
Plan of Training

Small Equipment Service Technician



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

March 2020

PLAN OF TRAINING

Small Equipment Service Technician

March, 2020



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

Approved by:

Dave Hill

Chairperson, Provincial Apprenticeship and Certification Board

Date: June 01, 2020

Plan of Training – Small Equipment Service Technician

Preface

This curriculum standard describes the curriculum content for the Small Equipment Service Technician apprenticeship 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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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 level 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.

Level 1				
Course No.	AACS 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	None
TS1220	-	Precision Measurement	30	None
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	None
SR1131	-	Engine Operations	30	TS1191 SR1120
SR1140	-	Lubrication Systems	45	TS1191 SR1120
SR1221	-	Small Equipment Engines	60	SR1131
SR1230	-	Small Equipment Starting and Charging Systems	75	MP1440
SR1240	-	Ignition Systems	60	MP1440

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Level 1				
Course No.	AACS No.	Course Name	Hours	Pre-Requisite(s)
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
SR1145	-	Introduction to Heating and Air Conditioning Systems	30	TS1191
SR1431	-	Emission Control Systems	30	SR1330 SR1340 SR1240
AM1000	-	Introduction to Essential Skills	9	None
*AM1101	-	Math Essentials	42	None
AM1361	-	Powersport 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			1061	

***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.**

REQUIRED WORK EXPERIENCE

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Level 2				
Course No.	AACS No.	Course Name	Hours	Pre-Requisite(s)
SR2100	-	Lawn & Garden Equipment Servicing Fundamentals	45	Level 1
SR2200	-	Snowmobile Servicing Fundamentals	60	Level 1
SR2301	-	Motorcycle Servicing Fundamentals	30	Level 1
SR2302	-	ATV Servicing Fundamentals	30	Level 1
SR2401	-	Marine Equipment Servicing Fundamentals	75	Level 1
Total Hours			240	

REQUIRED
WORK EXPERIENCE

Level 3				
Course No.	AACS No.	Course Name	Hours	Pre-Requisite(s)
SR1500	-	Small Equipment Transmissions	120	Level 2
SR2310	-	Motorcycle & ATV Troubleshooting & Repair	120	Level 2
Total Hours			240	

REQUIRED
WORK EXPERIENCE

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Level 4				
Course No.	AACS No.	Course Name	Hours	Pre-Requisite(s)
SR2111	-	Lawn & Garden Equipment, Troubleshooting & Repair	70	Level 3
SR2210	-	Snowmobile Troubleshooting & Repair	80	Level 3
SR2411	-	Marine Equipment Troubleshooting & Repair	90	Level 3
Total Hours			240	

Total Course Credit Hours	1781
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Level 1

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

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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

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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. rationale 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

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- 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.
- Demonstrate an appreciation for environmental protection.

Duration: 120 Hours

Pre-Requisite(s): 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. ratcheting 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 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

10. 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

11. 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-Requisite(s): 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. measuring tape
 - v. angle gauge
 - vi. straight edges

2. Describe the procedures to select and use precision measuring tools.
 - i. micrometers (all types)
 - ii. Vernier calipers (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
 - xi. feeler gauges

3. Solve problems on Imperial/Metric conversions.

Practical Requirements:

1. Measure outside and inside diameters of a given object.
2. Measure projection and depth of a given object.
3. Measure runout, endplay and backlash on given object.
4. 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-Requisite(s): TS1191

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
 - 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 Requisite(s): TS1191

Objectives and Content:

1. Describe the procedures to operate MIG welding equipment to industrial safety standards as needed for various motorized equipment.
 - i. equipment
 - ii. advantages
 - iii. shielding gases
 - iv. filler wire
 - v. welding process
 - vi. types
 - vii. weld penetration
 - viii. electrical system cautions
 - 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(s): TS1191, SR1120

Objectives and content:

1. Describe basic electrical 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. Describe the application of 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.
 - i. circuit testing devices
 - applications of volt, ohm and ammeters
 - meter ranges
 - correct hookup of meters
 - test lights, circuit breakers
 - ii. circuit problems and testing problems
 - short, open and grounds
 - diagnostic trouble shooting procedures
 - testing procedures and equipment

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

5. Identify electronic components, their purpose and uses.
 - i. wires and terminals
 - types and sizes
 - terminals and connectors
 - conductors, semi-conductors and insulators
 - ii. electronic control modules
 - identification
 - purpose
 - uses
 - iii. voltage regulators

6. Describe fly-by-wire control systems.
 - i. steering
 - ii. throttle
 - iii. shifting

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
 - ii. complete a wire repair

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(s): 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
5. Introduction to computerized information systems.
 - i. computerized parts information
 - ii. computerized service and repair information
 - iii. other online resources
6. 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.

