

Pre-Employment Plan of Training



PLAN OF TRAINING

Heavy Duty Equipment Technician

March, 2019



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

Approved by:

A handwritten signature in blue ink, appearing to read "D. Wells", is written over a horizontal line.

Chairperson, Provincial Apprenticeship and Certification Board

Date: March 20, 2019

Preface

This curriculum standard is aligned with the 2019 Level 1 Atlantic Apprenticeship Curriculum Standard (AACS) and the 2014 National Occupational Analysis (NOA) for the Heavy Duty Equipment Technician trade. It describes the curriculum content for the Heavy Duty Equipment Technician pre-employment training program.

Acknowledgements

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We offer a sincere thank you.

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A. NOA Comparison Chart

A National Occupational Analysis (NOA) comparison chart is located in the Atlantic Apprenticeship Curriculum Standard (AACS) for this trade.

B. 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 training institution, 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.

A pre-employment student who becomes an apprentice will also be required to complete Levels II, III & IV in the Atlantic Apprenticeship Curriculum Standard.

Pre-Employment				
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
SV1101	CHT-100	Safety	30	None
SV1166	CHT-105	Tools and Equipment	30	SV1101
SV1810	CHT-120	Preventive Maintenance	5	None
SV1201	CHT-125	Start, Move and Park Vehicle	5	None
SV1800	CHT-110	Hoisting and Lifting	15	SV1101
SV1151	CHT-115	Service Information Systems	25	None
SV1131	CHT-175	Electrical and Electronic Principles	55	AM1101
SV1370	CHT-180	Batteries	15	TS1530 TS1520 SV1131 SV1166

Pre-Employment				
Course No.	AACS No.	Course Name	Hours	Pre-Requisite(s)
SV1491	CHT-185	Conventional Lighting Circuits	15	SV1131 SV1370 SV1151
SV1501	CHT-190	Wiring Harnesses and Accessories	15	SV1131 SV1370 SV1151
SV1379	-	Introduction to Starting and Charging Systems	18	SV1501
SV2661	-	Electronic Ignition Systems	30	SV1501
SV1830	CHT-150	Metallurgy	5	None
SV1301	CHT-155	Cutting, Heating and Welding	30	SV1101 SV1830
WD2330	CHT-160	MIG Welding	30	TS1520 SV1166 SV1830
WD2290	CHT-625	Shielded Metal Arc Welding (SMAW)	15	TS1520 SV1166 SV1830
SV1820	CHT-145	Bearings	6	SV1166 TS1520
SV1452	-	Gears	12	SV1166 SV1190
SV1121	CHT-140	Gaskets and Seals	5	SV1166 TS1520
SV1211	CHT-165	Tires, Rims and Wheels	25	SV1166
SV1191	CHT-130 CHT-600	Fasteners, Tubing, Hoses, and Fittings	30	SV1166
SV1190	CHT-135	Lubrication and Fluids Servicing	30	SV1166 TS1520
SV1141	CHT-195	Introduction to Hydraulics	30	None
SV1401	-	Gauges	11	SV1501
SV2391	CHT-605	Reservoirs, Coolers and Filters	15	SV1191
SV1261	CHT-610	Vehicle Hydraulic Brake Systems	60	SV1190 SV1191

Pre-Employment				
Course No.	AACS No.	Course Name	Hours	Pre-Requisite(s)
SV1451	CHT-630	Steering Systems	30	SV1190 SV1452
SV1249	-	Introduction to Suspension Systems	15	SV1166 SV1800
SV2491	-	Pneumatic Systems	20	SV1166
SV1271	CHT-615	Basic Air Brake Systems	60	SV1261
SV1281	-	Drive Lines	25	SV1190 SV1151
SV2731	-	Cab Components	9	SV1166
SV2689	-	Introduction to Frames and Chassis	6	SV1166 SV1800
SV2779	-	Introduction to Hitches and Couplers	6	SV1166 SV1800
SV2299	-	Introduction to Track-Type Undercarriages	15	SV1166 SV1800
SV1303	CHT-170	Engine Principles	45	SV1151
SV1310	-	Cooling Systems	30	SV1121
SV1331	-	Intake and Exhaust Systems	25	SV1166 SV1303
SV1361	-	Diesel Fuel Supply Systems	25	SV1166 TS1520
SV2669	-	Introduction to Heating, Ventilation and Air Conditioning (HVAC) Systems	15	SV1131 SV1166
SV1111	CHT-620	Ozone Depleting Substances	6	SV2669
AM1000	-	Introduction to Essential Skills	9	None
AM1101	-	Math Essentials	42	None
AM1370	-	Heavy Duty and Truck Transport Math Fundamentals	42	AM1101

Pre-Employment				
Course No.	AACS No.	Course Name	Hours	Pre-Requisite(s)
CM2161	CHT-115	Communication Essentials	36	None
SD1761	-	Workplace Essentials	24	None
MC1062	-	Computer Essentials	15	None
AP1102	-	Introduction to Apprenticeship	12	None
Total			1100	

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

Pre-Employment

TS1510 Occupational Health and Safety

Learning Outcomes:

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

Duration: 6 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Interpret the Occupational Health and Safety Act laws and regulations.
 - i. explain the scope of the act
 - application of the act
 - Federal/Provincial jurisdictions
 - Canada Labour Code
 - rules and regulations
 - private home application
 - conformity of the Crown by the Act
2. Explain responsibilities under the Act and Regulations.
 - i. duties of employer, owner, contractors, sub-contractors, employees, and suppliers
3. Explain the purpose of joint health and safety committees.
 - i. formation of committee
 - ii. functions of committee
 - iii. legislated rights
 - iv. health and safety representation
 - v. reporting endangerment to health
 - vi. appropriate remedial action
 - vii. investigation of endangerment
 - viii. committee recommendation
 - ix. employer's responsibility in taking remedial action

