a weld bead using GTAW equipment.
- Demonstrate knowledge of the procedures used to perform visual weld inspections.

Duration: 18 Hours

Pre-Requisite(s): WD1190, WD1602

Objectives and Content:

1. Describe the purpose, applications and advantages of GTAW.

2. Define terminology associated with GTAW welding.
   - i. equipment and accessories
     - power sources
     - air-cooled torches
     - water-cooled torches
     - flow meters
   - ii. tungsten electrodes
   - iii. current requirement
   - iv. shielding gases
   - v. travel and work angles
   - vi. filler rods
   - vii. collet
   - viii. collet body
   - ix. cup
   - x. high frequency

3. Identify GTAW welding equipment, consumables and accessories and describe their applications.

4. Describe the procedures used to assemble and disassemble GTAW welding equipment.

5. Describe the procedures used to establish and maintain an arc using GTAW welding equipment.

6. Describe the procedures and techniques used to deposit a weld bead using GTAW welding equipment.
   i. with filler metal
   ii. without filler metal

7. Describe the procedures used to inspect, maintain and troubleshoot GTAW welding equipment

Practical Requirements:

1. Set-up GTAW equipment.

2. Run beads on mild steel plate.

3. Shut-down equipment.

4. Perform a visual weld inspection.

WD1651 Plasma Arc Cutting and Gouging

Learning Outcomes:

- Demonstrate knowledge of plasma arc equipment and accessories.
- Demonstrate knowledge of the procedures used to cut with plasma arc equipment.
- Demonstrate knowledge of the procedures used to gouge with plasma arc equipment.

Duration: 12 Hours

Pre-Requisite(s): WD1190

Objectives and Content:

1. Define terminology associated with plasma arc cutting and gouging.

2. Describe the plasma arc process.
   - i. general precautions
   - ii. equipment and accessories
     - types of torches
     - electrodes and tips
   - iii. types of arcs
   - iv. gases
   - v. power source
   - vi. procedures to set-up equipment and check its operation

3. Describe the procedures used to set-up, adjust and shut down plasma arc equipment.

4. Describe the procedures used to inspect and maintain plasma arc equipment.

5. Describe the procedures used to cut using plasma arc equipment.

6. Describe the procedures used to gouge using plasma arc equipment.

Practical Requirements:

1. Perform plasma arc cutting and gouging operations.

WD1661 Blueprint Reading 1 (Basic)

Learning Outcomes:

- Demonstrate a basic knowledge of blueprints and their purpose.
- Demonstrate knowledge of interpreting and extracting information from drawings.

Duration: 30 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Identify the types of orthographic, oblique and isometric drawings and their purposes.

2. Identify the various types of lines used on blueprints and describe their applications.
   i. centre
   ii. hidden
   iii. dimension
   iv. extension
   v. object
   vi. break
   vii. long
   viii. short

3. Identify views and describe their purpose.
   i. front
   ii. right side
   iii. left side
   iv. top (plan)
   v. bottom
   vi. back
   vii. section
   viii. detailed

4. Identify notes and specifications and describe their purpose.
    i. parts of objects
    ii. title block
    iii. revisions
    iv. drawing numbers

5. Identify sectioning practices and describe their purpose.
    i. enlarged
    ii. isometric
    iii. auxiliary
    iv. rotation
    v. developed view
    vi. detail

6. Identify and interpret common abbreviations and symbols.
    i. supplementary symbols
    ii. outdated and preferred symbols
    iii. references
    iv. location of symbols on drawings

Practical Requirement(s):

None.

WD1670 Blueprint Reading 2 (Welding Symbols)

Learning Outcomes:

- Demonstrate knowledge of the procedures used to interpret welding abbreviations and symbols.

Duration: 30 Hours

Pre-Requisite(s): WD1660

Objectives and Content:

1. Identify common welding symbols and abbreviations and describe their applications.
   - i. back gouging
   - ii. melt through
   - iii. finishing
   - iv. processes

2. Identify and interpret the symbols for fillet welds.
   - i. pitch
   - ii. dimension
   - iii. shape
   - iv. finishing

3. Identify and interpret the symbols for groove welds.
   - i. preparation
     - depth
     - angle
   - ii. root spacing

4. Identify and interpret the symbols for melt-through welds.
   - i. root spacing
   - ii. preparation angle
   - iii. backing
   - iv. fusible inserts

5. Identify and interpret the symbols for plug welds.
   - i. dimensions
   - ii. bevel angle
   - iii. filler thickness
   - iv. number

v. pitch
vi. shape

6. Identify and interpret weld finishing symbols.
   i. grinding
   ii. machining
   iii. chipping
   iv. hammering
   v. rolling
   vi. unspecified

7. Identify and interpret pipe welding symbols.

Practical Requirements:

1. Locate and interpret abbreviations and symbols relevant to the trade
   i. fillet welds
   ii. groove welds
   iii. melt through
   iv. weld finishing
   v. plug welds

WD3020 Shop Drawings and Structural Components for Fabrication

Learning Outcomes:

- Demonstrate knowledge of structural components, their characteristics and applications.
- Demonstrate knowledge of joints, their applications and the procedures used to prepare them for welding operations.
- Demonstrate knowledge of the procedures used to identify structural components from shop drawings.
- Demonstrate knowledge of the procedures used to draw templates for structural parts.
- Demonstrate knowledge of the procedures used to control welding distortion.