SR1131 Engine Operations

Learning Outcomes:

- Demonstrate knowledge of engine construction and operation.

Duration: 30 Hours

Pre-Requisite(s): TS1191, SR1120

Objectives and content:

1. 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
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 principles of engine operation.
 - i. cylinder pressures
 - ii. heat transfer
 - iii. stress
 - iv. torque
 - v. compression
 - vi. combustion
 - vii. atmospheric pressure

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- viii. friction
 - ix. vacuum
 - x. inertia
 - xi. horsepower
6. Describe the metallurgy of engine blocks.
- i. aluminum
 - ii. cast iron
 - iii. composites

Practical Requirements:

None

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-Requisite(s): TS1191, SR1120

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
 - iv. electric
7. Describe the types and explain the operation of valves and components.
 - i. pressure relief
 - ii. check
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
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 or check valve and components.
4. Remove, clean, inspect and replace oil pump.

SR1221 Small Equipment Engines

Learning Outcomes:

- Demonstrate the skills and knowledge required to perform routine servicing on light duty engines.
- Demonstrate the ability to use service information effectively.
- Demonstrate the use of safety practices in potentially harmful situations.

Duration: 60 Hours

Pre-Requisite(s): SR1131

Objectives and Content:

1. 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
2. Describe the procedures to check gasoline engine compression.
 - i. remove spark plugs
 - ii. test compression
 - 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.

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.

Duration: 75 Hours

Pre-Requisite(s): MP1440

Objectives and Content:

1. Describe types and purposes of batteries.
2. Describe the operating principles of starting and charging systems.
3. Describe the procedures to service batteries.
 - i. test
 - ii. recharge
 - iii. replace
3. Describe the procedures to disassemble, inspect and service starting system.
 - i. rope-rewind starters
 - ii. relays and switches
 - iii. electrical starters
 - iv. starter drives
 - v. maintain starting system
4. Describe the procedures to service and replace starting motors.
5. Describe the procedures to disassemble, inspect and service charging system.
 - i. AC generator
 - ii. voltage regulators
 - iii. rectifiers
 - iv. maintain charging system
6. 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 AC generator.
7. 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-Requisite(s): MP1440

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.

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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-Requisite(s): TS1191, SR1120

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-Requisite(s): SR1320, MP1440

Objectives and Content:

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.

Duration: 60 Hours

Pre-Requisite(s): SR1320

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-Requisite(s): TS1191, SR1120

Objectives and Content:

1. Describe types of cooling systems and their operation.
 - i. air
 - ii. liquid
 - anti-freeze
 - oil
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.

SR1145 Introduction to Heating and Air Conditioning Systems

Learning Outcomes:

- Demonstrate knowledge of air conditioning and heating systems, their components and operation.
- Demonstrate knowledge of the equipment used to diagnose air conditioning control systems.

Duration: 30 Hours

Pre-Requisite(s): TS1191

Objectives and Contents:

1. Explain the principles of an air condition system.
2. Identify airflow control systems, their components and operation.
3. Identify heating systems, and describe their components and operation.
4. Identify types of diagnostic equipment, and describe their applications and procedures for use.
 - i. scan tool
 - ii. manifold gauge set
 - iii. charging station
 - iv. pyrometer

Practical Requirements:

None

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-Requisite(s): SR1240, SR1330, SR1340

Objectives and Content:

1. Identify the components and functions of an emission control system.
 - i. crankcase ventilation systems
 - positive
 - opened and closed
 - ii. air injection systems
 - secondary
 - iii. catalytic converters
 - monolithic
 - 2 way
 - 3 way
 - iv. evaporation controls
 - tank vent
 - v. spark timing controls
 - thermal valves
 - knock sensors
 - vi. oxygen sensors
2. Describe exhaust system characteristics.
 - i. Back pressure
 - ii. Sound waves

Practical requirements:

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 content¹
 - ii. OLES Essential Skills Profiles²
 - iii. OLES tools and support for apprentices and tradespeople³
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 Indicator⁴ and Essential Skills Self-Assessment for the Trades⁵ 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 AM1100 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.