4. Examine right to refuse dangerous work.
 - i. reasonable grounds for refusal
 - ii. reporting endangerment to health
 - iii. appropriate remedial action
 - iv. investigation of endangerment
 - v. committee recommendation
 - vi. employer's responsibility to take appropriate remedial action
 - vii. action taken when employee does not have reasonable grounds for refusing dangerous work
 - viii. employee's rights
 - ix. assigning another employee to perform duties
 - x. temporary reassignment of employee to perform other duties
 - xi. collective agreement influences
 - xii. wages and benefits
5. State examples of work situations where one might refuse work.
6. Describe discriminatory action.
 - i. definition
 - ii. filing a complaint procedure
 - iii. allocated period of time a complaint can be filed with the Commission
 - iv. duties of an arbitrator under the Labour Relations Act
 - v. order in writing inclusion
 - vi. report to commission Allocated period of time to request Arbitrator to deal with the matter of the request
 - vii. notice of application
 - viii. failure to comply with the terms of an order
 - ix. order filed in the court
7. Explain duties of commission officers.
 - i. powers and duties of officers
 - ii. procedure for examinations and inspections
 - iii. orders given by officers orally or in writing
 - iv. specifications of an order given by an officer to owner of the place of employment, employer, contractor, sub-contractor, employee, or supplier
 - v. service of an order
 - vi. prohibition of persons towards an officer in the exercise of his/her power or duties
 - vii. rescinding of an order
 - viii. posting a copy of the order
 - ix. illegal removal of an order
8. Interpret appeals of others.
 - i. allocated period of time for appeal of an order
 - ii. person who may appeal order
 - iii. action taken by Commission when person involved does not comply with the order

- iv. enforcement of the order
 - v. notice of application
 - vi. rules of court
9. Explain the process for reporting of accidents.
- i. application of act
 - ii. report procedure
 - iii. reporting notification of injury
 - iv. reporting accidental explosion or exposure
 - v. posting of act and regulations

Practical Requirements:

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

TS1520 Workplace Hazardous Materials Information System (WHMIS)

Learning Outcomes:

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

Duration: 6 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Define WHMIS safety.
 - i. rational and key elements
 - ii. history and development of WHMIS
 - iii. WHMIS legislation
 - iv. WHMIS implementation program
 - v. definitions of legal and technical terms
2. Examine hazard identification and ingredient disclosure.
 - i. prohibited, restricted and controlled products
 - ii. classification and the application of WHMIS information requirements
 - iii. responsibilities for classification
 - the supplier
 - the employer
 - the worker - Classification: rules and criteria
 - information on classification
 - classes, divisions and subdivision in WHMIS
 - general rules for classification
 - class A - compressed gases
 - class B - flammable and combustible materials
 - class C - oxidizing material
 - class D - poisonous and infectious material
 - class E - corrosive material
 - class F - dangerously reactive material
 - iv. products excluded from the application of WHMIS legislation
 - consumer products
 - explosives
 - cosmetics, drugs, foods and devices
 - pest control products
 - radioactive prescribed substances
 - wood or products made of wood
 - manufactured articles

- tobacco or products of tobacco
 - hazardous wastes
 - products handled or transported pursuant to the Transportation of Dangerous Goods (TDG) Act
 - v. comparison of classification systems - WHMIS and TDG
 - vi. general comparison of classification categories
 - vii. detailed comparison of classified criteria
3. Explain labeling and other forms of warning.
- i. definition of a WHMIS label
 - supplier label
 - workplace label
 - other means of identification
 - ii. responsibility for labels
 - supplier responsibility
 - employer responsibility
 - worker responsibility
 - iii. introduce label content, design and location
 - supplier labels
 - workplace labels
 - other means of identification
4. Introduce material safety data sheets (MSDS).
- i. definition of a material safety data sheet
 - ii. purpose of the data sheet
 - iii. responsibility for the production and availability of data sheets
 - supplier responsibility
 - employer responsibility
 - workers responsibility

Practical Requirements:

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

TS1530 Standard First Aid

Learning Outcomes:

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

Duration: 14 Hours

Pre-Requisite(s): None

Practical Requirements:

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

SV1101 Safety

Learning Outcomes:

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

Duration: 30 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Identify types of personal protective clothing and equipment and describe their applications.
2. Describe the care and maintenance of personal protective equipment (PPE).
3. Identify workplace hazards and describe safe work practices.
 - i. personal
 - ii. shop/facility
 - fire
 - explosion
 - gases
 - electrical
 - housekeeping
 - awareness of surroundings
 - iii. environmental awareness
 - iv. vehicle/equipment
 - restraint systems
 - high voltage systems
 - high pressure systems
 - hydraulic
 - fuel
 - air
 - fire suppression systems
4. Identify and explain workplace safety and health regulations.
 - i. federal
 - Safety data sheets (MSDS)
 - workplace hazardous material information system (WHMIS)
 - ii. provincial/territorial
 - occupational health and safety (OHS)

Practical Requirements:

1. Locate fire alarms, fire extinguishers, exits.
2. Locate and operate shop ventilation systems.
3. Prepare a floor plan showing fire exit routes.

SV1166 Tools and Equipment

Learning Outcomes:

- Demonstrate knowledge of hand and power tools, their applications, maintenance and procedures for use.
- Demonstrate knowledge of measuring tools, their applications, maintenance and procedures for use.
- Demonstrate knowledge of diagnostic tools, their applications and maintenance.
- Demonstrate knowledge of shop equipment, their applications, maintenance and procedures for use.

Duration: 30 Hours

Pre-Requisite(s): SV1101

Objectives and Content:

1. Identify types of hand tools and describe their applications and procedures for use.
2. Describe the procedures used to store and maintain hand tools.
3. Identify types of power tools and describe their applications and procedures for use.
 - i. electric
 - ii. pneumatic
 - iii. hydraulic
4. Describe the procedures used to store and maintain power tools.
5. Identify types of measuring tools and describe their applications and procedures for use.
 - i. imperial
 - ii. metric
6. Identify types of diagnostic tools and describe their applications.
7. Describe the procedures used to store and maintain measuring and diagnostic tools.
8. Identify types of shop equipment and describe their applications and procedures for use.
9. Describe the procedures used to store and maintain shop equipment.

Practical Requirements:

1. Use hand tools.
2. Store and maintain hand tools.
3. Use power tools.
 - i. electric
 - ii. pneumatic
 - iii. hydraulic
4. Store and maintain power tools.
5. Bench work projects to include the use of common hand tools for;
 - i. metal cutting,
 - ii. filing,
 - iii. measuring,
 - iv. drilling,
 - v. tapping,
 - vi. threading
 - vii. broken stud removal.
 - viii. Sharpen a twist drill.
6. Wash components with pressure washer equipment.

