Plan of Training

Small Equipment Service Technician

Newfoundland Labrador

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

July 2012

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Approved by:

Chairperson, Provincial Apprenticeship and Certification Board

Date: July 4, 2012

Preface

This document describes the curriculum content for the Small Equipment Service Technician apprenticeship training program and outlines each of the technical training units necessary for the completion of apprenticeship.

Acknowledgements

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Glen Cooper
Ron Thornhill

Without their dedication to quality apprenticeship training, this document could not have been produced.

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Document Status

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Approved	July 2012	September 2013	
Approved	January 2015	January 2015	Corrected error in total course credit hours

Table of Contents

A. 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 within each block can be determined by the educational agency, as long as pre-requisite conditions are satisfied.

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

Block I				
Course No.	**IPG No.**	**Course Name**	**Hours**	**Pre-Requisite(s)**
TS1510		OH&S	6	None
TS1520	-	WHMIS	6	None
TS1530	-	Standard First Aid	14	None
TS1191	_	Shop Fundamentals	120	-
TS1220	_	Precision Measurement	30	-
WD1250	_	Oxy-fuel Cutting and Heating	30	TS1191
WD1320	_	Gas Metal Arc Welding	30	TS1191
MP1440	_	Electrical and Electronic Basic Principles	90	TS1191 SR1120
SR1120	_	Service Information Systems	30	-
SR1130	_	Engine Operations	45	TS1191 SR1120
SR1140	_	Lubrication Systems	45	TS1191 SR1120

Block I				
Course No.	**IPG No.**	**Course Name**	**Hours**	**Pre-Requisite(s)**
SR1220	-	Small Equipment Engines	90	SR1130
SR1230	-	Small Equipment Starting and Charging Systems	75	MP1440
SR1240	-	Ignition Systems	60	MP1440
SR1320	-	Gasoline Engine Air and fuel delivery systems	30	TS1191 SR1120
SR1330	-	Gas Injection Systems	60	SR1320 MP1440
SR1340	-	Carburetted Fuel Systems	60	SR1320
SR1420	-	Small Equipment Cooling Systems	45	TS1191 SR1120
SR1431	-	Emission Control Systems	30	SR1330 SR1340 SR1240
AP1101	-	Introduction to Apprenticeship	15	None
*AM1100	-	Math Essentials	30	None
AM1360	-	Power Sport Math Fundamentals	30	AM1100
CM2160	-	Communication Essentials	45	None
SD1760	-	Workplace Essentials	45	None
MC1060	-	Computer Essentials	15	None
Total Hours			1076	

***A student who can meet the mathematics requirement through an ACUPLACER® test may be exempted from AM1100 - Math Essentials. Please check with your training institution**.

REQUIRED

WORK EXPERIENCE

Block II				
Course No.	**IPG No.**	**Course Name**	**Hours**	**Pre-Requisite(s)**
SR2100		Lawn & Garden Equipment, Servicing Fundamentals	45	Entry Level Courses
SR2200		Snowmobile Servicing Fundamentals	60	Entry Level Courses
SR2300		Motorcycle & ATV Servicing Fundamentals	60	Entry Level Courses
SR2400		Marine Equipment Servicing Fundamentals	75	Entry Level Courses
Total Hours			240	

REQUIRED
WORK EXPERIENCE

Block III				
Course No.	**IPG No.**	**Course Name**	**Hours**	**Pre-Requisite(s)**
SR1500	-	Small Equipment Transmissions	120	Entry Level Courses
SR2310	-	Motorcycle & ATV Troubleshooting & Repair	120	SR2300
Total Hours			240	

REQUIRED
WORK EXPERIENCE

Block IV				
Course No.	**IPG No.**	**Course Name**	**Hours**	**Pre-Requisite(s)**
SR2110	-	Lawn & Garden Equipment, Troubleshooting & Repair	80	SR2100
SR2210	-	Snowmobile Troubleshooting & Repair	80	SR2200
SR2410	-	Marine Equipment Troubleshooting & Repair	80	SR2400
Total Hours			240	

Total Course Credit Hours	1796

BLOCK I

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.

TS1191 Shop Fundamentals

Learning Outcomes:

- Demonstrate a knowledge of the need for safety regulations in the operation and maintenance of shop tools, equipment and facilities

Duration: 120 Hours

Pre-requisites: None

Objectives and Content:

1. Identify safe working habits.
   - i. purpose and maintenance of personal safety equipment
   - ii. respect noise level regulations
   - iii. identify potential hazards to personal safety
   - iv. check for unsafe conditions
   - v. reporting of accidents

2. Identify fire hazards.
   - i. fire hazards
     - classifications of fire types
     - purpose and use of fire extinguishers
   - ii. explosions
     - spontaneous combustion
     - storage and handling of fuels
   - iii. ventilation and hazardous gases
     - carbon monoxide
     - storage batteries

3. Describe procedures to select and use hand tools.
   i. pliers
   ii. screwdrivers
   iii. wrenches
   iv. hammers and mallets
   v. gripping tools
   vi. turning tools

4. Describe the procedures to select and use tubing, fittings and flaring tools.
   i. single and double flaring
   ii. ISO flaring
   iii. measure and cut tubing
   iv. double flare union

5. Describe the procedures to select and use cutting tools.
   i. punches
   ii. chisels
   iii. files
   iv. saws
   v. sharpen chisels
   vi. sharpen drill bits
   vii. maintain and store cutting tools

6. Describe the procedures to select and use threading devices.
   i. taps
   ii. dye
   iii. thread restorers
   iv. thread inserts
   v. extractors
   vi. tap and drill chart

7. Describe the procedures to select and use fasteners.
   i. rivets
   ii. sheet metal screws
   iii. bolts
   iv. nuts
   v. washers
   vi. torque procedures
   vii. bolt grades

viii. keys and pins
ix. c-clips and snap rings
x. plastic fastening devices

8. Describe the procedures to select, use and maintain shop equipment.
   i. pullers
   ii. drivers
   iii. presses
   iv. portable power tools
   v. power cleaning equipment
   vi. portable crane
   vii. jacks
   viii. chain hoist
   ix. solvent cleaning tanks
   x. winches

9. Describe the procedures for wire repair.
   i. soldering
   ii. crimping
   iii. terminal removal tools
   iv. heat shrink
   v. neoprene sealers

10. Describe the procedures to drill materials.
   i. operation of power drilling equipment
   ii. selection and use cutting fluids
   iii. identify and selection of clamping devices
   iv. maintenance of drilling equipment

11. Describe the procedures to grind and finish metals.
   i. installation of grinding wheel disc and brush
   ii. adjustment of tool rest
   iii. dressing a grinding wheel
   iv. operation of stationary and portable grinders
   v. maintenance of equipment
   vi. identification and use of abrasives

12. Describe the procedures to use and maintain compressed air systems

Practical Requirements:

1. Locate fire exits, fire alarms.

2. Locate shop ventilation system.

3. Prepare a floor plan showing fire exit routes.

4. Use hand and shop tools for small equipment while working on bench projects .

5. Identify and use common fasteners.

TS1220 Precision Measurement

Learning Outcomes:

- To demonstrate an understanding of the skills and knowledge required for making precision measurements

Duration: 30 Hours

Pre-requisites: None

Objectives and Contents:

1. Describe the procedures to select and use semi-precision measuring tools.
   - i. combination set
   - ii. steel rule
   - iii. dividers
   - iv. inside and outside callipers
   - v. measuring tape
   - vi. angle gauge
   - vii. callipers
   - viii. straight edges

2. Describe the procedures to select and use precision measuring tools.
   - i. micrometers (all types)
   - ii. vernier callipers (all types)
   - iii. surface plates (all types)
   - iv. telescopic gauges
   - v. small hole gauges
   - vi. depth gauges
   - vii. dial indicators (all types)
   - viii. v-blocks
   - ix. cylinder bore gauge
   - x. torque wrench

3. Solve problems on Imperial/Metric conversions.

Practical Requirements:

1. Identify and explain the purpose of the given measuring tools.

2. Measure outside and inside diameters of a given object.

3. Measure projection and depth of a given object.

4. Measure runout, endplay and backlash on given object.

5. Maintain measuring tools as required by the manufacture.

WD1250 Oxy-Fuel Cutting And Heating

Learning Outcomes:

- Demonstrate an understanding of the procedures for the safe and effective set up and operation of oxy-fuel equipment for heating and cutting.