Duration: 30 Hours

Pre-Requisite(s): WD1670

Objectives and Content:

1. Identify types of structural steel shapes and describe the procedures used to determine their dimensions.
   i. S-beam (standard)
   ii. WF-beam (wide flanged beam)
   iii. angle iron
   iv. channel
   v. I-beam
   vi. pipe and tubing
   vii. sheet
   viii. plate
   ix. flat bar
   x. square stock

2. Identify and interpret methods used to prepare shapes of various structural components found on shop drawings.
   i. column
   ii. beam
   iii. truss
   iv. purlin
   v. joists

3. Describe the procedures used to work accurately from shop drawings or sketches.
   i. read shop drawings
      - beams

- columns
- stairs
- brace

ii. verify dimensions
iii. cut parts as per shop drawings
- notch
- cut
- cope

4. Describe the procedures used to draw templates for structural parts.

5. Describe control of shrinkage in weldments.
i. welding sequence
- back step
- staggered intermittent
- chain intermittent

ii. weld size and number of passes
iii. balancing of shrinkage and other forces
iv. pre-heat and post-heat requirements
v. pre-bending/offsetting

Practical Requirements:

1. Interpret instructions and symbols found on working drawings.

WD2910 Layout and Template Development Fundamentals

Learning Outcomes:

- Demonstrate knowledge of pattern and template development and its purpose.
- Demonstrate knowledge of the procedures used to develop simple templates.

Duration: 30 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Describe the purpose and applications of templates.

2. Define terminology associated with layout and template development.

3. Describe methods used to establish line of cut using template.

4. Describe layout tools and procedures.

5. Describe template development using triangular, radial lines, and parallel lines.

6. Describe layout operations as required to develop wrap around templates for use in welded fabrication of joints in pipe and tubing for:
   i. a single cut elbow
   ii. a 90° double cut elbow
   iii. a tee
   iv. a 30° lateral

Practical Requirements:

1. Develop templates.
   i. hole-punching drilling
   ii. double cut elbow
   iii. tee

WD1682 Metallurgy

Learning Outcomes:

- Demonstrate knowledge of metals and their characteristics.
- Demonstrate knowledge of metallurgical principles.
- Demonstrate knowledge of expansion and contraction.

Duration: 18 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Define terminology associated with metallurgy.
    i. ferrous
    ii. low carbon
    iii. medium carbon
    iv. high carbon
    v. alloy steel
    vi. non-ferrous
    vii. low alloy steel
    viii. heat treated steel
    ix. stainless steel
    x. duplex stainless steel
    xi. spark test
    xii. tensile strength
    xiii. elasticity
    xiv. ductility
    xv. hardness
    xvi. compressive strength
    xvii. fatigue strength
    xviii. impact strength
    xix. thermal conductivity
    xx. thermal expansion
    xxi. brittleness

xxii. forging process
xxiii. casting process
xxiv. peening

2. Describe classification numbering systems for metals.
   i. Society of Automotive Engineers (SAE)
   ii. American Iron and Steel Institute (ANSI)
   iii. American Society of Testing and Materials (ASTM)
   iv. Canadian Standards Association (CSA)

3. Identify the processes used in the heat treatment of metals.
   i. stress relieving
   ii. quenching
   iii. hardening
   iv. tempering
   v. annealing
   vi. normalizing

4. Describe the effects of hot and cold working of metals.
   i. stress
   ii. contraction
   iii. expansion
   iv. distortion
   v. work hardening

Practical Requirements:

None.

WD1691 Quality Control

Learning Outcomes:

- Demonstrate knowledge of quality control measures used to verify compliance with design and code specifications.
- Demonstrate knowledge of inspection and testing methods and their applications.

Duration: 15 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Define terminology associated with quality control.
   - i. mill certificates
   - ii. data sheets
   - iii. paint thickness
   - iv. non-destructive
     - visual
     - radiography
     - magnetic particle
     - ultrasonic
     - dye penetrant test
     - leak test
     - pneumatic test (air and soap, inert gas)
     - hydrostatic test (water pressure)

2. Interpret codes and standards pertaining to quality control.

3. Interpret information pertaining to quality control found on drawings and specifications.

4. Identify tools and equipment relating to quality control and describe their applications and procedures for use.

5. Explain quality control, its purpose and applications.

6. Explain the methods used to identify and verify materials.
   i. codes, standards and specifications
   ii. mill certificates
   iii. colour coding of materials

7. Identify methods of inspection and testing and describe their characteristics, limitations and applications.
   i. destructive
   ii. non-destructive

8. Describe the procedures used to verify compliance with design and code specifications.
   i. perform visual inspections
   ii. verify measurements
   iii. perform post welding checks
   iv. mark materials and parts
   v. verify layout

9. Describe the procedures used to document quality control measures.

Practical Requirements:

None.

WD1721 Jigs and Fixtures

Learning Outcomes:

- Demonstrate knowledge of basic jigs and fixtures and their applications.

Duration: 12 Hours

Pre-Requisite(s): WD1610 or WD1631 or WD1641 or WD1741 or WD1360

Objectives and Content:

1. Define terminology associated with jigs and fixtures.
2. Explain the purpose, applications and limitations of basic jigs and fixtures.
3. Identify types of basic jigs and fixtures and describe their characteristics and applications.
4. Describe the procedures used to fabricate basic jigs and fixtures.

Practical Requirements:

1. Fabricate a jig or fixture.

WD1801 SMAW (Shielded Metal Arc Welding) 3 - Groove Weld 1G, 2G, 1GF, 2GF, 3GF and 4GF

Learning Outcomes:

- Demonstrate knowledge of the procedures used to prepare base metals and joints for shielded metal arc welding (SMAW) groove welds.
- Demonstrate knowledge of the procedures used to perform groove welds on low carbon steel plate in all positions using the SMAW process.
- Demonstrate knowledge of the procedures used to perform visual weld inspections.