SV1810 Preventive Maintenance

Learning Outcomes:

- Demonstrate knowledge of preventive maintenance and its purpose.
- Demonstrate knowledge of the procedures used to perform preventive maintenance.

Duration: 5 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Define terminology associated with preventive maintenance.
2. Describe preventive maintenance programs.
 - i. scheduled lubrication
 - ii. scheduled servicing
 - iii. scheduled cleaning
 - iv. inspections
 - v. completing documentation
 - vi. legal responsibilities
3. Describe the procedures used to perform preventive maintenance.

Practical Requirements:

None.

SV1201 Start, Move and Park Vehicle

Learning Outcomes:

- Demonstrate knowledge of the procedures used to start-up, operate and shut-down equipment/vehicle.
- Demonstrate knowledge of the procedures used to prepare equipment/vehicle to be towed or pushed.
- Demonstrate knowledge of equipment/vehicle lock-out procedures.

Duration: 5 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Identify hazards and describe safe work practices pertaining to starting, moving and parking vehicles.
2. Describe the procedures used to start-up and shut down equipment/vehicles.
3. Describe the procedures used to operate equipment/vehicles.
4. Describe the procedures used to prepare equipment/vehicles to be towed or pushed.
5. Describe the procedures used to lock-out equipment/vehicles prior to servicing.

Practical Requirements:

1. Start, move and park various types of vehicles.

SV1800 Hoisting and Lifting

Learning Outcomes:

- Demonstrate knowledge of hoisting and lifting equipment, their applications and procedures for use.

Duration: 15 Hours

Pre-Requisite(s): SV1101

Objectives and Content:

1. Define terminology associated with hoisting and lifting.
2. Identify hazards and describe safe work practices pertaining to hoisting and lifting.
3. Identify and interpret codes and regulations pertaining to hoisting and lifting.
4. Identify types of hoisting and lifting equipment and describe their applications, limitations and procedures for use.
 - i. vehicle/heavy equipment
 - ii. component
5. Identify types of hoisting and lifting equipment accessories and describe their applications and procedures for use.
6. Describe the procedures used to inspect, store and maintain hoisting and lifting equipment and accessories.
7. Describe the procedures used to determine lift points and perform lifts.
8. Identify hand signals used to perform hoisting and lifting operations.

Practical Requirements:

1. Raise a vehicle, blocking it using safety stands and cross blocking.
2. Perform a lift using applicable lifting equipment accessories.

SV1151 Service Information Systems

Learning Outcomes:

- Demonstrate the ability to select and use different types of service manuals for heavy equipment and truck and transport.

Duration: 25 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Use operators manual.
 - i. methods of using
 - ii. interpretation of sections
2. Use maintenance and lubrication manual.
 - i. methods of using
 - ii. interpretation of sections
3. Use service manual.
 - i. methods of using
 - ii. interpretation of sections
4. Use parts manual.
 - i. methods of using
 - ii. interpretation of sections
5. Use special bulletins.
 - i. methods of using
 - ii. purpose
 - iii. interpretation
 - iv. introduction to computers
 - computerized parts information
 - computerized service and repair information
6. Use computerized information systems.
 - i. work order
 - ii. warranty claims
 - iii. time ticket
 - iv. tracking procedures
 - v. computerized Info System
 - vi. electronic service

Practical Requirements:

1. Find serial number of a vehicle on the following items:
 - i. chassis
 - ii. motor
 - iii. transmission

2. With the appropriate manual, find the type and amount of hydraulic oil recommended on a vehicle.
 - i. with the appropriate manual find the step by step removal procedure of the engine and transmission of a vehicle
 - ii. with the appropriate manual, make a parts list of a cylinder head

SV1131 Electrical and Electronic Principles

Learning Outcomes:

- Demonstrate knowledge of electrical and electronic principles.
- Demonstrate knowledge of the principles of magnetism.
- Demonstrate knowledge of electrical and electronic testing devices and their procedures for use.

Duration: 55 Hours

Pre-Requisite(s): AM1101

Objectives and Content:

1. Define terminology associated with electricity, electronics and magnetism.
2. Identify hazards and describe safe work practices pertaining to electricity, electronics and magnetism.
3. Identify the principles of electricity and electronics.
4. Identify the principles of magnetism.
5. Describe Ohm's law and its applications.
6. Describe the procedures used to perform electrical-related calculations using Ohm's law.
7. Identify types of circuits and describe their characteristics and applications.
 - i. electrical
 - ii. electronic
 - programmable logic controls (PLCs)
 - non-programmable logic controls
8. Identify electrical components and describe their purpose and operation.
9. Identify electronic components and describe their purpose and operation.
 - i. diodes
 - ii. transistors
 - iii. capacitors
 - iv. resistors
10. Identify testing devices used to test circuits and describe their application and procedures for use.

11. Identify and interpret information found on schematics.
12. Describe electrical malfunctions and their causes.
13. Describe the procedures used to test circuits.

Practical Requirements:

1. Apply electrical principles using Ohms Law to calculate volts, ohms and amperes.
2. Use testing devices to test circuits/components of series, parallel and series parallel circuits.
3. Read schematics and wiring diagrams.

SV1370 Batteries

Learning Outcomes:

- Demonstrate knowledge of batteries and their operating principles.
- Demonstrate knowledge of the procedures used to service and test batteries.

Duration: 15 Hours

Pre-Requisite(s): TS1530, TS1520, SV1131, SV1166

Objectives and Content:

1. Define terminology associated with batteries.
2. Identify hazards and describe safe work practices pertaining to batteries.
 - i. personal
 - ii. shop/facility
 - iii. vehicle
3. Identify equipment used to test and recharge batteries and describe their applications and procedures for use.
4. Identify types of batteries and describe their applications, construction and operating principles.
5. Describe the procedures used to remove and install batteries.
 - i. 12 volt systems
 - ii. 24 volt systems
6. Describe the procedures used to activate, maintain and store batteries.
 - i. maintenance free
 - ii. dry charge
 - iii. gel
7. Describe the procedures used to start engines with a battery booster.
8. Identify battery problems and describe the procedures used to diagnose and correct them.

Practical Requirements:

1. Remove and install a battery.

2. Service and test a battery.
3. Charge batteries.
4. Connect booster cables at the battery to jump start an engine for a 12 and 24 volt system.

SV1491 Conventional Lighting Circuits

Learning Outcomes:

- Demonstrate knowledge of conventional lighting circuits, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair conventional lighting circuits.