AM1361 Powersport 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

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- 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

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- 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 SD1760 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

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- 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, Skills and Labour
 - 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 journeyman - Blue Seal
 - Interprovincial journeyman - 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

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- 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

Level 2

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-Requisite(s): Level 1

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 checklist.
2. Remove and install auxiliary attachments.
 - i. generators
 - ii. water pumps
 - iii. 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 snowmobiles.

Duration: 60 Hours

Pre-requisite: Level 1

Objectives and content:

1. Describe the operation of snowmobile systems and components.
 - i. fuel system
 - ii. oil injection system
 - iii. cooling system
 - liquid
 - 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 checklist.
 - i. Carburetors
 - ii. Fuel injection
 - iii. oil injection system
 - iv. braking system
 - v. cooling system
 - vi. steering system
 - vii. front suspension system
 - viii. frame components
 - ix. track suspension units
 - x. drive system
3. Describe the procedures to service snowmobile carburetors.
4. Describe the procedures to service snowmobile fuel injection systems.

5. Describe the procedures to adjust snowmobile oil injection systems.
 - i. mechanical
 - ii. electric
6. Describe the procedures to service snowmobile braking systems.
 - i. hydraulic lines
 - ii. cables
 - iii. disc
 - iv. rotor
 - v. linings
7. Describe the procedures to service snowmobile cooling systems.
 - i. heat exchangers
 - ii. electric radiators
 - iii. fan cooled
8. Describe the procedures to service snowmobile steering components.
 - i. skis
 - ii. ski spindle
 - iii. steering column
 - iv. handle bars
 - v. linkage
 - vi. power steering
9. Describe the procedures to service snowmobile independent front suspensions.
10. Describe the procedures to replace snowmobile frame components.
 - i. bolt on
 - ii. riveted
 - iii. cemented
11. Describe the procedures to service snowmobile track suspension units.
 - i. slide rail
 - ii. track alignment
 - iii. track tension

Practical Requirements:

1. Disassemble, service and reassemble a snowmobile carburetor.
2. Disassemble, service and reassemble a snowmobile fuel injection system.
3. Adjust a snowmobile oil injection system.

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4. Disassemble, service and reassemble a snowmobile braking system.
5. Disassemble, service and reassemble a snowmobile steering system.
6. Disassemble, service and reassemble a track suspension units.

SR2301 Motorcycles Servicing Fundamentals

Learning Outcomes:

- Demonstrate the ability to service motorcycles.

Duration: 30 Hours

Pre-requisite: Level 1

Objectives and content:

1. Describe starter parts and operation.
2. Describe types and functions of air filters.
3. Describe drum and hydraulic disk brake operation and design.
4. Describe the operation of motorcycle front forks.
5. Describe types of clutches.
6. Describe the procedures to tune-up engines.
 - i. compression test
 - ii. perform engine tune-up
 - iii. prepare machine for off-season storage
7. Describe the procedures to inspect and service motorcycle air cleaners.
8. 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
9. Describe the procedures to inspect and service brake systems.
 - i. hydraulic system
 - ii. disc
 - iii. drum

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

11. Describe the procedures to inspect and service final drives.
 - i. identify types of final drives
 - chain
 - belt
 - shaft
 - ii. bearings
 - iii. swing arms

12. Describe the procedures to identify, diagnose and service handling problems.

Practical Requirements:

1. Perform an engine tune-up.
2. Remove, replace and balance a tire.
3. Re-spoke and align a rim.
4. Disassemble, service and reassemble a brake system.
 - i. disc
 - ii. drum
5. Disassemble, service and reassemble steering head bearings and front forks.
 - i. standard
 - ii. inverted
6. Service and adjust chain & belt drives.
7. Disassemble, service and reassemble shaft & final drives.

SR2302 ATV Servicing Fundamentals

Learning Outcomes:

- Demonstrate the ability to service ATVs.