Duration: 120 Hours

Pre-Requisite(s): WD1620

Objectives and Content:

1. Define terminology associated with SMAW groove welds.
   - i. butt joint
   - ii. root landing/face
   - iii. root opening
   - iv. bevel landing
   - v. root penetration
   - vi. 1-G
   - vii. 2-G
   - viii. 1GF
   - ix. 2GF
   - x. 3GF
   - xi. 4GF
   - xii. F3
   - xiii. F4

2. Describe the procedures used to perform groove welds in the 1G, 2G, 1GF, 2GF, 3GF, and 4GF positions.
   - i. joint design
   - ii. inspection and testing

iii. electrode angles
iv. electrode manipulation
v. amperage adjustment
vi. identify position and limitations
vii. identify material
viii. determine thickness of material
ix. select electrode
x. select current
xi. penetration

3. Describe the procedures used to prepare base metals and joints for SMAW groove welds.

4. Describe the procedures used to perform groove welds on low carbon steel plate in all positions using SMAW process.

5. Describe the procedures used to test welds and prevent and correct weld faults.

Practical Requirements:

1. Weld groove butt joints on 3/8” mild steel plate in 1G, 2G, 1GF, 2GF, 3GF, and 4GF positions using F3 and F4 electrodes.

2. Perform weld tests.

3. Perform a visual weld inspection.

WD1815 Fillet and Groove Weld, Medium and High Carbon Steel using FCAW, GMAW, GTAW, MCAW and SMAW

Learning Outcomes:

- Demonstrate knowledge of the procedures used to prepare medium and high carbon steel plate and joints for FCAW, GMAW, GTAW, MCAW and SMAW fillet and groove welds.
- Demonstrate knowledge of the procedures used to perform fillet and groove welds on medium and high carbon steel plate in all positions using the FCAW, GMAW, GTAW, MCAW and SMAW processes.

Duration: 6 Hours

Pre-Requisite(s): WD1610 or WD1631 or WD1641 or WD1741 or WD1360

Objectives and Content:

1. Define terminology associated with FCAW, GMAW, GTAW, MCAW and SMAW fillet and groove welds on medium and high carbon steel plate.

2. Identify the considerations when selecting consumables and determining equipment set-up for performing FCAW, GMAW, GTAW, MCAW and SMAW fillet and groove welds on medium and high carbon steel plate.
   i. specification requirements
   ii. base metals
      - composition
      - thickness
   iii. power source
   iv. welding position
   v. joint type and design

3. Identify the requirements and describe the procedures to store consumables used for FCAW, GMAW, GTAW, MCAW and SMAW fillet and groove welds on medium and high carbon steel plate.

4. Describe the procedures used to prepare medium and high carbon steel plate and joints for FCAW, GMAW, GTAW, MCAW and SMAW fillet and groove welds.

5. Describe the procedures used to perform fillet and groove welds on medium and high carbon steel plate using FCAW, GMAW, GTAW, MCAW and SMAW processes.
   i. temperature measuring devices
   ii. pre-heating
   iii. interpass temperature
   iv. post-heating
   v. stress relieving

6. Describe the procedures used to prevent and correct weld faults.

Practical Requirements:

None.

WD1832 GMAW (Gas Metal Arc Welding) 3-Groove Weld, All Positions, Mild Steel

Learning Outcomes:

- Demonstrate knowledge of the procedures used to prepare base metals and joints for gas metal arc welding (GMAW) groove welds.
- Demonstrate knowledge of the procedures used to perform groove welds on mild steel plate in all positions using the GMAW process.
- Demonstrate knowledge of the procedures used to perform visual weld inspections.

Duration: 30 Hours

Pre-Requisite(s): WD1821

Objectives and Content:

1. Define terminology associated with GMAW groove welds.

2. Identify the considerations when selecting consumables and determining equipment set-up for performing GMAW fillet and groove welds on mild steel plate.
   i. specification requirements
   ii. base metals
      - composition
      - thickness
   iii. power source
   iv. welding position
   v. joint type and design

3. Identify the requirements and describe the procedures to store consumables used for GMAW groove welds on mild steel plate.

4. Describe the procedures used to prepare base metal and joints for GMAW groove welds.

5. Describe the procedures used to perform groove welds on mild steel plate in all positions using GMAW process.

6. Describe the procedures used to prevent and correct weld faults.

7. Perform groove welds on mild steel plate in all positions.

Practical Requirements:

1. Perform groove welds in flat, horizontal, and vertical down positions on mild steel plate using the GMAW process.

2. Perform a visual weld inspection.

WD1871 Build Up of Metal Parts

Learning Outcomes:

- Demonstrate knowledge of the procedures used to build up metal parts.
- Demonstrate knowledge of the procedures used to surface base metals.

Duration: 12 Hours

Pre-Requisite(s): WD1610 or WD1631 or WD1641 or WD1741 or WD1360

Objectives and Content:

1. Define terminology associated with build-up and surfacing of metal parts.
   - i. hard surfacing
   - ii. sequence
   - iii. surfacing materials
   - iv. types of wear
     - abrasion
     - impact
     - corrosion

2. Explain the purpose and applications of building up and surfacing of metal parts.

3. Identify the processes used to build up and surface metal parts.
   - i. shielded metal arc welding (SMAW)
   - ii. gas metal arc welding (GMAW)
   - iii. flux core arc welding (FCAW)
   - iv. metal core arc welding (MCAW)
   - v. gas tungsten arc welding (GTAW)
   - vi. submerged arc welding (SAW)
   - vii. oxy fuel gas welding (OFW)

4. Identify types of wear requiring hard surfacing.
   - i. abrasion
   - ii. impact
   - iii. corrosion

iv. erosion

5. Describe the procedures used to build up and surface metal parts using welding processes.
   i. identify base metal
   ii. identify effects of heating and cooling
   iii. identify effects of dilution
   iv. select process
   v. select filler material
   vi. determine sequence

Practical Requirements:

1. Build up a component with any process.

WD1892 FCAW (Flux Core Arc Welding) 2-Fillet and Groove Weld Plate, All Positions

Learning Outcomes:

- Demonstrate knowledge of the procedures used to prepare plate for flux core arc welding (FCAW).
- Demonstrate knowledge of the procedures used to perform welds on plate in all positions using the FCAW process.
- Demonstrate knowledge of the procedures used to perform visual weld inspections.