Duration: 15 Hours

Pre-Requisite(s): SV1131, SV1370, SV1151

Objectives and Content

1. Define terminology associated with conventional lighting circuits.
2. Identify hazards and describe safe work practices pertaining to conventional lighting circuits.
3. Identify specialty tools and equipment used to service and repair conventional lighting circuits and describe their applications and procedures for use.
4. Identify types of conventional lighting circuits and describe their components, purpose and operation.
 - i. high voltage
 - ii. low voltage
5. Interpret electrical symbols and wiring diagrams relating to conventional lighting circuits.
6. Describe the procedures used to inspect and maintain conventional lighting circuits and their components.
7. Identify conventional lighting circuit problems and their causes.
8. Describe the procedures used to diagnose conventional lighting circuits.
9. Describe the procedures used to remove and install conventional lighting circuit components.
10. Describe the procedures to repair conventional lighting circuits and components.

Practical Requirements:

1. Use specialty tools and equipment to service and repair conventional lighting circuits.
2. Remove, check and reinstall lighting system components.
3. Remove, check and reinstall a gauge and a sending unit.

SV1501 Wiring Harnesses and Accessories

Learning Outcomes:

- Demonstrate knowledge of wiring harnesses and accessories, their purpose and operation.
- Demonstrate knowledge of the procedures used to service and repair wiring harnesses and accessories.

Duration: 15 Hours

Pre-Requisite(s): SV1131, SV1370, SV1151

Objectives and Content:

1. Define terminology associated with wiring harnesses and accessories.
2. Identify hazards and describe safe work practices pertaining to wiring harnesses and accessories.
3. Identify specialty tools and equipment used to service and repair wiring harnesses and accessories and describe their applications and procedures for use.
4. Identify types of wiring harnesses and their components and describe their purpose and operation.
5. Identify types of wiring accessories and their components and describe their purpose and operation.
6. Identify electrical symbols and wiring diagrams relating to wiring harnesses and accessories.
7. Describe the procedures used to inspect and maintain wiring harnesses and accessories and their components.
8. Identify wiring harness and accessory component problems and their causes.
9. Describe the procedures used to diagnose wiring harnesses and accessories.
10. Describe the procedures used to remove and install wiring harnesses and accessories and their components.
11. Describe the procedures used to repair wiring harnesses and accessories and their components.

Practical Requirements:

1. Use specialty tools and equipment to service and repair wiring harnesses and accessories.
2. Diagnose problems relating to wiring harness and accessories.
3. Replace or repair wiring harness.

SV1379 Introduction to Starting and Charging Systems

Learning Outcomes:

- Demonstrate knowledge of starting and charging systems, their components and operation.

Duration: 18 Hours

Pre-Requisite(s): SV1501

Objectives and Content:

1. Define terminology associated with starting and charging systems.
2. Identify hazards and describe safe work practices pertaining to starting and charging systems.
3. Identify specialty tools and equipment used to service and repair starting and charging systems and describe their applications and procedures for use.
4. Identify types of starting systems and describe their applications and operation.
 - i. electrical
 - ii. hydraulic
 - iii. pneumatic
5. Identify starting and charging system components and describe their applications and operation.
 - i. Cables
 - ii. Starting motor
 - iii. Starting motor solenoid
 - iv. Ignition switch
 - v. Alternator
 - vi. Belt

Practical Requirements:

1. Inspect electrical starting and charging system components.

SV2661 Electronic Ignition Systems

Learning Outcomes:

- Demonstrate knowledge of electronic ignition systems, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair electronic ignition systems.

Duration: 30 Hours

Pre-Requisite(s): SV1501

Objectives and Content:

1. Define terminology associated with electronic ignition systems.
2. Identify hazards and describe safe work practices pertaining to electronic ignition systems.
3. Identify specialty tools and equipment used to service and repair electronic ignition systems and describe their applications and procedures for use.
4. Identify types of electronic ignition systems and describe their operating principles.
5. Identify electronic ignition system components and describe their purpose and operation.
6. Describe the procedures used to inspect and maintain electronic ignition systems and components.
7. Identify electronic ignition system problems and their causes.
8. Describe the procedures used to diagnose electronic ignition systems and components.
9. Describe the procedures used to remove and install electronic ignition system components.
10. Describe the procedures used to repair and adjust electronic ignition systems and components.

Practical Requirements:

1. Use specialty tools and equipment used to service and repair electronic ignition systems.
2. Inspect and maintain electronic ignition systems and components.
3. Check and test high tension leads.
4. Perform a complete tune-up on a gasoline engine.

SV1830 Metallurgy

Learning Outcomes:

- Demonstrate knowledge of metals and their characteristics.
- Demonstrate knowledge of material testing procedures.

Duration: 5 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Define terminology associated with metallurgy.
2. Identify types of metals and describe their properties.
 - i. ferrous
 - ii. non-ferrous
3. Identify common metal tests and describe their associated procedures.

Practical Requirements:

None

SV1301 Cutting, Heating and Welding

Learning Outcomes:

- Demonstrate knowledge of cutting and heating equipment and accessories.
- Demonstrate knowledge of the procedures used to cut and heat using oxy-fuel equipment.
- Demonstrate knowledge of the procedures used to solder, braze and fuse using oxy-fuel equipment.

Duration: 30 Hours

Pre-Requisite(s): SV1101, SV1830

Objectives and Content:

1. Define terminology associated with oxy-fuel cutting and heating.
2. Identify hazards and describe safe work practices pertaining to oxy-fuel cutting and heating.
 - i. personal
 - ii. shop/facility
 - awareness of surroundings
 - iii. equipment/vehicle
 - iv. ventilation
 - v. cutting and heating equipment
3. Identify and interpret codes and regulations pertaining to oxy-fuel cutting and heating.
4. Identify cutting and heating equipment and accessories and describe their applications.
 - i. oxy-fuel
 - ii. plasma-arc
5. Describe the procedures used to set-up, adjust and shut-down oxy-fuel equipment.
6. Describe the procedures used to inspect and maintain oxy-fuel equipment.
7. Describe the procedures used to transport and store oxy-fuel equipment.
8. Describe the procedures used to cut and heat material using oxy-fuel equipment.