Duration: 30 Hours

Pre-requisite: Level 1

Objectives and content:

1. Describe starter parts and operation.
2. Describe types and functions of air filters.
3. Describe drum, hydraulic disk, and wet brake system operation and design.
4. Describe types of clutches.
5. Describe the procedures to repair recoil starters.
6. Describe the procedures to tune-up engines.
 - i. compression test
 - ii. perform engine tune-up
 - iii. prepare machine for off-season storage
7. Describe the procedures to inspect and service air cleaners.
8. Describe the procedures to inspect and service wheels and tires.
 - i. remove and replace tire
 - ii. service wheel bearings
 - iii. repair tires
 - iv. balance wheel and tire
 - v. align front end
 - vi. check tire pressure
9. Describe the procedures to inspect and service brake systems.
 - i. hydraulic system
 - ii. disc
 - iii. drum
 - iv. wet brake

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10. Describe the procedures to inspect and service front ends.
 - i. bushings
 - ii. bearings
 - iii. tie rod ends
 - iv. CV shafts
 - v. electric power steering

11. Describe the procedures to inspect and service final drives.
 - i. identify types of final drives
 - chain
 - belt
 - shaft
 - ii. bearings and cv joints
 - iii. swing arms

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

Practical Requirements:

1. Perform an engine tune-up.
2. Remove, replace and balance a tire.
3. Disassemble, service and reassemble a brake system.
 - i. disc
 - ii. drum
4. Service and adjust chain & belt drives.
5. Disassemble, service and reassemble a rear differential.

SR2401 Marine Equipment Servicing Fundamentals

Learning Outcomes:

- Demonstrate the ability to troubleshoot and repair marine equipment.

Duration: 75 Hours

Pre-Requisite(s): Level 1

Objectives and content:

1. Describe the procedures to diagnose and service ignition systems.
 - i. CDI
 - ii. solid state
 - iii. ECM
2. Describe the procedures to diagnose and service starting and charging systems.
3. Describe the procedures to diagnose and service fuel systems.
 - i. air intake system
 - ii. carburetor
 - iii. fuel injection
 - iv. manifold
 - v. fuel pump
 - vi. oil injection
 - vii. fuel tank
 - viii. lines
 - ix. anti-siphon valve
4. Describe the operation and purpose of tilt and trim systems.
5. Describe the procedures to diagnose and service tilt and trim systems.
6. Describe propeller operation and applications.
7. Describe the procedures to replace water pump impellers.
8. Describe the procedures to diagnose and repair upper stern drive gear housings.
 - i. pressure test
9. Describe the procedures to diagnose and repair lower stern drive gear housings.
 - i. pressure test

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

Practical Requirements:

1. Diagnose 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.

Level 3

SR1500 Small Equipment Transmissions

Learning Outcomes:

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

Duration: 120 Hours

Pre-Requisite(s): Level 2

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 types and purpose of snowmobile chain and gear cases.
4. Describe the procedures to service and repair chainsaw systems.
 - i. chains and bars
 - ii. drive systems
 - iii. chain oilers
5. Describe the procedures to service and repair snowmobile chain and gear cases.
 - i. chains, sprockets, bearings, and gears
 - ii. tensioners
 - iii. drive axle
 - iv. jackshaft
6. Describe the operation of motorcycle transmissions.
 - i. primary drives
 - ii. clutches
 - iii. gear shifting mechanisms
7. Describe the procedures to service and repair motorcycle transmissions.
 - i. troubleshoot transmission malfunctions

- ii. disassemble and assemble transmissions
8. Describe motorcycle kick starting operations.
 9. Describe the procedures to service and repair motorcycle and all-terrain vehicle clutches.
 - i. primary drives and clutches
 - ii. Constant Variable Transmission (CVT)
 - iii. one-way clutches
 - iv. centrifugal clutch
 - v. multi-plate clutch

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 a snowmobile gear case.
7. Disassemble, inspect, service and reassemble chainsaw chain and bar.
8. Disassemble, inspect, service and reassemble chainsaw drive system.
9. Disassemble, inspect, service and reassemble a motorcycle transmission.
10. Disassemble, inspect, service and reassemble all-terrain vehicle clutches.

SR2310 Motorcycle and ATV Troubleshooting and Repair

Learning Outcomes:

- Demonstrate the ability to troubleshoot and repair motorcycles and ATVs.

Duration: 120 Hours

Pre-Requisite(s): Level 2

Objectives and content:

1. Describe two-stroke and four-stroke lubrication systems.
2. Describe the procedures to service lubrication systems.
 - i. check oil pressure
 - ii. check valves
 - iii. test for contaminants
 - iv. change oil and filters
3. Describe a systematic approach to diagnosing engine malfunctions.
4. Describe the procedures to adjust valve clearances on a 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
 - v. camshafts
 - vi. bearings and seals
 - vii. timing chains, belts and gears
 - viii. measuring clearances
6. Describe the procedures to service motorcycle engine exhaust and 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. bearings and seals