Duration: 80 Hours

Pre-Requisite(s): WD1741

Objectives and Content:

1. Define terminology associated with FCAW fillet and groove welds.
   i. stringer
   ii. weave
   iii. stick-out
   iv. travel speed
   v. work and travel angles
   vi. visual inspection

2. Identify the considerations when selecting consumables and determining equipment set-up for performing FCAW fillet and groove welds on plate.
   i. specification requirements
   ii. base metals
      - composition
      - thickness
   iii. power source
   iv. welding position
   v. joint type and design

3. Identify the requirements and describe the procedures to store consumables for FCAW welding of plate.

4. Describe the procedures used to prepare plate for FCAW fillet and groove welds.

5. Describe the procedures used to perform fillet and groove welds on plate using the FCAW process.
   i. temperature measuring devices
   ii. pre-heating
   iii. inter-pass temperature
   iv. post-heating
   v. stress relieving

6. Describe the procedures used to prevent and correct weld faults.

Practical Requirements:

1. Perform FCAW welds.
   i. 1GF
   ii. 2GF
   iii. 3GF
   iv. 4 GF

2. Perform a visual weld inspection.

WD1900 Air Carbon Arc Cutting and Gouging

Learning Outcomes:

- Demonstrate knowledge of the procedures used to remove a weld from a joint using the air carbon arc (CAC-A) process.
- Demonstrate knowledge of the procedures used to prepare joints using the air carbon arc (CAC-A) process.

Duration: 15 Hours

Pre-Requisite(s): WD1610

Objectives and Content:

1. Define terminology associated with electric arc cutting and gouging.

2. Identify hazards and describe safe work practices pertaining to electric arc cutting and gouging.
   i. personal
   ii. shop/facility
   iii. fire and explosion
   iv. equipment
   v. ventilation/fumes
   vi. storage, handling and transportation
   vii. noise

3. Describe the purposes and applications of air carbon arc cutting and gouging.

4. Describe the procedures used to remove a weld from a joint using the CAC-A (Air Carbon Arc) process.
   i. types of carbon electrodes
   ii. air pressure
   iii. electrode angles
   iv. polarity
   v. constant current power source

5. Describe groove preparation using the CAC-A process.
   i. U-joint
   ii. J-joint
   iii. single-vee
   iv. single-bevel joints

6. Describe the procedures used to back gouge a welded joint.

Practical Requirements:

1. Set-up equipment for gouging, select the correct air pressure, carbon electrode and polarity.

2. Back gouge to sound metal a single vee groove butt joint.

WD1430 Hoisting, Lifting, Rigging and Access Equipment

Learning Outcomes:

- Demonstrate knowledge of hoisting, lifting, rigging and access equipment, their applications, limitations and procedures for use.
- Demonstrate knowledge of the procedures used to perform hoisting and lifting operations.
- Demonstrate knowledge of calculations required prior to hoisting and lifting operations.

Duration: 30 Hours

Pre-Requisite(s): WD1390

Objectives and Content:

1. Define terminology associated with hoisting, lifting, rigging and access equipment.

2. Identify hazards and describe safe work practices pertaining to hoisting, lifting rigging and access equipment.

3. Identify regulations pertaining to hoisting, lifting rigging and access equipment.

4. Identify types of access equipment and describe their characteristics and applications.
   i. scaffolding
   ii. ladders
   iii. man lifts
   iv. elevated work platforms

5. Identify types of fall protection and fall arrest equipment and describe their applications and procedures for use.

6. Identify types of rigging equipment and accessories and describe their limitations, applications and procedures for use.

7. Identify types of hoisting and lifting equipment and accessories and describe their applications and procedures for use.
   i. jacks
   ii. hoists
   iii. cranes
      - overhead travelling cranes (OTC)
      - gantry

8. Describe the procedures used to inspect, maintain and store hoisting, lifting, rigging and access equipment.

9. Describe the procedures used to rig material/equipment for lifting.

10. Describe the procedures to attach and use tag lines.

11. Describe the procedures used to ensure the work area is safe for lifting.
   i. supervision of lift
   ii. securing work area
   iii. communication

12. Identify and describe the procedures used to communicate during hoisting, lifting and rigging operations.
   i. hand signals
   ii. electronic communications
   iii. audible and visual warnings

13. Identify the factors to consider when selecting rigging equipment.
   i. load characteristics
   ii. sling angle
   iii. environment
      - chemical hazards
      - grounding requirements
      - weather conditions
   iv. working load limit

14. Describe the procedures used to perform a lift.
   i. pre-lift checks
   ii. lifting load

iii. placement of load
iv. post-lift inspection

Practical Requirements:

None.

WD1790 Work Planning

Learning Outcomes:

- Demonstrate knowledge of the procedures used to plan and organize work tasks.

Duration: 6 Hours

Pre-Requisite(s): All Level I Technical Courses

Objectives and Content:

1. Identify sources of information relevant to work task planning.
   i. supervisor
   ii. documentation
   iii. drawings
   iv. related professionals
   v. suppliers
   vi. clients

2. Identify the considerations when planning work tasks.
   i. scheduling
   ii. sequence
   iii. material selection and handling
   iv. equipment selection

3. Describe the procedures used to organize, move and store tools, equipment, materials and supplies.

Practical Requirements:

None.

OT1150 Workplace Exposure

Learning Outcomes:

- Demonstrate knowledge of theory and practical applications of trade skills, safe work practices, appropriate workplace behaviour, and time management through exposure to the trade in an authentic work environment.