Duration: 30 Hours

Pre-requisites: TS1191 Shop Fundamentals

Objectives and Content:

1. Describe the procedures to operate oxy-fuel heating and cutting equipment to industrial safety standards for the removal and/or installation of parts.
   - i. Safety precautions
     - safety apparel
     - storage and handling of welding gases
     - pre-operational inspection
   - ii. Setting up equipment
     - cylinders
     - gauges
     - regulators
     - valves-flame arrestor
     - torches and tips
     - hoses
     - testing for leaks
   - iii. Operating the torch
     - lighting procedures
     - types of flame (adjustment)
     - shutting down procedures

2. Describe the procedures to perform flame cutting with oxy-acetylene equipment.
   - i. flame cutting
   - ii. cutting torch and tips
   - iii. use of cutting torch

Practical Requirements:

1. Assemble, test, light and adjust oxy-fuel welding and cutting equipment.

2. Perform flame cutting with oxy-fuel equipment.

3. Perform proper shut down procedures.

WD1320 Gas Metal Arc Welding

Learning Outcomes:

- Demonstrate an understanding of the basic MIG (GMAW) welding process and of the skills and knowledge needed to use MIG Welding equipment.

Duration: 30 Hours

Pre Requisites: TS1191 Shop Fundamentals

Objectives and Content:

1. Describe the procedures to operate MIG welding equipment to industrial safety standards as needed for various motorized equipment.
   - i. Equipment used in MIG welding
   - ii. Shielding gases used in MIG welding
   - iii. Filler wire used in MIG welding
   - iv. The basic MIG welding process
   - v. Advantages of MIG welding
   - vi. Types of MIG welding
   - vii. Proper penetration
   - viii. Electrical system cautions when MIG welding
     - Location of ground cables
     - Possible bearing damage from welding
     - Possible computer and electrical accessory damage from welding
     - Procedures to prevent electrical and bearing damage
   - ix. Set up and shut down procedures

Practical Requirements:

1. Weld using MIG equipment.

2. Perform set up and shut down procedures.

3. Perform routine maintenance activities.

MP1440 Electrical & Electronic Basic Principles

Learning Outcomes:

- Demonstrate the ability to apply basic electrical and electronic principles.

Duration: 90 Hours

Pre-requisite: TS1191 Shop Fundamentals
SR1120 Service Information Systems

Objectives and content:

1. Demonstrate knowledge of electrical basic principles.
   i. safety practices and procedures working with electrical equipment
   ii. terminology - abbreviations and glossary of electrical terms
   iii. sources of Electricity
      - generation of electricity
      - use of chemical, magnetism, heat, light and DC power supply
      - theory and laws of electricity
      - theory and laws of magnetism and inductance
   iv. ohms law - volts, ohms and amperes
   v. symbols and schematics - common electrical symbols
      - read schematics/wiring diagrams

2. Apply electrical principles using ohms law to calculate volts, ohms, watts and amperes.
   i. application of Ohms Law to electrical circuits
      - series circuit
      - parallel circuit
      - series and parallel circuit

3. Use instruments to test components of series, parallel and series parallel circuits to determine cause of malfunctions in an electrical circuit.
   ii. circuit testing devices
      - applications of volt, ohm and ammeters
      - meter ranges
      - correct hookup of meters

- test lights, circuit breakers

iii. circuit problems and testing problems
- short, open and grounds
- diagnostic trouble shooting procedures
- testing procedures and equipment

4. Identify electronic components.

i. wires and terminals
- types and sizes
- terminals and connectors
- conductors, semi conductors and insulators

ii. capacitors
- construction
- purpose
- uses

iii. resistors
- identification
- purpose
- uses

iv. transistors
- identification
- purpose
- uses

v. diodes
- identification
- purpose
- uses

Practical Requirements:

1. Read schematics and wiring diagrams.

2. Use circuit testing devices.
   i. ammeter
   ii. ohmmeter
   iii. voltmeter
   iv. test lights
   v. peak voltage meter

3. Apply Ohms Law to Electrical Circuit.

4. Identify wires and terminals.
   i. demonstrate back probing

5. Test electronic circuit.

SR1120 Service Information Systems

Learning Outcomes:

- Demonstrate the ability to select and use different types of service manuals found in the Small Equipment Repair industry.

Duration: 30 Hours

Pre-requisite: None

Objectives and Content:

1. Identify the procedures to use operator's manual.
   i. methods of using
   ii. interpretation of sections

2. Identify the procedures to use service manual.
   i. methods of using
   ii. interpretation of sections

3. Identify the procedures to use parts manual.
   i. methods of using
   ii. interpretation of sections

4. Identify the procedures to use special bulletins.
   i. methods of using
   ii. purpose
   iii. interpretation
   iv. introduction to computers
      - computerized parts information
      - computerized service and repair information

5. Identify the procedures to use computerized information systems.
   i. work order
   ii. warranty claims
   iii. time ticket
   iv. tracking procedures

Practical Requirements:

1. Find serial number and decode on the following items.
   i. chassis
   ii. engine
   iii. transmission

2. With the appropriate manual, find the type and amount of engine oil recommended on an all-terrain vehicle.

3. With the appropriate manual find the step by step removal procedure of the engine and transmission of a motorcycle.

4. With the appropriate manual, create a parts list of a cylinder head.

SR1130 Engine Operations

Learning Outcomes:

- Demonstrate the skills and knowledge required to maintain and repair engines
- Demonstrate the ability to use service information effectively
- Demonstrate the ability to practice safety in potentially harmful situations
- Demonstrate an appreciation for environmental protection

Duration: 45 Hours

Pre-requisites:

TS1191	Shop Fundamentals
SR1120	Service Information Systems

Objectives and content:

1. Describe major engine components.

2. Describe types of engines.

3. Describe basic engine terminology.

4. Describe engine operating cycles.
   i. 4 Cycle Gasoline
   ii. 4 Cycle Diesel
   iii. 2 Cycle Gasoline

5. Describe the procedures to set valve timing.
   i. replace timing belt/chain
   ii. valve timing
   iii. service and repair reed valves on 2 cycle engines
   iv. rotary valve timing on 2 cycle engine

6. Describe the procedures to check engine compression (gasoline).
   i. remove spark plugs
   ii. test compression
      - gas engine
   iii. compare readings to indicate engine condition
   iv. replace and torque spark plugs
   v. cylinder leak down test
   vi. bore scope inspection

Practical Requirements:

1. Set valve timing on a two cycle and a four cycle engine.

2. Perform a compression test on a gasoline engine.

3. Perform bore scope inspection.

SR1140 Lubrication Systems

Learning Outcomes:

- Demonstrate the skills and knowledge required for maintaining and repairing lubrication systems
- Demonstrate the ability to use service information effectively
- Demonstrate the use of safety practices in potentially harmful situations
- Demonstrate an appreciation for environmental protection

Duration: 45 Hours

Pre-requisites: TS1191 Shop Fundamentals
SR1120 Service Information Systems

Objectives and content:

1. Describe the types, qualities, characteristics, and classifications of engine oils.

2. Describe the functions of engine oils.

3. Describe contaminants and explain their effects.

4. Explain the operation of lubrication systems.
   i. splash
   ii. pressure

5. Describe the types and explain the purpose of lubricating oil filters.

6. Describe the types and explain the operation of lubricating pumps.
   i. gear
   ii. vane
   iii. rotor

7. Describe the types and explain the operation of pressure relief valves and components.

8. Describe the types and explain the operation of lubrication oil coolers.

9. Describe the procedures to identify and service lubrication systems charts for pre-mixing.
   i. oil filters and check for leaks
   ii. oil level
   iii. oil pressure
   iv. dirty oil tank
   v. oil for contamination
   vi. engine oil
   vii. maintain appropriate service records

10. Describe the procedures to service oil filters.
   i. replace oil filters
   ii. gaskets and "o" rings and filter
   iii. fill and bleed system (if necessary)

11. Describe the procedures to service a lubricating oil pump.
   i. identify, remove and disassemble oil pumps
   ii. inspect and identify worn components
   iii. replace, prime and test on engine
   iv. identify and adjust two-cycle oil pumps
   v. test oil pressure

12. Describe the procedures to service lubricating oil coolers.
   i. clean, inspect components
   ii. "O" rings, gaskets and seals

Practical Requirements:

1. Perform an oil pressure check on an engine.

2. Remove, clean, inspect and replace an oil filter.

3. Remove, clean, inspect and replace a pressure relief valve and components.

4. Remove, clean, inspect and replace oil pump.

SR1220 Small Equipment Engines

Learning Outcomes:

- Demonstrate the skills and knowledge required to maintain and repair light duty engines
- Demonstrate the ability to use service information effectively
- Demonstrate the use of safety practices in potentially harmful situations
- Demonstrate an appreciation for environmental protection

Duration: 90 Hours

Pre-requisites: SL1130 Engine Operations

Objectives and Content:

1. Describe the principles of engine operation.
   - i. cylinder pressures
   - ii. heat transfer
   - iii. stress
   - iv. torque
   - v. compression
   - vi. combustion
   - vii. atmospheric pressure
   - viii. friction
   - ix. vacuum
   - x. inertia
   - xi. horsepower

2. Describe the construction, operation and purpose of engine components.
   - i. cylinder head
   - ii. cylinder block
   - iii. pistons
   - iv. crankshaft
   - v. camshaft
   - vi. bearings
   - vii. seals
   - viii. valves

ix. connecting rods
x. rings
xi. lubrication pump
xii. manifolds
xiii. valve arrangements
xiv. cam chains

3. Describe the metallurgy of engine blocks.
   i. aluminum
   ii. cast iron
   iii. composites

4. Describe the procedures to recondition cylinder heads and valves.
   i. cylinder head removal
      - cleaning
      - inspection
   ii. valve guides
      - inspection
      - removal
      - installation
      - reaming
   iii. valves
      - removal
      - inspection
      - cutting
      - installation
      - lapping
   iv. valve springs
      - disassemble
      - inspection
      - measuring
      - installation
   v. cylinder head assembly
      - inspection
      - measuring
      - seat reconditioning
   vi. cylinder head installation

5. Describe the procedures to recondition pistons, rings and cylinders.
   i. pistons
      - removal
      - inspection
      - cleaning
      - measuring
      - installation
   ii. rings
      - removal
      - inspection
      - measuring
      - installation
   iii. cylinders
      - measuring
      - deglazing

6. Describe the procedures to remove and replace crankshafts, camshafts, bearings, timing chains, belts and gears.
   i. crankshaft
      - removal
      - inspection
      - measuring
      - installation
      - phasing
   ii. camshaft
      - removal
      - inspection
      - measuring
      - installation
   iii. bearings and seals
      - removal
      - inspection
      - measuring
      - installation
   iv. timing chains, belts and gears
      - disassemble
      - inspection
      - measuring
      - installation

Practical Requirements:

1. Recondition a cylinder head.

2. Recondition cylinder bores, pistons and rings.

3. Remove, clean, inspect crankshafts and camshafts.

4. Remove, clean, inspect and replace bearings and seals.

SR1230 Small Equipment Starting and Charging Systems

Learning Outcomes:

- Demonstrate the skills and knowledge required to maintain and repair light duty starting and charging systems
- Demonstrate the ability to use service information effectively
- Demonstrate the use of safety practices in potentially harmful situations
- Demonstrate an appreciation for environmental protection

Duration: 75 Hours

Pre-requisites: MP1440 Electrical and Electronic Basic Principles

Objectives and Content:

1. Describe types and purposes of batteries.

2. Describe the procedures to service batteries.
   iv. test
   v. recharge
   vi. replace

2. Describe the procedures to disassemble, inspect and service starting system.
   i. operating principles of starting systems
   ii. rope-wind starter
   iii. rope-rewind starters
   iv. wind-up starters
   v. relays and switches
   vi. electrical starters
   vii. starter drives
   viii. maintain starting system

3. Describe the procedures to service and replace starting motors.

4. Describe the procedures to disassemble, inspect and service charging system.
   i. operating principles of a charging system
   ii. DC generator
   iii. AC generator
   iv. voltage regulators
   v. rectifiers
   vi. maintain charging system

5. Describe the procedures to service and replace ac generators, voltage regulators and rectifiers.

Practical Requirements:

1. Recharge a battery.

2. Test a battery.

3. Remove, inspect, repair and/or replace rope rewind starters.

4. Remove, inspect, repair and/or replace starter drives.

5. Remove, inspect, repair and/or replace electrical starters.

6. Remove, inspect, repair and or replace DC generator.

7. Remove, inspect, repair and or replace AC generator.

8. Remove, inspect, repair and or replace voltage regulators and rectifiers.

SR1240 Ignition Systems

Learning Outcomes:

- Demonstrate the skills and knowledge required to maintain and repair ignition systems
- Demonstrate the ability to use service information effectively
- Demonstrate the use of safety practices in potentially harmful situations
- Demonstrate an appreciation for environmental protection

Duration: 60 Hours

Pre-requisites: MP1440 Electrical and Electronic Basic Principles

Objectives and Content:

1. Describe types, purpose and operations of ignition systems.

2. Identify the components of a conventional/electronic ignition system.

3. Describe the purpose and operation of on-board computer.

4. Describe the operation of the distributor and timing mechanisms.

5. Describe the procedures to test and service ignition systems.
   i. electronic ignition (solid state, CDI)
   ii. computers
   iii. inputs and outputs
   iv. sensors

6. Describe the procedures to check, adjust and set distributor timing.

7. Describe the procedures to clean, adjust and replace spark plugs.

8. Describe the procedures to check resistance of high voltage wires, terminals and plug caps.

Practical Requirements:

1. Scan test on-board computer systems.

2. Set static and dynamic timing.

3. Remove, clean, adjust and/or replace spark plugs.

4. Determine resistance of high voltage wires.

5. Test output of ignition system components.

6. Test sensors readings as per manufactures specifications.

SR1320 Gasoline Engine Air and Fuel Delivery Systems

Learning Outcomes:

- Demonstrate the skills and knowledge required to maintain and repair gasoline air and fuel delivery systems
- Demonstrate the ability to use service information effectively
- Demonstrate the use of safety practices in potentially harmful situations
- Demonstrate an appreciation for environmental protection

Duration: 30 Hours

Pre-requisites: TS1191 Shop Fundamentals
SR1120 Service Information Systems

Objectives and Content:

1. Explain the characteristics and uses of fuels.
   i. regular unleaded
   ii. high test unleaded
   iii. diesel
   iv. LPG

2. Describe the types, purpose and operation of fuel system components.
   i. filters
   ii. tanks
   iii. fuel lines
   iv. fittings
   v. pumps (mechanical, electric, impulse)
   vi. manifolds
   vii. shut offs

3. Describe the procedures to inspect and service fuel system components.
   i. filters
   ii. tanks
   iii. fuel lines
   iv. fittings
   v. pumps (mechanical, electric, impulse)

vi. vacuum
vii. pressure
viii. flow rate
ix. rebuilding

4. Describe the types, purpose and operation of air intake system components.
   i. air filters
   ii. manifolds
   iii. air boxes
   iv. gaskets