9. Describe the procedures used to solder, braze and fuse using oxy-fuel equipment.

Practical Requirements:

1. Assemble, test, light, adjust and shut down oxy-fuel welding and cutting equipment.
2. Perform flame cutting with oxy-fuel equipment.
3. Perform solder, braze and fuse welding using oxy-fuel equipment.

WD2330 Metal Inert Gas (MIG) Welding

Learning Outcomes:

- Demonstrate knowledge of MIG welding equipment and accessories.
- Demonstrate knowledge of the procedures used to weld using MIG welding equipment.

Duration: 30 Hours

Pre-Requisite(s): TS1520, SV1166, SV1830

Objectives and Content:

1. Define terminology associated with MIG welding.
2. Identify hazards and describe safe work practices pertaining to MIG welding.
 - i. personal
 - ii. shop/facility
 - awareness of surroundings
 - iii. equipment/vehicle
 - iv. ventilation
 - v. MIG equipment
3. Describe MIG welding processes and their applications.
 - i. Gas Metal Arc Welding (GMAW)
 - ii. Flux-Cored Arc Welding (FCAW)
4. Identify MIG welding equipment, consumables and accessories and describe their applications.
5. Describe the procedures used to set-up, adjust and shut-down MIG welding equipment.
6. Describe the procedures used to inspect and maintain MIG welding equipment.
7. Identify the types of welds performed using MIG welding equipment.
 - i. joints
 - ii. positions
8. Describe the procedures used to weld using MIG welding equipment.
9. Describe weld defects, their causes and prevention.

Practical Requirements:

1. Set up and shut down MIG welding equipment.
2. Weld using MIG welding equipment.

WD2290 Shielded Metal Arc Welding (SMAW)

Learning Outcomes:

- Demonstrate knowledge of SMAW equipment and accessories.
- Demonstrate knowledge of the procedures used to weld using SMAW equipment.

Duration: 15 Hours

Pre-Requisite(s): TS1520, SV1166, SV1830

Objectives and Content:

1. Define terminology associated with SMAW.
2. Identify hazards and describe safe work practices pertaining to SMAW.
 - i. personal
 - ii. shop/facility
 - iii. awareness of surroundings
 - iv. equipment/vehicle
 - v. ventilation
 - vi. SMAW equipment
3. Identify and interpret codes and regulations pertaining to SMAW.
4. Describe the SMAW process and its application.
5. Identify SMAW equipment, consumables and accessories and describe their applications and storage requirements.
6. Describe the procedures used to set-up, adjust and shut-down SMAW equipment.
7. Describe the procedures used to inspect and maintain SMAW equipment.
8. Identify the types of welds performed using SMAW equipment.
 - i. joints
 - ii. positions
9. Describe the procedures used to weld using SMAW equipment.
10. Describe weld defects, their causes and prevention.

Practical Requirements:

1. Strike and maintain an arc.
2. Fillet weld flat position.

SV1820 Bearings

Learning Outcomes:

- Demonstrate knowledge of bearings and their applications.
- Demonstrate knowledge of the procedures to remove and install bearings.

Duration: 6 Hours

Pre-Requisite(s): SV1166, TS1520

Objectives and Content:

1. Define terminology associated with bearings.
2. Identify hazards and describe safe work practices pertaining to bearings.
3. Identify specialty tools and equipment used to remove and install bearings and describe their applications and procedures for use.
4. Identify types of bearings and describe their applications.
 - i. friction
 - ii. anti-friction
5. Describe bearing failure and its causes.
6. Describe the procedures used to remove and install bearings.
7. Describe the procedures used to lubricate and adjust bearings.

Practical Requirements:

None

SV1452 Gears

Learning Outcomes:

- Demonstrate knowledge of gears and their applications.
- Demonstrate knowledge of the procedures to remove and install gears.

Duration: 12 Hours

Pre-Requisite(s): SV1166, SV1190

Objectives and Content:

1. Define terminology associated with gears.
2. Identify hazards and describe safe work practices pertaining to gears.
3. Identify specialty tools and equipment used to remove and install gears and describe their applications and procedures for use.
4. Identify types of gears and describe their applications.
 - i. straight cut spur
 - ii. external
 - iii. internal
 - iv. helical
 - v. rack and pinion
 - vi. bevel
 - vii. spiral
 - viii. worm
 - ix. planetary
5. Describe gear failure and its causes.
6. Describe the procedures used to remove and install gears.
7. Describe the procedures used to lubricate and adjust gears.\

Practical Requirements:

None

SV1121 Gaskets and Seals

Learning Outcomes:

- Demonstrate knowledge of gaskets and seals, their applications and procedures for use.

Duration: 5 Hours

Pre-Requisite(s): SV1166, TS1520

Objectives and Content:

1. Define terminology associated with gaskets and seals.
2. Identify hazards and describe safe work practices pertaining to gaskets and seals.
3. Identify specialty tools and equipment used to remove and install gaskets and seals and describe their applications and procedures for use.
4. Identify types of gaskets and seals and describe their applications.
5. Describe the procedures used to remove, fabricate and install gaskets.
6. Describe the procedures used to remove and install seals.
7. Identify types of sealing compounds.
 - i. room temperature vulcanizing (RTV)
 - ii. anaerobic

Practical Requirements:

None

SV1211 Tires, Rims and Wheels

Learning Outcomes:

- Demonstrate knowledge of tires, rims and wheels, their characteristics and applications.
- Demonstrate knowledge of the procedures used to service and repair tires, rims and wheels.

Duration: 25 Hours

Pre-Requisite(s): SV1166

Objectives and Content:

1. Define terminology associated with tires, rims, wheels and hubs.
2. Identify hazards and describe safe work practices pertaining to tires, rims, wheels, and hubs.
3. Identify codes and regulations pertaining to tires, rims, wheels, and hubs.
 - i. jurisdictional requirements
4. Identify specialty tools and equipment used to service and repair tires, rims, wheels, and hubs and describe their applications and procedures for use.
5. Identify types of tires and describe their characteristics and applications.
 - i. on-road
 - radial
 - bias-ply
 - tube
 - tubeless
 - ii. off-road
 - loaded
 - non-loaded
6. Identify types of rims and wheels and describe their characteristics and applications.
7. Identify tire, rim and wheel components and accessories and describe their purpose.
8. Describe the procedures used to inspect and maintain tires, rims, wheels, and hubs.