NOTE: The pre-apprentice must be supervised at the workplace. Supervision staff must be appropriately qualified to undertake that role – preferably a certified Journeyperson for the trade.

Duration: 80 Hours

Pre-Requisite(s): None

AM1000 Introduction to Essential Skills

Learning Outcomes:

- Demonstrate knowledge of the nine nationally recognized essential skills.
- Demonstrate knowledge of the essential skills levels of complexity.
- Demonstrate knowledge of the essential skills required for the learners chosen trade.
- Demonstrate an awareness of essential skills assessments.

Duration: 9 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Identify and describe the essential skills recognized by the Government of Canada through the Office of Literacy and Essential Skills (OLES).
   i. reading
   ii. document use
   iii. numeracy
   iv. writing
   v. oral communication
   vi. working with others
   vii. thinking
   viii. computer use
   ix. continuous learning

2. Describe the Levels of Complexity measurement assigned to essential skills.

3. Identify the essential skills, along with their complexity level, identified as necessary for the learner's trade.
   i. RSOS / NOA content[1]
   ii. OLES Essential Skills Profiles[2]
   iii. OLES tools and support for apprentices and tradespersons[3]

4. Describe the nature and purpose of essential skills assessment.
   i. self-assessment & formal assessment tools
   ii. indicators of deficiencies
   iii. suggestions for improvement

5. Describe the benefits of essential skills improvement.
   i. confidence at work
   ii. employability
   iii. success in apprenticeship

iv. wage & job advancement

Practical Requirements:

1. Complete an essential skills self-assessment addressing numeracy, document use and reading. The online **Government of Canada Essential Skills Indicator**[4] and **Essential Skills Self-Assessment for the Trades**[5] are to be used unless the instructor provides a similar assessment tool or tools.

2. Participate in a group discussion about the impact of gaps in essential skills that may be revealed by the self-assessments completed, and the value of improving essential skills.

Students are graded complete or incomplete on this practical work, no grade is permitted for self-assessment performance. However, completion of the practical requirements is mandatory for completion of this unit.

Resources:

All footnotes are in the companion document, Resources for Introduction to Essential Skills, which is available online from Apprenticeship and Trades Certification.

AM1101 Math Essentials

Note: It is recommended that AM1101 be delivered in the first semester of the Pre-employment program.

Learning Outcomes:

- Demonstrate knowledge of essential numeracy skills.
- Demonstrate knowledge of mathematics as a critical element of the trade environment.
- Demonstrate knowledge of mathematical principles in trade problem solving situations.
- Demonstrate the ability to solve simple mathematical word problems.

Duration: 42 Hours

Pre-Requisite(s): None

Objectives and Content:

Wherever possible, the instructor is expected to use trade specific examples to reinforce the course objectives.

1. Describe whole number operations.
   i. read, write, count, round off, add, subtract, multiply and divide whole numbers

2. Describe the application of the order of operations in math problems.

3. Describe fraction and mixed number operations.
   i. read, write, add, subtract, multiply and divide fractions

4. Describe decimal operations.
   i. read, write, round off, add, subtract, multiply and divide decimals

5. Describe percent/decimal/fraction conversion and comparison.
   i. convert between fractions, decimals and percents

6. Identify percentage operations.
   i. read and write percentages
   ii. calculate base, rates and percentages

7. Identify ratio and proportion operations.
   i. use a ratio comparing two quantities with the same units

ii. use a proportion comparing two ratios

8. Describe the use of the imperial measurement system in math problems.
   i. identify units of measurement
      - length
      - mass
      - area
      - volume
      - capacity

9. Describe the use of the metric measurement system in math problems.
   i. identify units of measurement
      - length
      - mass
      - area
      - volume
      - capacity

10. Identify angles, lines and geometric shapes.
    i. use a protractor to measure angles
    ii. determine whether an angle is right, acute or obtuse
    iii. identify parallel, perpendicular, horizontal and vertical lines
    iv. identify types of triangles, quadrilaterals, and 3-dimensional shapes

11. Describe estimation strategies.
    i. estimate a linear measure using a referent
    ii. estimate length, area and volume of objects in metric and imperial systems

12. Describe problem solving that involves linear measurement using instruments such as rulers or tape measures, in the metric and imperial systems.

Practical Requirements:

1. To emphasize or further develop specific knowledge objectives, students will be required to complete practical demonstrations which confirm proper application of mathematical theory to job skills.

AM1321 Welding Math Fundamentals

Learning Outcomes:

- Demonstrate knowledge of mathematical concepts in the performance of trade practices.
- Demonstrate knowledge of mathematics as a critical element of the trade environment.
- Solve mathematical word problems
- Demonstration knowledge of mathematical principles for the purposes of problem solving, job and materials estimation, measurement, calculation, system conversion, diagram interpretation and scale conversions, formulae calculations, and geometric applications.

Duration: 42 Hours

Pre-Requisite(s): AM1101

Objectives and Content:

The instructor is required to use trade specific examples to reinforce the course objectives.

1. Describe percent/decimal/fraction conversions and comparisons in trade specific situations.

2. Describe ratios and proportions as they relate to trade specific problems.

3. Describe the use of the Imperial and Metric measurement systems in trade specific applications.

4. Describe Imperial and Metric conversions in trade specific situations.
   i. convert between imperial and metric measurements
   ii. convert to another unit within the same measurement system

5. Describe how to manipulate formulas using cross multiplication, dividing throughout, elimination, and substitution to solve trade specific problems.
   i. right angle triangles
   ii. area
   iii. volume
   iv. perimeter
   v. density

6. Identify calculations involving geometry that are relevant to the trade.
   i. angle calculations

ii. circle calculations

7. Identify math processes used to complete administrative trade tasks.
   i. material estimation
   ii. material costing
   iii. time & labour estimates
   iv. taxes & surcharges
   v. markup & projecting revenue

Practical Requirements:

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

Note: This course is **non-transferable** to other trades programs, and **not eligible for prior learning assessment**. Students completing training in this trade program are required to complete this math course. Apprentice transfers under Provincial / Territorial Mobility agreements may be exempt from this requirement.