5. Describe the procedures to inspect and service air intake system components.
   i. air filters
   ii. air boxes
   iii. gaskets

6. Describe the purpose and explain the operation of turbochargers, superchargers, and intercoolers.

7. Describe the effect that temperature, atmospheric pressure and humidity have on the operation of fuel systems.

Practical Requirements:

1. Replace a fuel filter.

2. Replace an air filter.

3. Test a fuel pump for flow and / or pressure according to manufacturer specifications.

SR1330 Gas Injection Systems

Learning Outcomes:

- Demonstrate the skills and knowledge required to maintain and repair gasoline injection systems
- Demonstrate the ability to use service information effectively
- Demonstrate the use of safety practices in potentially harmful situations
- Demonstrate an appreciation for environmental protection

Duration: 60 Hours

Pre-requisites: SR1320 Gasoline Engine Air and Fuel Delivery Systems
MP1440 Electrical and Electronic Basic Principles

Course objectives (knowledge):

1. Describe types of injection systems and their operation for gasoline and diesel fuels.
   i. direct fuel injection
   ii. semi-direct fuel injection
   iii. high pressure injection

2. Describe the operation of high pressure pumps and pressure regulators.

3. Describe the purpose of sensors, actuators and computer control modules.

4. Describe the procedure to inspect, test and service fuel system components.
   i. injectors
   ii. injection pumps
   iii. filters
   iv. fuel lines
   v. fuel rails
   vi. pressure regulators
   vii. injector cleaning

Practical Requirements:

1. Test fuel injectors.

2. Test fuel pressure regulators.

3. Remove and replace fuel injectors.

4. Test sensor outputs.

5. Perform a pressure test on a high pressure injection pump.

SR1340 Carburetted Fuel Systems

Learning Outcomes:

- Demonstrate the skills and knowledge required to maintain and repair carburetted fuel systems
- Demonstrate the ability to use service information effectively
- Demonstrate the use of safety practices in potentially harmful situations
- Demonstrate an appreciation for environmental protection

Duration: 60 Hours

Pre-requisites: SR1320 Gasoline Engine Air and Fuel Delivery Systems

Objectives and Content:

1. Describe carbureted fuel systems and explain the operation.

2. Describe the types of carburetors and explain their operations.
   i. circuits

3. Describe the types of governors and explain their operation.

4. Describe the procedure to recondition and synchronize carburetors.
   i. replace carburetor kits
   ii. adjust settings
   iii. synchronize multi-carburetor systems
   iv. pressure tests

5. Describe the procedures to service governors.
   i. air-vane
   ii. centrifugal
   iii. electronic assist

Practical Requirements:

1. Recondition a carburetor.

2. Synchronize a multi-carburetor system.

3. Inspect and adjust a mechanical governor.

SR1420 Small Equipment Cooling Systems

Learning Outcomes:

- Demonstrate the skills and knowledge required to maintain and repair light and medium duty cooling systems
- Demonstrate the ability to use service information effectively
- Demonstrate the use of safety practices in potentially harmful situations
- Demonstrate an appreciation for environmental protection

Duration: 45 Hours

Pre-requisites: TS1191 Shop Fundamentals
SR1120 Service Information Systems

Objectives and Content:

1. Describe types of cooling systems and their operation.
   i. air
   ii. liquid

2. Describe the components of the cooling system and their operation.
   i. belts
   ii. pumps
   iii. thermostats
   iv. radiators
   v. block heaters
   vi. heat exchanger
   vii. fans (mechanical, electric)
   viii. pulleys
   ix. shrouds
   x. recovery tank
   xi. anodes

3. Describe damage caused by cooling system failure.

4. Describe types of coolant and explain the purposes.

5. Describe the effects of chemical corrosion on the cooling system.

6. Describe temperature control systems.

7. Describe the procedures to remove, service, and replace cooling system components.
   i. belts
   ii. pumps
   iii. thermostats
   iv. radiators
   v. block heaters
   vi. heat exchanger
   vii. fans (mechanical, electric)
   viii. pulleys
   ix. adjustments
   x. anodes

8. Describe the procedures to test and replace coolant.
   i. cleaning and flushing
   ii. select engine coolants
   iii. test coolant condition
   iv. replace coolant as per manufactures specifications
   v. check system for leakage

9. Describe procedures to pressure test a cooling system.
   i. inspect cooling system
   ii. test cooling system temperature
   iii. check radiator cap pressure and vacuum release
   iv. check cooling system leaks using pressure
   v. refill and check system

10. Describe procedures to check thermostatic fan controls.
    i. check fan motor for power supply and ground
    ii. check thermo switch
    iii. inspect and test wiring harness

Practical Requirements:

1. Drain and refill cooling system as per manufactures specifications.

2. Test coolant condition.

3. Test cooling system for leaks.

4. Replace a thermostat.

5. Inspect a water pump.

6. Check a cooling fan motor operation.

SR1431 Emission Control Systems

Learning Outcomes:

- Demonstrate the ability to service and repair vehicle emission control systems
- Demonstrate an understanding of industry and provincial standards

Duration: 30 Hours

Pre-requisites:

SR1240	Ignition Systems
SR1330	Gas Injection Systems
SR1340	Carbureted Fuel Systems

Objectives and Content:

1. Identify the components of an emission control system.
   - i. describe the purpose of crankcase ventilation systems
     - positive
     - opened and closed
   - ii. describe the purpose of air injection systems
     - secondary
   - iii. describe the purpose of catalytic converters (types and functions)
     - monolithic
     - 2 way
     - 3 way
   - iv. describe the purpose of evaporation controls
     - tank vent
   - v. describe the purpose of spark timing controls
     - thermal valves
     - knock sensors
   - vi. describe the purpose of oxygen sensors

Practical requirements:

No Practical Required.

AP1101 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: 15 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Define the following terms.
   - i. apprenticeship
   - ii. apprentice vs. registered apprentice
   - iii. Journeyperson vs. Certified Journeyperson
   - iv. Certificate of Apprenticeship
   - v. Certificate of Qualification
   - vi. Recognition of Prior Learning
   - vii. dual certification

2. Explain the apprenticeship system in Newfoundland and Labrador and the roles and responsibilities of those involved.
   - i. registered apprentice
   - ii. training institution
   - iii. employer
   - iv. Journeyperson
   - v. Department of Advanced Education and Skills
     - Industrial Training Section
     - Standards and Curriculum Section
   - vi. Provincial Trade Advisory Committees
   - vii. Provincial Apprenticeship and Certification Board

3. Identify the Conditions Governing Apprenticeship.

4. Describe the training and educational requirements.
   i. pre-employment (entry level) training
   ii. block release
   iii. on-the-job

5. Explain the steps in the registered apprenticeship process.
   i. criteria for eligibility
      - entrance requirements as per Conditions of Apprenticeship
      - employment
   ii. registration process
      - application requirements
   iii. Memorandum of Understanding
      - probation period
      - cancellation
   iv. Record of Occupational Progress (Logbook)
      - signing off skills
      - recording hours
      - updating PDO on progress
   v. class calls
      - schedule
      - EI Eligibility
      - Direct Entry
      - advanced level
   vi. Block Exams
   vii. progression
      - schedule
      - wage rates
   viii. cancellation of apprenticeship
   ix. Practical Examinations
   x. Provincial and Interprovincial examinations
   xi. certification
      - Certification of Apprenticeship
      - Certification of Qualification
      - Provincial certification
      - Interprovincial Red Seal endorsement

6. Explain the Interprovincial Standards Red Seal Program.
   i. designated Red Seal trade
   ii. the National Occupational Analysis (NOA)
   iii. Interprovincial (IP) Red Seal Endorsement Examination
   iv. relationship of NOA to IP Examination
   v. qualification recognition and mobility