9. Describe the procedures used to remove and install tires, rims, wheels, and hubs.
10. Describe the procedures used to repair tires, rims, wheels, and hubs.
11. Describe the procedures used to balance wheels.

Practical Requirements:

1. Use specialty tools and equipment used to service and repair tires, rims and wheels.
2. Inspect and maintain tires, rims and wheels.
3. Remove and install tires, rims and wheels.

SV1191 Fasteners, Tubing, Hoses and Fittings

Learning Outcomes:

- Demonstrate knowledge of fasteners, piping, tubing, hoses and fittings, their applications and procedures for use.
- Demonstrate knowledge of specialty tools and equipment.

Duration: 30 Hours

Pre-Requisite(s): SV1166

Objectives and Content:

1. Identify hazards and describe safe work practices pertaining to fasteners, piping, tubing, hoses and fittings.
2. Identify specialty tools and equipment used to remove and install fasteners, piping, tubing, hoses and fittings and describe their applications and procedures for use.
3. Identify types of fasteners and describe their applications and procedures for use.
4. Identify types of piping, tubing, and hoses and describe their applications and procedures for use.
 - i. hydraulic
 - ii. pneumatic
 - iii. fuel
5. Identify types of fittings and describe their applications and procedures for use.
 - i. hydraulic
 - ii. pneumatic

Practical Requirements:

1. Select and use specialty tools and equipment.
2. Cut, bend and connect copper and steel tubing.
3. Flare copper and steel tubing.
 - i. International Standards Organization (ISO)
 - ii. inverted flare

4. Remove and install hydraulic hoses.
5. Install a crimped type fitting to a hydraulic hose.
6. Install a reusable type fitting to a hydraulic hose.

SV1190 Lubrication and Fluids Servicing

Learning Outcomes:

- Demonstrate knowledge of lubricants and fluids, their characteristics and applications.
- Demonstrate knowledge of the procedures to lubricate vehicle/equipment components.
- Demonstrate knowledge of the procedures for lubrication and fluid servicing.

Duration: 30 Hours

Pre-Requisite(s): SV1166, TS1520

Objectives and Content:

1. Define terminology associated with lubrication and fluids servicing.
2. Identify hazards and describe safe work practices pertaining to lubrication and fluid servicing.
 - i. personal
 - ii. equipment
 - iii. environmental
3. Identify specialty tools and equipment used for lubrication and fluid servicing and describe their applications and procedures for use.
4. Identify types of lubricants and fluids and describe their applications.
5. Identify the properties and characteristics of lubricants and fluids.
6. Identify types of filters and describe their characteristics and applications.
7. Describe the procedures used to check lubricant and fluid levels and condition.
8. Describe the procedures used to take samples and analyze fluids.
9. Describe the procedures used to change fluids and filters.
10. Describe the procedures used to lubricate vehicle/equipment components.
11. Identify types of automatic lubrication systems and describe their purpose and operation.

12. Describe the procedures used to service and maintain automatic lubrication systems.
13. Describe the procedures used to handle, store and dispose of lubricants and fluids.

Practical Requirements:

1. Check fluid level on vehicles/equipment components.
2. Change engine oil and filter on a vehicle/equipment.
3. Perform a complete lubrication service on a vehicle/equipment.

SV1141 Introduction to Hydraulics

Learning Outcomes:

- Demonstrate knowledge of the principles of hydraulics.
- Demonstrate knowledge of hydraulic components, their purpose and operation.

Duration: 30 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Define terminology associated with hydraulics.
2. Identify hazards and describe safe work practices pertaining to hydraulics.
3. Describe the principles and theories of hydraulics.
 - i. Pascal's law
 - ii. Bernoulli's principle
4. Describe units of measure as they relate to hydraulics.
5. Identify hydraulic-related formulae and describe their applications.
6. Identify and interpret hydraulic-related symbols and abbreviations found on schematics.
7. Describe the properties of hydraulic fluids.
8. Identify hydraulic components and describe their purpose, applications and operation.
 - i. pumps
 - positive displacement
 - non-positive displacement
 - ii. actuators
 - linear
 - rotary
 - iii. pressure control valves
 - iv. directional control valves
 - v. flow control valves
 - vi. reservoirs
 - vii. fittings, piping, tubing and hoses
 - viii. coolers
 - ix. filters

- x. accumulators

Practical Requirements:

1. Apply hydraulic principles and theories for a simple hydraulic circuit.

SV1401 Gauges

Learning Outcomes:

- Demonstrate knowledge of gauges, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair gauges.

Duration: 11 Hours

Pre-Requisite(s): SV1501

Objectives and Content:

1. Define terminology associated with gauges.
2. Identify hazards and describe safe work practices pertaining to gauges.
3. Identify specialty tools and equipment used to service and repair gauges and describe their applications and procedures for use.
4. Identify types of gauges and their components and describe their purpose and operation.
5. Identify electrical symbols and wiring diagrams relating to gauges.
6. Describe the procedures used to inspect and maintain gauges and their components.
7. Identify gauge problems and their causes.
8. Describe the procedures used to diagnose gauge circuits and their components.
9. Describe the procedures used to remove and install gauges and their components.
10. Describe the procedures to repair and calibrate gauge components.

Practical Requirements:

1. Use specialty tools and equipment used to service and repair gauges.
2. Remove, check and reinstall gauges and sending units.
3. Diagnose gauge circuits and their components.

SV2391 Reservoirs, Coolers and Filters

Learning Outcomes:

- Demonstrate knowledge of reservoirs, coolers and filters, their applications and operation.
- Demonstrate knowledge of the procedures used to service and repair reservoirs, coolers and filters.

Duration: 15 Hours

Pre-Requisite(s): SV1191

Objectives and Content:

1. Define terminology associated with reservoirs, coolers and filters.
2. Identify hazards and describe safe work practices pertaining to reservoirs, coolers and filters.
3. Identify specialty tools and equipment used to service and repair reservoirs, coolers and filters and describe their applications and procedures for use.
4. Identify types of reservoirs and describe their characteristics and applications.
 - i. vented
 - ii. pressurized
5. Identify reservoir components and describe their purpose and operation.
6. Identify types of coolers and filters and describe their characteristics and applications.
7. Identify cooler and filter components and describe their purpose and operation.
8. Describe the procedures used to inspect and maintain reservoirs, coolers and filters and their components.
9. Identify reservoir, cooler and filter problems and describe their causes.
10. Describe the procedures used to diagnose reservoirs, coolers and filters and their components.
11. Describe the procedures used to remove and install reservoirs, coolers and filters and their components.