CM2161 Communication Essentials

Learning Outcomes:

- Demonstrate knowledge of the importance of well-developed writing and oral communication skills in the workplace.
- Demonstrate knowledge of the principles of effective workplace writing.
- Demonstrate knowledge of the purpose of various types of workplace documentation and workplace meetings.
- Demonstrate knowledge of the importance of effective interpersonal skills in the workplace.
- Demonstrate knowledge of effective job search techniques

Duration: 36 Hours

Pre-Requisite(s): None

Objectives and Content:

Wherever possible, the instructor is expected to use trade specific examples to reinforce the course objectives.

1. Define communications terminology used in the trade.

2. Identify the principles of effective workplace writing.
   i. grammar, punctuation, mechanics
   ii. sentence and paragraph construction
   iii. tone, language, and word choice
   iv. the writing process
      - planning
      - writing
      - editing/revising

3. Identify sources of information used to communicate in the workplace.
   i. regulations
   ii. codes
   iii. OH&S requirements
   iv. prints, drawings and specifications
   v. company and client documentation

4. Identify types and purposes of informal workplace documents.
   i. reports
      - incident
      - process
      - progress

ii. common trade specific forms
iii. primary and secondary methods of information gathering
iv. accuracy and completeness in reports and forms

5. Demonstrate an understanding of interpersonal communications in the workplace.
   i. recognize group dynamics
   ii. contribute information and expertise
   iii. individual learning styles
      - audible
      - visual
      - experiential
      - theoretical
   iv. recognize respectful and open communication
   v. accept and provide feedback
   vi. interpret non-verbal communication cues
      - body language
      - signals

6. Demonstrate an understanding of effective oral communication skills.
   i. listening
      - receiving, understanding, remembering, reflecting, evaluating, paraphrasing, and responding
   ii. speaking
      - using clear and proper words
      - tone, style, and vocabulary
      - brevity
   iii. common workplace oral communication situations
      - introducing self and others
      - telephone conversations
      - tool box/safety talks
      - face-to-face conversations
      - communicating with co-workers, supervisors, clients, and other trades people

7. Identify common practices related to workplace meetings.
   i. meeting formats
   ii. meeting preparation
   iii. agendas and minutes
   iv. roles, responsibilities, and etiquette of meeting participants

8. Identify acceptable workplace use of communication technologies
   i. cell / smart phone etiquette
   ii. voice mail
   iii. e-mail
   iv. texting / messaging through social media

v. teleconferencing / videoconferencing for meetings and interviews
vi. social networking
vii. other emerging technologies

9. Demonstrate an understanding of effective job search techniques
   i. employment trends, opportunities, and sources of employment
   ii. job ads and the importance of fitting qualifications to job requirements
   iii. resumes
      - characteristics of effective resumes
      - types of resumes
      - principles of resume formatting
   iv. effective cover letters
   v. job interview process
      - pre-interview preparation
      - interview conduct
      - post-interview follow up

Practical Requirements:

1. Write a well-developed, coherent, unified paragraph.

2. Complete a trade-related form.

3. Prepare an agenda for a toolbox safety talk.

4. Participate in a simulated oral workplace communication situation.

5. Prepare a resume.

SD1761 Workplace Essentials

Note: It is recommended that SD1761 be delivered in the second half of Pre-employment training.

Learning Outcomes:

- Demonstrate knowledge of workplace requirements in the areas of personal responsibility, unions, workers compensation, workers' rights, and human rights.
- Demonstrate knowledge of quality customer service.

Duration: 24 Hours

Pre-Requisite(s): None

Objectives and Content:

Wherever possible, the instructor is expected to use trade specific examples to reinforce the course objectives.

1. Identify personal responsibilities and attitudes that contribute to on-the-job success.
   i. Asking questions
   ii. Working safely
   iii. Accepting constructive feedback
   iv. Time management & punctuality
   v. Respect for authority
   vi. Stewardship of materials, tools and properties

2. Define unions and identify their role in the workplace.
   i. purpose of unions
   ii. common union structure
   iii. unions in this trade

3. Demonstrate an understanding of the Worker's Compensation process.
   i. aims, objectives, and benefits of the Workplace Health, Safety and Compensation Commission
   ii. role of the workers advisor
   iii. internal review process

4. Demonstrate an understanding of worker's rights.
   i. labour standards
   ii. regulations, including:
      - hours of work & overtime
      - termination of employment
      - minimum wages & allowable deductions
      - statutory holidays, vacation time, and vacation pay

5. Demonstrate an understanding of human rights issues.
   i. awareness of the Human Rights Code and the role of the Human Rights Commission
   ii. categories of discrimination and strategies for prevention
      - direct
      - systemic
      - adverse effect
   iii. types of discrimination
      - race
      - ethnic origin
      - colour
      - religion
      - age
      - gender identify
      - sexual orientation
      - marital status
      - family status
      - disability
      - criminal conviction that has been pardoned
   iv. conduct that constitutes harassment and discrimination
      - objectionable conduct
      - comments or displays made either on a one-time or continuous basis that demeans, belittles, or causes personal humiliation or embarrassment to the recipient
   v. the value of diversity in the workplace
      - culture
      - gender identify
      - sexual orientation

6. Demonstrate an understanding of quality customer service.
    i. importance of quality service
    ii. barriers to quality service
        - physical and physiological
        - cultural
        - technological
    iii. customer needs & common methods for meeting them
    iv. characteristics & importance of a positive attitude
    v. interactions with challenging customers
    vi. addressing complaints and resolve conflict

Practical Requirements:

None.