- iv. connecting rods
 - v. timing chains
 - vi. belts
 - vii. gears
 - viii. measure clearances
 - ix. deglaze cylinder bore
8. Identify and explain the operation, diagnosis and service of motorcycle and ATV ignition systems.
 - i. electronic
 - ii. CDI
 - iii. Magneto
 - iv. Battery ignition
 - v. ECU
 9. Identify and explain the operation, diagnosis and service of motorcycle and ATV starting and charging systems.
 - i. testing
 - ii. one-way clutch
 10. Identify and explain the operation, diagnosis and service of motorcycle and ATV carburetors.
 - i. flat slide
 - ii. CV
 - iii. Fixed venturi
 11. Describe the procedures to diagnose and service motorcycle and ATV cooling systems.
 12. Describe the procedures to diagnose and service motorcycle and ATV electrical malfunctions.
 - i. troubleshoot switches
 - ii. troubleshoot lighting and starter circuits

Practical Requirements:

1. Diagnose engine system malfunctions.
2. Disassemble, inspect, service and reassemble a motorcycle or ATV cylinder head, including a valve adjustment.
3. Disassemble, inspect, service and reassemble a motorcycle or ATV cylinder block.
4. Diagnose and service a starting system.

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5. Diagnose and service a charging system.
6. Diagnose and service an ignition system.
7. Diagnose and service a carburetor.
8. Diagnose and service a cooling system.

Level 4

SR2111 Lawn and Garden Equipment Troubleshooting and Repair

Learning Outcomes:

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

Duration: 70 Hours

Pre-Requisite(s): Level 3

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 and service procedures for lawn and garden equipment.
 - i. hydraulic theory
 - ii. hydraulic systems
5. Describe the procedures to service valve trains on lawn and garden equipment.
 - i. valve service procedures
 - ii. four cycle engines
6. Describe the procedures to diagnose and service engine components on lawn and garden equipment.
 - i. pistons, rods, bearings and rings
 - ii. cylinders
 - iii. camshaft
 - iv. crankshaft

7. Describe the procedures to diagnose and service clutches and drives on lawn and garden equipment.
8. Describe the procedures to diagnose and service cooling systems on lawn and garden equipment.
9. Describe the procedures to overhaul engine driven water pumps.
 - i. identify and replace water pump parts
10. 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
11. Identify types of portable generating units.
12. Describe the procedures to diagnosis and service portable generating equipment.
 - i. resistance test
 - ii. voltage test
 - iii. brush measurement
 - iv. RPM check
 - v. hertz check

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-Requisite(s): Level 3

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. Describe the procedures to tune and recondition clutches.
 - i. maximum rpm
 - ii. shift rpm
 - iii. engagement rpm
 - iv. backshift
 - v. clutch weights
 - vi. spring preload
 - vii. spring rate
 - viii. spring total force
 - ix. belt deflection
 - x. belt alignment
5. Describe crankshaft component operation.
 - i. water pump
 - ii. rotary valve drive
 - iii. oil pump
 - iv. counterbalance shafts
6. Describe the procedure to 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.
 - i. adjust throttle safety systems

9. Describe the procedures to diagnose and repair fuel system malfunctions.
 - i. spark plug readings
 - ii. carbon patch readings
10. Describe the procedures to service gas charged shocks.
 - i. safety precautions
11. Describe the procedures to recondition drive and driven clutches.
 - i. set alignments
 - ii. diagnose belt failure
12. 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. bearings, seals and gaskets
 - vii. crankshafts
 - viii. installation and alignment
13. Describe the procedures to service engine power-valve systems.
 - i. pressure
 - ii. electric
14. Describe the procedures to inspect and replace snowmobile exhaust systems.

Practical Requirements:

1. Diagnose 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 and a driven clutch.
7. Disassemble, inspect, service and assemble a snowmobile engine.

SR2411 Marine Equipment Troubleshooting and Repair

Learning Outcomes:

- Demonstrate the ability to service marine equipment.