12. Describe the procedures used to repair reservoirs and coolers and their components.

Practical Requirements:

1. Drain hydraulic fluids and refill reservoir.
2. Remove, service, and install hydraulic filters.
3. Check condition and service hydraulic oil cooler.

SV1261 Vehicle Hydraulic Brake Systems

Learning Outcomes:

- Demonstrate knowledge of vehicle hydraulic brake systems, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair vehicle hydraulic brake systems.

Duration: 60 Hours

Pre-Requisite(s): SV1190, SV1191

Objectives and Content:

1. Define terminology associated with vehicle hydraulic brake systems.
2. Identify hazards and describe safe work practices pertaining to vehicle hydraulic brake systems.
3. Identify specialty tools and equipment used to service and repair vehicle hydraulic brake systems and describe their applications and procedures for use.
4. Identify types of vehicle hydraulic brake systems and describe their applications and operation.
 - i. drum
 - ii. disc
5. Identify vehicle hydraulic brake system components and describe their purpose and operation.
6. Describe the procedures used to inspect and maintain vehicle hydraulic brake systems and their components.
7. Identify vehicle hydraulic brake system problems and their causes.
8. Describe the procedures used to diagnose vehicle hydraulic brake systems.
9. Describe the procedures used to remove and install vehicle hydraulic brake system components.
10. Describe the procedures used to repair and adjust vehicle hydraulic brake systems and their components.

Practical Requirements:

1. Disassemble, inspect, repair and assemble a master cylinder.
2. Disassemble, inspect, repair and assemble drum brakes.
3. Disassemble, inspect, repair and assemble disc brakes.
4. Machine a brake drum and brake rotor.

SV1451 Steering Systems

Learning Outcomes:

- Demonstrate knowledge of steering systems, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair steering systems.

Duration: 30 Hours

Pre-Requisite(s): SV1190, SV1452

Objectives and Content:

1. Define terminology associated with steering systems.
2. Identify hazards and describe safe work practices pertaining to steering systems.
3. Identify specialty tools and equipment used to service and repair steering systems and describe their applications and procedures for use.
4. Identify types of steering systems and describe their applications and operation.
5. Identify steering components and describe their purpose and operation.
 - i. steering columns
 - ii. steering linkage
 - iii. gear boxes
6. Describe the procedures used to inspect and maintain steering systems and their components.
7. Identify steering systems problems and their causes.
8. Describe the procedures used to diagnose steering systems.
9. Describe the procedures used to remove and install steering system components.
10. Describe the procedures used to repair and adjust steering system components.

Practical Requirements:

1. Use specialty tools and equipment used to service and repair steering systems.
2. Inspect and maintain steering systems and their components.
3. Disassemble and reassemble steering columns.
4. Disassemble and assemble steering linkage.
5. Adjust steering linkage.

SV1249 Introduction to Suspension Systems

Learning Outcomes:

- Demonstrate knowledge of steering systems, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair steering systems.

Duration: 15 Hours

Pre-Requisite(s): SV1166, SV1800

Objectives and Content:

1. Define terminology associated with front and rear suspensions.
2. Identify hazards and describe safe work practices pertaining to front and rear suspensions.
3. Identify specialty tools and equipment used to service and repair front and rear suspensions and describe their applications and procedures for use.
4. Identify the types of front and rear suspensions and describe their characteristics and applications.
 - i. leaf spring
 - ii. shock absorber
5. Identify front and rear suspension components and describe their purpose and operation.
6. Describe the procedures used to inspect and maintain front and rear suspension components.

Practical Requirements:

1. Inspect and maintain front and rear suspension components.

SV2491 Pneumatic Systems

Learning Outcomes:

- Demonstrate knowledge of pneumatic systems, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair pneumatic systems and components.

Duration: 20 Hours

Pre-Requisite(s): SV1166

Objectives and Content:

1. Define terminology associated with pneumatic systems.
2. Identify hazards and describe safe work practices pertaining to pneumatic systems.
3. Describe the principles and theories of pneumatics.
 - i. Charles' law
 - ii. Boyle's law
4. Describe units of measure as they relate to pneumatics.
5. Identify pneumatic related formulae and describe their applications.
6. Identify and interpret pneumatic related symbols and abbreviations found on schematics.
7. Identify specialty tools and equipment used to service and repair pneumatic systems and describe their applications and procedures for use.
8. Identify types of pneumatic systems and describe their applications and operation.
 - i. portable air compressors
 - rotary
 - single-stage
 - two-stage
 - reciprocating
 - single-stage
 - two-stage
9. Identify pneumatic system components and describe their purpose and operation.

10. Describe the procedures used to inspect and maintain pneumatic systems and components.
11. Identify pneumatic system problems and their causes.
12. Describe the procedures used to diagnose pneumatic systems.
13. Describe the procedures used to remove and install pneumatic system components.
14. Describe the procedures used to adjust and repair pneumatic systems.

Practical Requirements:

1. Use specialty tools and equipment used to service and repair pneumatic systems.
2. Inspect and maintain pneumatic systems and components.
3. Start-up, operate and shut down a portable air compressor.
4. Check and adjust air pressure on an air compressor.
5. Service and repair an air compressor unit.

SV1271 Basic Air Brake Systems

Learning Outcomes:

- Demonstrate knowledge of basic air brake systems, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair basic air brake systems.

Duration: 60 Hours

Pre-Requisite(s): SV1261

Objectives and Content:

1. Define terminology associated with basic air brake systems.
2. Identify hazards and describe safe work practices pertaining to basic air brake systems.
3. Identify specialty tools and equipment used to service and repair basic air brake systems and describe their applications and procedures for use.
4. Identify types of basic air brake systems and describe their applications and operation.
 - i. air
 - ii. air over hydraulic
5. Identify basic air brake system components and describe their purpose and operation.
 - i. compressors
 - ii. reservoirs
 - iii. governors
 - iv. hoses, lines and fittings
 - v. air dryers
 - vi. foundation brakes
 - vii. brake chambers
 - viii. valves
 - ix. indicators and warning devices
6. Describe the procedures used to inspect and maintain basic air brake systems and components.
7. Identify basic air brake system problems and their causes.