7. Identify the current financial incentives available to apprentices.

8. Explain the NL apprenticeship and trades certification division's out-of- province apprenticeship policy.

Practical Requirements:

1. Use the Provincial Apprenticeship and Trades Certification web site at www.gov.nl.ca/app to:
   i. locate, download, and complete the Application for Apprenticeship and Memorandum of Understanding (MOU)
   ii. locate, download, and complete the Out of Province registration forms
      - Application for Apprenticeship (out of province)
      - Letter of Understanding (LOU)
      - Acceptance of Conditions Letter
   iii. locate, download, and complete the Work Experience Credits form
   iv. identify the locations of all Industrial Training offices
   v. locate and review the following learning resources relevant to the trade:
      - Study Guide
      - Exam Preparation Guide
      - Plan of Training

2. Use a logbook for this trade to:
   i. identify the hours for the trade (in-school and on-the-job)
   ii. identify the number of blocks
   iii. identify the courses in each block
   iv. identify the workplace skills to be completed and verified

3. Use the Red Seal Web site, http://www.red-seal.ca to retrieve the National Occupational Analyses (NOA) for this trade.
   i. identify the following components of the NOA:
      - Trends
      - Scope
      - Key Competencies
      - Blocks
      - Tasks
      - Subtasks
      - Pie Charts
      - Table of Specifications

AM1100 Math Essentials

Note: It is recommended that AM1100 be delivered in the first semester of the Entry Level training program.

Learning Outcomes:

- Demonstrate knowledge of the numeracy skills required to begin the 2nd level math course.
- 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: 30 Hours

Pre-Requisite(s): None

Objectives and Content:

Wherever possible, the instructor should use trade specific examples to reinforce the course objectives

1. Use multiplication tables from memory.

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

3. Apply the order of operations in math problems.

4. Perform fraction and mixed number operations.
   i. read, write, add, subtract, multiply and divide fractions

5. Perform decimal operations.
   i. read, write, round off, add, subtract, multiply and divide decimals

6. Perform percent/decimal/fraction conversion and comparison.
   i. convert between fractions, decimals and percents

7. Perform percentage operations.
   i. read and write percentages
   ii. calculate base, rates and percentages

8. Perform ratio and proportion operations.
   i. use a ratio comparing two quantities with the same units
   ii. use a proportion comparing two ratios

9. Use the imperial measurement system in math problems.
   i. identify units of measurement for:
      - length
      - mass
      - area
      - volume
      - capacity

10. Use the metric measurement system in math problems.
    i. identify units of measurement for:
       - length
       - mass
       - area
       - volume
       - capacity

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.

AM1360 Power Sport 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.
- Demonstrate knowledge of solving mathematical word problems.
- Demonstrate 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: 30 Hours

Pre-Requisite(s): AM1100

Objectives and Content:

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

1. Employ percent/decimal/fraction conversion and comparison in trade specific situations.

2. Apply ratios and proportions to trade specific problems.

3. Use the Imperial Measurement system in trade specific applications.

4. Use the Metric Measurement system in trade specific applications.

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

6. Manipulate formulas using cross multiplication, dividing throughout, elimination, and substitution to solve trade specific problems, such as:
   i. right angle triangles
   ii. area
   iii. volume
   iv. perimeter

7. Perform calculations involving geometry that are relevant to the trade, such as:
   i. angle calculations
   ii. circle calculations

8. Use practical math skills 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 has been designated as 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.

CM2160 Communication Essentials

Learning Outcomes:

- Demonstrate knowledge of the importance of well-developed writing skills in the workplace and in career development.
- Demonstrate knowledge of the purpose of various types of workplace correspondence.
- Demonstrate knowledge of the principles of effective workplace writing.
- Demonstrate knowledge of standard formats for letters and memos.
- Demonstrate knowledge of principles related to writing effective letters and memos.
- Demonstrate the ability to prepare and deliver an oral presentation.
- Demonstrate knowledge of the importance of effective interpersonal skills in the workplace.

Duration: 45 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 the principles for writing clear, concise, complete sentences and paragraphs which adhere to the conventions of grammar, punctuation, and mechanics.

2. Identify the principles of effective workplace writing.
   - i. describe the value of well-developed writing skills to career success
   - ii. discuss the importance of tone, and language or word choice in workplace communication, regardless of the circumstances
   - iii. demonstrate an awareness of cultural differences when preparing workplace correspondence
   - iv. describe the writing process as it applies to workplace communication
     - planning
     - writing

- editing/revising

v. identify the parts of a business letter and memo, and when each should be used in the workplace

vi. identify the standard formats for business letters and memos

vii. identify guidelines for writing sample letters and memos which convey:
- acknowledgment
- routine request
- routine response
- complaint
- refusal
- persuasive request
- letters of appeal

3. Identify types of informal workplace documents.

i. identify types & purposes of reports
- incident
- process
- progress

ii. identify common trade specific forms

iii. describe primary and secondary methods used to gather information

iv. discuss the importance of accuracy and completeness in reports and forms

4. Identify the elements of presentations used in the workplace.

i. identify presentation types
- impromptu
- informative
- demonstration
- persuasive

ii. identify the components of an effective presentation
- eye contact
- body language
- vocal qualities
- audience analysis
- multimedia tools
- keeping on topic

5. Demonstrate an understanding of interpersonal communications in the workplace.
   i. identify listening techniques
   ii. demonstrate an understanding of group dynamics
   iii. describe the importance of contributing information and expertise in the workplace
   iv. describe the importance of respectful and open communication in the workplace
   v. identify methods to accept and provide feedback in a constructive and considerate manner
   vi. explain the role of conflict in a group to reach solutions

6. Identify acceptable workplace uses of communication technologies.
   i. cell / Smart Phone etiquette
   ii. voice mail
   iii. e-mail
   iv. teleconferencing / videoconferencing for meetings and interviews
   v. social networking
   vi. other emerging technologies

Practical Requirements:

1. Write well-developed, coherent, unified paragraphs.

2. Write sample letters and memos.

3. Write one short informal report.

4. Complete a selection of at least 3 trade-related forms.

5. Deliver an effective oral presentation.

SD1760 Workplace Essentials

Note: It is recommended that SD1760 be delivered in the second half of the Entry Level training program.

Learning Outcomes:

- Demonstrate knowledge of workplace essentials in the areas of meetings, unions, workers compensation, workers' rights, and human rights.
- Demonstrate knowledge of good customer service practices.
- Demonstrate knowledge of effective job search techniques.

Duration: 45 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 common practices related to workplace meetings.
   i. identify and discuss meeting format and preparation required for a meeting
   ii. explain the purpose of an agenda
   iii. explain the expected roles, responsibilities, and etiquette of meeting participants

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

3. Demonstrate an understanding of the Worker's Compensation process.
   i. describe the aims, objectives, regulations and benefits of the Workplace Health, Safety and Compensation Commission
   ii. explain the role of the Workers Advisor
   iii. explain the internal review process

4. Demonstrate an understanding of workers' rights.
   i. define labour standards
   ii. identify 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. examine the Human Rights Code and explain the role of the Human Rights Commission
   ii. define harassment in various forms and identify strategies for prevention
      - direct
      - systemic
      - adverse effect
   iii. identify gender and stereotyping issues in the workplace
   iv. define basic concepts and terms related to workplace diversity including age, race, culture, religion, socio-economic status, and sexual orientation

6. Demonstrate an understanding of quality customer service.
   i. explain why quality service is important
   ii. identify barriers to quality customer service
   iii. identify customer needs & common methods for meeting them
   iv. identify and discuss the characteristics & importance of a positive attitude
   v. identify the importance of demonstrating good communication skills including body language, listening, questioning, and when using electronic communication devices
   vi. identify techniques for interacting with challenging customers to address complaints and resolve conflict

7. Demonstrate an understanding of effective job search techniques.
   i. identify and explain employment trends, opportunities, and sources of employment
   ii. identify and discuss essential skills for the trades as outlined by Human Resources and Skills Development Canada
   iii. review job ads and identify the importance of fitting qualifications to job requirements
   iv. identify the characteristics of effective resumes, the types of resumes, and principles of resume formatting
   v. identify the characteristics of an effective cover letter
   vi. identify the components of a portfolio, and discuss the value of establishing and maintaining a personal portfolio
   vii. identify the common characteristics of the job interview process:
      - pre-interview preparation
      - interview conduct
      - post-interview follow up

Practical Requirements:

1. Create a resume.

2. Create a cover letter.

3. Participate in a mock job interview.

MC1060 Computer Essentials

Learning Outcomes:

- Demonstrate knowledge of computer systems and their operation.
- Demonstrate knowledge of popular software packages and their applications.
- Demonstrate knowledge of security issues related to computers.