MC1062 Computer Essentials

Course Outcomes:

- Demonstrate knowledge of desktop/laptop and mobile computers and their operation.
- Demonstrate knowledge of word processing and spreadsheet software, internet browsers and their applications.
- Demonstrate knowledge of e-mail applications and procedures.
- Demonstrate an awareness of security issues related to computers.
- Demonstrate an awareness of online learning using computers.

Duration: 15 Hours

Pre-Requisite(s): None

Objectives and Content:

When possible, the instructor is expected to use trade specific examples to reinforce the course objectives.

1. Identify computer types used in the workplace, and the characteristics of each.
   i. desktop/laptop computers
   ii. tablets
   iii. smartphones

2. Identify common desktop and mobile operating systems.
   i. Windows
   ii. Mac OS
   iii. iOS
   iv. Android

3. Describe the use of Windows operating system software.
   i. start and end a program
   ii. use the help function
   iii. use the find function
   iv. maximize and minimize a window
   v. open and scroll through multiple windows
   vi. use the task bar
   vii. adjust desktop settings such as screen savers, screen resolution, and backgrounds
   viii. shut down a computer

4. Identify the skills necessary to perform file management commands.
   i. create folders
   ii. copy files and folders
   iii. move files and folders
   iv. rename files and folders
   v. delete files and folders

5. Describe the use of word processing software to create documents.
   i. enter & edit text
   ii. indent and tab text
   iii. change text attributes
      - bold
      - underline
      - font
   iv. change layout format
      - margins
      - alignment
      - line spacing
   v. spell check and proofread
   vi. save, close & reopen a document
   vii. print document

6. Describe the use of spreadsheet software to create documents.
   i. enter data in cells
   ii. format data in cells
   iii. create formulas to add, subtract, multiply and divide
   iv. save, close & reopen a spreadsheet
   v. print spreadsheet

7. Describe the use of the internet in the workplace.
   i. web browsers
   ii. search engines
   iii. security issues
   iv. personal responsibility for internet use at work

8. Describe the role of e-mail.
   i. e-mail etiquette
      - grammar and punctuation
      - privacy issues when sharing and forwarding e-mail
      - work appropriate content
      - awareness of employer policies
   ii. managing e-mail
      - using folders
      - deleting, forwarding, replying
   iii. adding attachments to e-mail
   iv. view e-mail attachments

v. printing e-mail

9. Describe computer use for online learning.
   i. online training
   ii. level exams
   iii. study guides
   iv. practice exams

Practical Requirements:

1. Create, save and print a document using word processing software.

2. Create, save and print a document using spreadsheet software.

3. Send and receive an e-mail with an attachment.

AP1102 Introduction to Apprenticeship

Learning Outcomes:

- Demonstrate knowledge of how to become a registered apprentice.
- Demonstrate knowledge of the steps to complete an apprenticeship program.
- Demonstrate knowledge of various stakeholders in the apprenticeship process.
- Demonstrate knowledge of the Red Seal Program.

Duration: 12 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Define terminology associated with apprenticeship.
   i. apprentice
   ii. registered apprentice
   iii. trade qualifier
   iv. journeyperson
   v. certified journeyperson
   vi. Certificate of Apprenticeship
   vii. Certificate of Qualification
   viii. dual certification
   ix. compulsory trades

2. Explain the roles and responsibilities of those involved in the apprenticeship system in Newfoundland and Labrador.
   i. registered apprentice
   ii. training institution
   iii. employer
   iv. journeyperson
   v. mentor
   vi. Department of Immigration, Population Growth and Skills
      - Industrial Training section
      - Standards and Curriculum section
   vii. Provincial Trade Advisory Committees (PTAC)
   viii. Provincial Apprenticeship and Certification Board (PACB)

3. Describe the training components of an apprenticeship.
   i. in-school
      - pre-employment / Level 1
      - advanced levels
   ii. workplace experience

4. Explain the steps in the registered apprenticeship process.
   - i. meet entrance requirements
     - education
     - employment
     - Recognition of Prior Learning (RPL) - if applicable
   - ii. complete the registration process
     - application
     - required documents
   - iii. complete the Memorandum of Understanding (MOU)
     - contract responsibilities
     - probation period
     - cancellation
   - iv. maintain Record of Occupational Progress (Logbook)
     - sign off skills
     - record hours
     - update Apprenticeship Program Officer (APO) on progress
   - v. class calls
     - hour requirements
     - EI eligibility
     - training schedule
   - vi. level examinations - if applicable
   - vii. progression schedule
     - apprenticeship level
     - wage rates
   - viii. certification examinations
     - Provincial
     - Interprovincial
       - written
       - practical - if applicable
   - ix. certification
     - Certificate of Apprenticeship
     - Certificate of Qualification
     - Provincial journeyperson - Blue Seal
     - Interprovincial journeyperson - Red Seal endorsement (RSE)

5. Identify the Conditions Governing Apprenticeship.

6. Discuss cancellation of apprenticeship.
   - i. failure to notify of address change
   - ii. extended periods of unemployment
   - iii. lack of contact with an APO for an extended period
   - iv. failure to respond to class calls
   - v. declining of multiple class calls

7. Explain the Interprovincial Standards Red Seal program.
   - i. designated Red Seal trades

ii. the Red Seal Occupational Standard (RSOS)
iii. relationship of RSOS to IP examination
iv. national qualification recognition and mobility

8. Identify the current financial incentives available to apprentices.
   i. Federal
   ii. Provincial

9. Explain the Provincial / Territorial Apprentice Mobility Guidelines.
   i. temporary mobility
   ii. permanent mobility