Duration: 90 Hours

Pre-Requisite(s): Level 3

Objectives and content:

1. Describe the procedures to repair recoil starters.
 - i. replace rope
 - ii. rebuild recoil assembly
2. Describe the procedure to service superchargers and intercoolers.
3. Describe the procedures to diagnose and service inboard and outboard engines.
 - i. handle and clean an outboard motor
 - ii. salvage a submerged outboard
 - iii. service an outboard powerhead
 - identify components
 - cylinders
 - pistons, rods and rings
 - iv. service an inboard engine
 - pistons, rods, bearings and rings
 - cylinders
 - camshaft
 - crankshaft
4. Describe the procedures to diagnose and service marine equipment remote controls.
 - i. steering controls
 - ii. remote shift controls
 - iii. fly by wire systems
5. 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
 - stern drive water pumps

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- engine water pumps
 - exhaust manifolds and circulation systems
 - v. flush freshwater cooling systems
 - vi. pressure test manifolds
 - vii. clean and service exhaust elbows
- 6. Describe the procedures to perform routine maintenance on stern drive engines.
 - i. change oil and filter
 - ii. prepare engine for off-season storage
- 7. Describe the procedures to diagnose and service stern drive engine electrical systems.
 - i. starting system
 - ii. ignition system
 - iii. charging system
- 8. Describe the procedures to tune-up engine.
 - i. troubleshoot engine problems
 - ii. time ignition
 - iii. synchronize carburetor
 - iv. prepare engine for off-season storage
- 9. Describe the procedures to align engines.
 - i. personal watercraft
 - ii. dual outboards
 - iii. inboards
- 10. Describe the requirements and procedures to rig outboard and stern drive boat and motor unit.
- 11. Describe the procedures to service bilge pumps and bilge blowers.
- 12. Describe the procedures to service boat trailers.
 - i. set up trailer
 - ii. wire trailer and tow vehicle
 - iii. service trailer undercarriage
- 13. Describe the components of a jet drive system.
- 14. Describe corrosion protection systems.

Practical Requirements:

1. Overhaul an outboard powerhead.
2. Perform a complete service on an inboard engine.
3. Service a marine equipment open cooling system.
4. Service a marine equipment closed cooling system.
5. Service a supercharger and intercooler.
6. Perform a starting system check on an outboard or stern drive unit.
7. Perform a charging system output test on an outboard or stern drive unit.
8. Align a dual outboard or stern drive engine.
9. Perform a tune-up.

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. 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 in Section 14.

5.0 Apprenticeship Progression Schedule and Wage Rates

Progression Schedule

Small Equipment Service Technician - 5400 Hours			
Apprenticeship Level and Wages			
Level	Wage Rate	Requirements for Progression to Next Level	Next Level
1	60%	<ul style="list-style-type: none"> ▪ Completion of Pre-Employment training ▪ Registration as an apprentice ▪ Minimum 1800 hours of combined relevant work experience and training 	2 nd Year
2	70%	<ul style="list-style-type: none"> ▪ Completion of Level 2 training ▪ Pass Level 2 exam* ▪ Minimum 3600 hours of combined relevant work experience and training 	3 rd Year
3	90%	<ul style="list-style-type: none"> ▪ Completion of Level 3 & 4 training ▪ Pass Level 3 and Level 4 exams* ▪ Minimum 5200 hours of combined relevant work experience and training ▪ Sign-off of all workplace skills in apprentice logbook ▪ Pass certification exam 	Journeyperson Certification
<p>Wage Rates</p> <ul style="list-style-type: none"> ▪ 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. <p>Level Exams*</p> <ul style="list-style-type: none"> ▪ This program may not currently contain level exams, in which case this requirement will be waived until such time as level exams are available. 			

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Small Equipment Service Technician - 5400 Hours		
Class Calls (After Apprenticeship Registration)		
Call Level	Requirements for Class Call	Hours awarded for In-School Training
Direct Entry Level 1	<ul style="list-style-type: none"> ▪ Minimum of 1800 hours of relevant work experience ▪ Prior Learning Assessment (PLA) at designated college (if applicable) 	1061
Level 2	<ul style="list-style-type: none"> ▪ Minimum of 2300 hours of relevant work experience and training 	240
Level 3	<ul style="list-style-type: none"> ▪ Minimum of 3800 hours of relevant work experience and training 	240
Level 4	<ul style="list-style-type: none"> ▪ Minimum of 5200 hours of relevant work experience and training 	
<p>Class Calls at Minimum Hours</p> <ul style="list-style-type: none"> ▪ 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.

C. Requirements for Provincial Certificate of Qualification

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 8100 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 journeyman.
- obtains the required hand tools as specified by the PACB for each period of training of the apprenticeship program.

The Employer:

- provides high quality work experiences in an environment conducive to learning.
- remunerates apprentices as set out in the Plan of Training or Collective Agreements.
- provides feedback to training institutions, 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 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.