Duration: 15 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 the major external components of a microcomputer system.
   i. input devices
   ii. output devices
   iii. central control unit

2. Use operating system software.
   i. start and quit a program
   ii. use the help function
   iii. use the find function
   iv. maximize and minimize a window
   v. use the task bar
   vi. adjust desktop settings such as screen savers, screen resolution, and backgrounds
   vii. shut down a computer

3. 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

4. Use word processing software to create documents.
   i. enter text
   ii. indent and tab text
   iii. change text attributes (bold, underline, font, etc.)
   iv. change layout format (margins, alignment, line spacing)
   v. spell check and proofread
   vi. edit text
   vii. save document
   viii. print document
   ix. close document
   x. retrieve documents

5. Use spreadsheet software to create spreadsheets.
   i. enter data in cells
   ii. create formulas to add, subtract, multiply and divide
   iii. save spreadsheet
   iv. print spreadsheet
   v. close spreadsheet
   vi. retrieve spreadsheet

6. Access the Internet.
   i. access websites using the world wide web(www)
   ii. identify examples of web browsers
   iii. use search engines with common searching techniques
   iv. describe security issues

7. Use electronic mail.
    i. describe e-mail etiquette
        - grammar and punctuation
        - privacy and legal issues when sharing and forwarding e-mail
        - work appropriate content
        - awareness of employer policies
    ii. manage e-mail using the inbox, sent, and deleted folders
    iii. send an e-mail message with attachment(s)
    iv. print e-mail

Practical Requirements:

None.

BLOCK II

SR2100 Lawn and Garden Equipment Servicing Fundamentals

Learning Outcomes:

- Demonstrate the ability to identify components and service lawn and garden equipment.

Duration: 45 Hours

Pre-requisites: Entry Level Courses

Objectives and content:

1. Describe the procedures to perform routine maintenance and tune-ups.
   i. maintain a service schedule
   ii. use tune-up check list
   iii. prepare equipment for off-season storage

2. Describe the procedures to service single component ignition module.

3. Describe the procedures to service engine auxiliary components.
   i. adjust belt deflection
   ii. align pulleys
   iii. remove and install generators, water pumps and auxiliary attachments
   iv. remove and install reduction drives

4. Identify and explain the purpose of mower deck components and attachments.

5. Describe the procedures to service mower decks and attachments.

6. Identify and explain the purpose of brake and steering components.

7. Describe the procedures to service brake and steering components.

8. Describe the procedures to service chain saws.
   i. causes of bar failure
   ii. causes of chain failure

Practical Requirements:

1. Perform a routine maintenance and tune-up using a check list.

2. Remove and install auxiliary attachments (generators, water pumps, reduction drives).

3. Adjust belts and pulleys on engine auxiliary components.

4. Remove and install mower decks.

5. Disassemble, inspect, service and reassemble a brake system.

6. Service a steering system.

SR2200 Snowmobile Servicing Fundamentals

Learning Outcomes:

- Demonstrate the skills and knowledge necessary to identify and service snowmobile components

Duration: 60 Hours

Pre-requisite: Entry level courses

Objectives and content:

1. Describe the operation of snowmobile systems and components.
   i. fuel system
   ii. oil injection system
   iii. cooling system (liquid and air)
   iv. drive clutch
   v. driven clutch
   vi. slide rail suspension
   vii. braking systems
   viii. steering system
   ix. suspension upgrades

2. Describe the procedures to inspect snowmobile components as per manufactures check list.
   i. carburetors
   ii. oil injection system
   iii. braking system
   iv. cooling system
   v. steering system
   vi. front suspension system
   vii. frame components
   viii. track suspension units
   ix. drive system

3. Describe the procedures to service snowmobile carburetors.

4. Describe the procedures to adjust snowmobile oil injection systems.

5. Describe the procedures to service snowmobile braking systems.
   i. hydraulic lines
   ii. cables.
   iii. disc (rotor)
   iv. linings

6. Describe the procedures to service snowmobile cooling systems.

7. Describe the procedures to service snowmobile steering components.
   i. skis
   ii. ski leg
   iii. steering column
   iv. handle bars
   v. linkage

8. Describe the procedures to service snowmobile independent front suspensions

9. Describe the procedures to replace snowmobile frame components.
   i. bolt on
   ii. riveted

10. Describe the procedures to service snowmobile track suspension units.
    i. slide rail
    ii. tracks

Practical Requirements:

1. Disassemble, service and reassemble a snowmobile carburetor.

2. Adjust a snowmobile oil injection system.

3. Disassemble, service and reassemble a snowmobile braking system.

4. Disassemble, service and reassemble a snowmobile steering system.

5. Disassemble, service and reassemble track suspension units.

SR2300 Motorcycles and ATV Servicing Fundamentals

Learning Outcomes:

- Demonstrate the ability to service motorcycles and ATVs.

Duration: 60 Hours

Pre-requisite: Entry Level Courses

Objectives and content:

1. Describe starter parts and operation.

2. Describe types and functions of motorcycle air filter.

3. Describe motorcycle drum and hydraulic disk brake operation and design.

4. Describe the operation of motorcycle front forks.

5. Describe types of motorcycle clutches

6. Describe the procedures to repair recoil starters

7. Describe the procedures to tune-up engines.
   i. compression test
   ii. perform engine tune-up
   iii. prepare machine for off-season storage

8. Describe the procedures to inspect and service motorcycle air cleaners.

9. Describe the procedures to inspect and service wheels and tires.
   i. remove and replace tire
   ii. service wheel bearings
   iii. repair tires
   iv. service spoke wheels
   v. re-spoke wheels
   vi. balance wheel and tire
   vii. align motorcycle wheels
   viii. check ATV tire pressure

10. Describe the procedures to inspect and service brake systems.
   i. hydraulic system
   ii. disc
   iii. drum

11. Describe the procedures to inspect and service front forks.
   i. recondition the front forks
   ii. steering head parts
   iii. steering head bearings

12. Describe the procedures to inspect and service final drives.
   i. identify types of final drives
   ii. chain drives
   iii. swing arms
   iv. belt drives
   v. shaft drives
   vi. final drives
   vii. bearings and cv joints

13. Describe the procedures to diagnose and service handling problems.
   i. types of handling problems

Practical Requirements:

1. Perform an engine tune-up.

2. Remove and replace a motorcycle and ATV tire.

3. Balance a motorcycle and ATV wheel and tire.

4. Re-spoke and align a rim.

5. Disassemble, service and reassemble an ATV and motorcycle brake system (disc and drum).

6. Disassemble, service and reassemble steering head bearings and front forks (standard and inverted).

7. Service and adjust chain & belt drives.

8. Disassemble, service and reassemble shaft & final drives .

SR2400 Marine Equipment Servicing Fundamentals

Learning Outcomes:

- Demonstrate the ability to service marine equipment.