10. Describe Atlantic and National Harmonization initiatives.

Practical Requirements:

1. Use the Provincial Apprenticeship and Trades Certification website at www.gov.nl.ca/atcd
   i. locate, download, and complete the Application for Apprenticeship and Memorandum of Understanding (MOU)
   ii. locate the address of the Industrial Training office closest to this campus
   iii. locate the training schedule and identify the start date of the next class call for this trade
   iv. locate and review the learning resources applicable to this trade
      - Study Guide
      - Exam Preparation Guide
      - Plan of Training

2. Use the Plan of Training applicable to this trade.
   i. locate the hours for the trade
      - total in-school
      - total required for certification
   ii. locate the number of levels
   iii. locate the courses in each level
   iv. locate the hours required for progression to a Level II apprentice and the wage percentage of that level

D. 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 a certain Plan of Training. All references to Memorandum of Understanding will also apply to Letter of Understanding (LOU) agreements.

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 a particular Plan of Training. Mature students, at the discretion of the Director of Apprenticeship and Trades Certification, 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 Apprenticeship and Trades Certification, 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 along with a Memorandum of Understanding as applicable to be indentured into an Apprenticeship. The Memorandum of Understanding must contain signatures of an authorized employer representative, the apprentice and an official representing the Provincial Apprenticeship and Certification Board to be valid.

2.5 A new Memorandum of Understanding must be completed for each change in an employer during the apprenticeship term.

3.0 Probationary Period

The probationary period for each Memorandum of Understanding will be six months or 900 employment credit hours. 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, such as that stated inSection14.

5.0 Apprenticeship Progression Schedule, Wage Rates and Advanced Training Criteria

Progression Schedule

WELDER - 5400 Hours			
APPRENTICESHIP LEVEL AND WAGES			
Year	Wage Rate At This Level	Requirements for progression to next level of apprenticeship	When requirements are met, the apprentice will progress to…
1st	60 %	▪ Completion of pre-employment training ▪ Registration as an apprentice ▪ Minimum 1800 hours of combined relevant work experience and training	2nd Year
2nd	75%	▪ Completion of AACS Level 2 training ▪ Pass Level 2 exam ▪ Minimum 3600 hours of combined relevant work experience and training	3rd Year
3rd	90%	▪ Completion of AACS Level 3 training ▪ Pass Level 3 exam ▪ Minimum 5400 hours of combined relevant work experience and training ▪ Sign-off of all workplace skills in apprentice logbook ▪ Pass certification exam	Journeyperson Certification

Wage Rates

- Rates are percentages of the prevailing journeyperson's wage rate in the place of employment of the apprentice.
- Rates must not be less than the wage rate established by the Labour Standards Act (1990), as now in force or as hereafter amended, or by other order, as amended from time to time replacing the first mentioned order.
- Rates must not be less than the wage rate established by any collective agreement which may be in force at the apprentice's workplace.
- Employers are free to pay wage rates above the minimums specified.

Level Exams

- This program may **not** currently contain Level Exams, in which case this requirement will be waived until such time as Level Exams are available.

WELDER - 5400 Hours		
CLASS CALLS *(AFTER APPRENTICESHIP REGISTRATION)*		
Call Level	Requirements for Class Call	Hours awarded for In-School Training
Level 2	▪ Minimum of 3000 hours of relevant work experience and training	210
Level 3	▪ Minimum of 5200 hours of relevant work experience and training	240
Class Calls at Minimum Hours ▪ Class calls may not always occur at the minimum hours indicated. Some variation is permitted to allow for the availability of training resources and apprentices.		

6.0 Tools

Apprentices shall be required to obtain their own hand tools applicable for the designated occupation of registration or tools as 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 apprenticeship level and rate of wage shall not be advanced as provided in Section 5 until his/her progress is satisfactory to the Director of Apprenticeship and Trades Certification 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. A mark of 70% must be attained in both the theory examination and the practical project assignment, where applicable as documented on an official transcript.

7.4 Course credits may be granted through the use of a PACB approved matrix which identifies course equivalencies between designated trades and between current and historical Plans of Training for the same trade.

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 Apprenticeship and Trades Certification shall provide copies of the Registration for Apprenticeship form to all signatories to the document.

11.0 Ratio of Apprentices to Journeypersons

Under normal practice, the ratio of apprentices to journeypersons shall not exceed two apprentices to every one journeyperson employed. Other ratio arrangements would be determined and approved by the PACB.

12.0 Relationship to a Collective Bargaining Agreement

Where applicable in Section 5 of these conditions, Collective Agreements take precedence.

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 attend training 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. 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 qualifying to receive a class call to training as a registered Trade Qualifier. Cancellation must be mutually agreed upon by the employer and the apprentice.

14.5 An employer shall ensure that each apprentice is under the direct supervision of an approved journeyperson supervisor who is located at the same worksite as the apprentice, and that the apprentice is able to communicate with the journeyperson with respect to the task, activity or function that is being supervised.

14.6 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.

14.7 The employer will permit each apprentice to attend training programs as prescribed by the PACB.

14.8 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 PACB authorized 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 Immigration, Population Growth and Skills within 30 days of the decision.

E. Requirements for Red Seal Endorsement

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 the program.

3. A combination of training from an approved training program and suitable work experience totaling 5400 hours.

   Or

   A total 7200 hours of suitable work experience.

4. Completion of a National Red Seal examination, to be set at a place and time determined by the Apprenticeship and Trades Certification Division.

F. 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 journeyperson.
- 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, Apprenticeship and Trades Certification 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.
- ensures a certified journeyperson is currently on staff in the same trade area as the apprentice and whose certification is recognized by the NL Department of Immigration, Population Growth and Skills.

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 Apprenticeship and Trades Certification 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 counsellors, 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 Level, provincial and interprovincial 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.