Duration: 75 Hours

Pre-requisites: Entry Level Courses

Objectives and content:

1. Describe the procedures to repair recoil starters.
    a. replace rope
    b. rebuild recoil assembly

2. Describe the procedures to service marine equipment carburetors.

3. Describe the procedure to service marine equipment fuel injection system.

4. Describe the procedures to diagnose and service outboard powerheads.
    i. prepare outboard powerheads for disassembly
        - handle and clean the outboard motor
        - salvage submerged outboards
    ii. service powerhead components
        - identify components
        - cylinders
        - pistons, rods and rings

5. Describe the procedures to diagnose and service marine equipment remote controls.
    i. steering controls
    ii. remote shift controls

6. Describe the procedures to diagnose and service marine equipment cooling systems.
    i. water pumps
    ii. thermostats

iii. personal watercraft cooling systems
iv. cooling systems on stern drive engines
- open and closed systems
- identify cooling system problems
- repair stern drive water pumps
- service engine water pumps
- service exhaust manifolds and circulation systems

v. flush freshwater cooling systems
vi. pressure test manifolds
vii. clean and service exhaust elbows

7. Describe the procedures to perform routine maintenance on stern drive engines.
   i. change oil and filter
   ii. prepare engine for off-season storage

8. Describe the procedures to diagnose and service stern drive engine electrical systems.
   i. starting system
   ii. ignition system
   iii. charging system

9. Describe the procedures to tune-up engine.
   i. troubleshoot engine problems
   ii. time ignition
   iii. synchronize carburetor
   iv. prepare engine for off-season storage

10. Describe the procedures to align engines.
   i. personal watercraft
   ii. outboards
   iii. inboards

11. Describe the procedures to rig stern drive boat and motor unit.

12. Describe the procedures to service outboard controls and accessories.
   i. rig and repair remote control assembly
   ii. rig and repair remote steering assembly

13. Describe the procedures to service bilge pumps and bilge blowers.

14. Describe the procedures to service boat trailers.
    i. set up trailer
    ii. wire trailer and tow vehicle
    iii. service trailer undercarriage

15. Describe the components of a jet drive system.

16. Describe corrosion protection systems.

17. Identify rigging requirements.

Practical Requirements:

1. Overhaul an outboard powerhead.

2. Service a marine equipment open cooling system.

3. Service a marine equipment closed cooling system.

4. Perform a starting system check on an outboard or stern drive unit.

5. Perform a charging system output test on an outboard or stern drive unit.

6. Align an outboard or stern drive engine.

7. Perform a tune-up.

BLOCK III

SR1500 Small Equipment Transmissions

Learning Outcomes:

- Demonstrate the skills and knowledge required to service small equipment transmissions

Duration: 120 Hours

Pre-requisites: Entry Level Courses

Objectives and content:

1. Describe the design and function of small equipment transmissions.

2. Describe the procedures to service and repair lawn and garden equipment transmissions and differentials.
   i. friction wheel drives
   ii. hydrostatic drives
   iii. troubleshoot transmission problems
   iv. perform maintenance on transmissions
   v. service differentials

3. Describe the procedures to service and repair a CVT (constant variable transmission).

4. Describe types and purpose of snowmobile chain cases.

5. Describe the procedures to service and repair chainsaw and drive systems.
   i. chains and bars
   ii. drive systems
   iii. chain oilers

6. Describe the procedures to service and repair hydrostatic drives.

7. Describe the procedures to service and repair snowmobile chain cases.

i. chain cases
ii. drive axles
iii. jackshaft and driveshaft

8. Describe the operation of motorcycle primary drives and clutches.

9. Describe the types and operation of motorcycle transmissions.

10. Describe the types and operation of motorcycle gear shifting mechanisms.

11. Describe the procedures to service and repair motorcycle transmissions.
    i. troubleshoot transmission malfunctions
    ii. disassemble and assemble transmissions

12. Describe motorcycle kick starting operations.

13. Describe the procedures to service and repair motorcycle and all-terrain vehicle clutches.
    i. primary drives and clutches
    ii. one-way clutches
    iii. centrifugal clutch
    iv. multi-plate clutch

14. Describe the procedures to service and repair marine equipment transmissions.

Practical Requirements:

1. Diagnosis small equipment transmission and differential problems.

2. Disassemble, inspect, service and reassemble friction wheel drives.

3. Disassemble, inspect, service and reassemble hydrostatic drives.

4. Disassemble, inspect, service and reassemble a constant variable transmission.

5. Disassemble, inspect, service and reassemble a snowmobile chain case.

6. Disassemble, inspect, service and reassemble chainsaw chain and bar.

7. Disassemble, inspect, service and reassemble chainsaw drive system.

8. Disassemble, inspect, service and reassemble a motorcycle transmission.

9. Disassemble, inspect, service and reassemble all-terrain vehicle clutches.

10. Disassemble, inspect, service and reassemble a marine equipment transmission.

SR2310 Motorcycle and ATV Troubleshooting And Repair

Learning Outcomes:

- Demonstrate the ability to troubleshoot and repair motorcycles and ATV's

Duration: 120 Hours

Pre-requisites: SR2300 Motorcycle and ATV Servicing Fundamentals

Objectives and content:

1. Describe two-stroke and four-stroke lubrication systems.

2. Describe the procedures to service lubrication systems.
   i. test and service lubrication systems
   ii. change oil and filters

3. Describe a systematic approach to diagnosing engine malfunctions.

4. Describe the procedures to adjust valve clearances on four-stroke engine.
   i. shim
   ii. rocker arm

5. Describe the procedures to disassemble, inspect, service and reassemble motorcycle and ATV cylinder heads.
   i. valves
   ii. valve guides
   iii. valve seats
   iv. springs

6. Describe the procedures to service engine power valve systems.

7. Describe the procedures to disassemble, inspect, service and reassemble motorcycle and ATV cylinder blocks.
   i. pistons and rings
   ii. crankshafts

iii. connecting rod
iv. measure clearances
v. deglaze cylinder bore

8. Identify and explain the operation of motorcycle and atv ignition systems.
   i. electronic

9. Describe the procedures to diagnose and service motorcycle and ATV CDI and battery ignition systems.
   i. Adjust timing on CDI ignition
   ii. Test electrical components

10. Identify and explain the operation of motorcycle and ATV starting and charging systems.

11. Describe the procedures to diagnose and service motorcycle and ATV charging systems.
   i. test charging systems

12. Describe the procedures to diagnose and service motorcycle and ATV starter systems.
   i. one-way clutches

13. Identify and explain motorcycle and ATV carburetor operation.
   i. slide valve
   ii. CV
   iii. Fixed venturi
   iv. troubleshooting

14. Describe the procedures to diagnose and service motorcycle and atv carburetor malfunctions.

15. Identify and explain motorcycle and atv electronic fuel injection operation.

16. Describe the procedures to diagnose and service motorcycle and atv cooling systems.

17. Describe the procedures to diagnose and service motorcycle and atv electrical malfunctions.

i. Troubleshoot switches
ii. Troubleshoot lighting and starter circuits

Practical projects:

1. Diagnose systematically engine system malfunctions.

2. Perform a valve adjustment on a four-stroke engine.

3. Disassemble, inspect, service and reassemble a motorcycle or ATV cylinder head.

4. Disassemble, inspect, service and reassemble a motorcycle or ATV cylinder block.

5. Diagnose and service starting system malfunctions.

6. Diagnose and service charging system malfunctions.

7. Perform a ignition output test.

8. Diagnose and service carburetor malfunctions.

9. Diagnose and service electrical malfunctions.

10. Diagnose and service cooling system malfunctions.

BLOCK IV

SR2110 Lawn and Garden Equipment Troubleshooting and Repair

Learning Outcomes:

- Demonstrate the ability to troubleshoot and repair lawn and garden equipment.

Duration: 80 Hours

Pre-requisites: SR2100 Lawn and Garden Equipment Servicing Fundamentals

Objectives and content:

1. Identify and describe the causes for piston failure.

2. Identify and describe types of bearing failure and the causes.

3. Identify and describe the importance of maintaining the correct quantity and quality of lubrication.

4. Identify and describe hydraulic operation on lawn and garden equipment.
   i. hydraulic theory
   ii. hydraulic systems

5. Describe the procedures to service hydraulic systems on lawn and garden equipment.

6. Describe the procedures to service valve trains on lawn and garden equipment.
   i. valve service procedures
   ii. four cycle engines
   iii. two cycle engines

7. Describe the procedures to service engine components on lawn and garden equipment.
   i. pistons, rods and rings
   ii. cylinders
   iii. camshaft
   iv. crankshaft
   v. analyze piston failure
   vi. analyze bearing failure

8. Describe the procedures to service clutches and drives on lawn and garden equipment.
   i. perform maintenance on clutches
   ii. troubleshoot clutch problems
   iii. service drives

9. Describe the procedures to service cooling systems on lawn and garden equipment.

10. Describe the procedures to overhaul engine driven water pumps.
   i. identify water pump parts
   ii. perform maintenance and repair on water pumps

11. Describe the procedures to overhaul chainsaw engines.
   i. identify the components of chainsaw engines
   ii. perform routine maintenance on chainsaw engines
   iii. disassemble and reassemble chainsaw engines
   iv. troubleshoot problems with chainsaw engines

12. Identify portable generating units.
   i. types

13. Describe the procedures to diagnosis and service portable generating equipment.
   i. resistance test
   ii. voltage test
   iii. brush measurement
   iv. RPM
   v. hertz

Practical Requirements:

1. Perform a lubrication service on lawn and garden equipment.

2. Drain and refill a lawn and garden hydraulic system.

3. Disassemble, analyze, and rebuild a lawn and garden engine.

4. Perform maintenance on a lawn and garden clutch system.

5. Overhaul a chainsaw engine.

6. Perform an output test on a portable generator.

SR2210 Snowmobile Troubleshooting and Repair

Learning Outcomes:

- Demonstrate the ability to troubleshoot and repair snowmobile engines

Duration: 80 Hours

Pre-requisites: SR2200 Snowmobile Servicing Fundamentals

Objectives and content:

1. Describe the parts and operation of a snowmobile fuel injection system.

2. Explain the advantages and disadvantages of fuel injection.

3. Describe the procedures involved in troubleshooting the fuel system.

4. Identify and describe how the following terms are associated with clutch tuning.
   i. maximum rpm
   ii. shift rpm
   iii. engagement rpm
   iv. backshift
   v. clutch weights
   vi. spring preload
   vii. spring rate
   viii. spring total force

5. Identify and describe how the crankshaft operates the following.
   i. water pump
   ii. rotary valve drive
   iii. oil pump
   iv. counterbalance shafts

6. Describe the procedure to systematically diagnose engine malfunctions.

7. Describe the procedures to diagnose and repair electronic ignition systems.

i. adjust ignition timing.

8. Describe the procedures to diagnose and repair lighting, starting and charging systems.

9. Describe the procedures to diagnose and repair fuel system malfunctions.
   i. spark plug readings
   ii. carbon patch readings
   iii. adjust throttle safety systems

10. Describe the procedures to service gas charged shocks.
   i. safety precautions

11. Describe the procedures to recondition drive clutches.

12. Describe the procedures to recondition driven clutches.
   i. set alignments
   ii. diagnose belt failure

13. Describe the procedures to disassemble, inspect, repair and assemble a snowmobile engine.
   i. cylinder head
   ii. valve train
   iii. cylinder block
   iv. honing
   v. pistons and rings
   vi. crankshafts
   vii. alignment
   viii. engine installation and alignment

14. Describe the procedures to service engine power valve systems.
   i. pressure
   ii. electric

15. Describe the procedures to service snowmobile exhaust systems.

Practical Requirements:

1. Diagnose systematically engine system malfunctions.
2. Adjust electronic ignition timing.
3. Diagnose and service starting system malfunctions.
4. Diagnose and service charging system malfunctions.
5. Diagnose fuel management problems.
6. Recondition a drive clutch.
7. Recondition a driven clutch.
8. Disassemble, inspect, service and assemble a snowmobile engine.

SR2410 Marine Equipment Troubleshooting and Repair

Learning Outcomes:

- Demonstrate the ability to troubleshoot and repair marine equipment

Duration: 80 Hours

Pre-requisites: SR2400 Marine Equipment Servicing Fundamentals

Objectives and content:

1. Describe the procedures to diagnose and service marine equipment ignition systems.
   i. identify ignition systems
   ii. CDI and solid state systems

2. Describe the procedures to diagnose and service marine equipment starting and charging systems.

3. Describe the procedures to diagnose and service fuel systems.
   i. air intake system
   ii. carburetor
   iii. manifold
   iv. fuel pump
   v. oil injection
   vi. fuel tank
   vii. lines
   viii. anti-siphon valve
   ix. fuel scavenging systems

4. Describe the operation and purpose of tilt and trim systems.

5. Describe the procedures to diagnose and service tilt and trim systems.
   i. tilt unit
   ii. trim system
   iii. tilt/trim system

6. Describe the theory of propeller operation.

7. Describe the procedure to select propellers.
   i. applications
   ii. replacements

8. Describe the procedures to repair water pump impellers.

9. Describe the procedures to diagnose and repair upper gear housings.
   i. stern drive unit
   ii. upper gear housing

10. Describe the procedures to diagnose and repair lower gear housings.
    i. lower units
    ii. pressure test lower gear housings

11. Describe the procedures to diagnose and service lower units.
    i. identify mechanical gear case components
    ii. service lower unit and mechanical gear case

12. Describe the procedures to diagnose and service jet drive units.

Practical Requirements:

1. Diagnose systematically fuel and ignition system malfunctions.

2. Diagnose and service starting system malfunctions.

3. Diagnose and service charging system malfunctions.

4. Service a tilt and trim system.

5. Remove and service a jet drive unit.

6. Disassemble, inspect, service and reassemble upper gear housing.

7. Disassemble, inspect, service and reassemble lower gear housing.

B. 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.

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.

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 Progression Schedule

SMALL EQUIPMENT SERVICE TECH NICIAN - 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 Block 1 training ▪ Pass Block 1 exam ▪ Minimum 1800 hours of combined relevant work experience and training	2nd Year
2nd	75%	▪ Completion of Block 2 training ▪ Pass Block 2 exam ▪ Minimum 3600 hours of combined relevant work experience and training	3rd Year
3rd	90%	▪ Completion of Block 3 & 4 training ▪ Pass Block 3 exam ▪ Minimum 5200 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.

Block Exams

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

SMALL EQUIPMENT SERVICE TECH NICIAN - 5400 Hours		
CLASS CALLS		
Call Level	Requirements for Class Call	Hours awarded for In-School Training
Direct Entry Apprentice: PLA & / or Block 1	▪ Minimum of 1000 hours of relevant work experience ▪ Prior Learning Assessment (PLA) at designated college (if applicable)	To be determined by the number of courses completed after each class call
Block 2	▪ Minimum of 1800 hours of relevant work experience and training	240
Block 3	▪ Minimum of 3600 hours of relevant work experience and training	240
Block 4	▪ Minimum of 5200 hours of relevant work experience and training	240

Direct Entry Apprentice

- Must complete Block 1 courses through PLA and / or in-school training.
- Block 1 training is to be completed via class calls; up to 16 weeks of training per calendar year.
- Must attend in-school training until Block 1 is complete before attending Blocks 2 or higher

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 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 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

The ratio of apprentices to journeypersons shall not exceed two apprentices to every one journeyperson employed.

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. 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 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 regularly 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 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 Advanced Education and Skills within 30 days of the decision.

C. Requirements for Blue Seal Endorsement

1. Evidence that 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 of 7200 hours of suitable work experience.

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

D. 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 Advanced Education 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 block, 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.