8. Describe the procedures used to diagnose basic air brake systems.
9. Describe the procedures used to remove and install basic air brake system components.
10. Describe the procedures used to repair and adjust basic air brake system components.

Practical Requirements:

1. Remove and install basic air brake system components.
2. Use specialty tools and equipment to service and repair basic air brake systems.
3. Disassemble, inspect, repair and assemble air compressors.
4. Disassemble inspect, repair and assemble air valves.
5. Disassemble, inspect, repair and assemble drum and disc air brakes.

SV1281 Drive Lines

Learning Outcomes:

- Demonstrate knowledge of drive lines, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair drive lines.

Duration: 25 Hours

Pre-Requisite(s): SV1190, SV1151

Objectives and Content:

1. Define terminology associated with drive lines.
2. Identify hazards and describe safe work practices pertaining to drive lines.
3. Identify specialty tools and equipment used to service and repair drive lines and describe their applications and procedures for use.
4. Identify drive line configurations and describe their characteristics and operation.
5. Identify drive line components and describe their purpose and operation.
6. Describe the procedures used to inspect and maintain drive line components.
7. Identify drive line problems and their causes.
8. Describe the procedures used to diagnose drive lines.
9. Describe the procedures used to remove and install drive line components.
10. Describe the procedures used to repair and adjust drive line components.

Practical Requirements:

1. Use specialty tools and equipment used to service and repair drive lines.
2. Remove and replace drive shaft, check phasing, alignment and shaft angle.
3. Remove service and install a universal joint.
4. Remove and install center support bearing.

SV2731 Cab Components

Learning Outcomes:

- Demonstrate knowledge of cab components, their purpose and operation.
- Demonstrate knowledge of the procedures used to service and repair cab components.

Duration: 9 Hours

Pre-Requisite(s): SV1166

Objectives and Content:

1. Define terminology associated with cab components.
2. Identify hazards and describe safe work practices pertaining to cab components.
3. Identify cab components and describe their purpose and operation.
 - i. interior
 - pedals
 - seats
 - restraints
 - side windows
 - ii. exterior
 - wipers
 - windshields
 - mirrors
 - door handles
 - steps
 - latches and cables
4. Describe the procedures used to inspect and maintain cab components.
5. Describe the procedures used to remove and install cab components.
6. Describe the procedures used to repair and adjust cab components.

Practical Requirements:

1. Adjust door striker.

SV2689 Introduction to Frames and Chassis

Learning Outcomes:

- Demonstrate knowledge of frames and chassis, their components and characteristics.

Duration: 6 Hours

Pre-Requisite(s): SV1166, SV1800

Objectives and Content:

1. Define terminology associated with frames and chassis.
2. Identify hazards and describe safe work practices pertaining to frames and chassis.
3. Identify and interpret codes and regulations pertaining to frames and chassis.
 - i. jurisdictional requirements
4. Identify specialty tools and equipment used to service and repair frames and chassis and describe their applications and procedures for use.
5. Identify types of truck frames and their components and describe their purpose and characteristics.

Practical Requirements:

None

SV2779 Introduction to Hitches and Couplers

Learning Outcomes:

- Demonstrate knowledge of trailer coupling devices, their components and operation.

Duration: 6 Hours

Pre-Requisite(s): SV1166, SV1800

Objectives and Content:

1. Define terminology associated with trailer coupling devices.
2. Identify hazards and describe safe work practices pertaining to trailer coupling devices.
3. Identify specialty tools and equipment used to service and repair trailer coupling devices and describe their applications and procedures for use.
4. Identify types of trailer coupling devices and describe their purpose and operation.
 - i. fifth wheels
 - ii. pintle hook couplers
5. Describe the procedures used to inspect and maintain trailer coupling devices.

Practical Requirements:

1. Inspect and maintain trailer coupling devices.

SV2299 Introduction to Track-Type Undercarriages

Learning Outcomes:

- Demonstrate knowledge of track-type undercarriages, their components and operation.

Duration: 15 Hours

Pre-Requisite(s): SV1166, SV1800

Objectives and Content:

1. Define terminology associated with track-type undercarriages.
2. Identify hazards and describe safe work practices pertaining to track-type undercarriages.
3. Identify specialty tools and equipment used to service and repair track-type undercarriages and describe their applications and procedures for use.
4. Identify track-type undercarriage components and describe their purpose and operation.
5. Describe the procedures used to inspect and maintain track-type undercarriages and their components.
6. Describe the procedures used to adjust track chain tension.

Practical Requirements:

1. Inspect and maintain track-type undercarriages and their components.
2. Make track sag adjustments to the manufacturer's specifications.

SV1303 Engine Principles

Learning Outcomes:

- Demonstrate knowledge of engine operating principles.
- Demonstrate knowledge of major engine components, their purpose and operation.

Duration: 45 Hours

Pre-Requisite(s): SV1151

Objectives and Content:

1. Define terminology associated with engine principles.
2. Explain the principles and theories of engine operation.
3. Identify types and classifications of engines and describe their applications.
4. Identify major engine components and describe their purpose and operation.

Practical Requirements:

None

SV1310 Cooling Systems

Learning Outcomes:

- Demonstrate knowledge of engine cooling systems, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair cooling systems.

Duration: 30 Hours

Pre-Requisite(s): SV1121

Objectives and Content:

1. Define terminology associated with cooling systems.
2. Identify hazards and describe safe work practices pertaining to cooling systems and their components.
3. Identify specialty tools and equipment used to service and repair cooling systems and describe their applications and procedures for use.
4. Identify types of cooling systems and describe their applications and operation.
 - i. liquid-cooled
 - ii. air-cooled
5. Identify cooling system components and describe their purpose and operation.
6. Identify types of cooling system fluids and describe their characteristics and applications.
7. Describe the procedures used to handle and dispose of cooling system fluids.
8. Identify cooling system fluid tests and describe their associated procedures.
9. Describe the procedures used to service cooling systems.
10. Describe the procedures used to inspect and maintain cooling systems and components.
11. Identify cooling system problems and their causes.
12. Describe the procedures used to diagnose cooling systems and components.

13. Describe the procedures used to remove and install cooling system components.
14. Describe the procedures used to repair cooling systems and components.

Practical Requirements:

1. Use specialty tools and equipment used to service and repair cooling system.
2. Drain, flush, refill and pressure test a cooling system.
3. Remove, service, and install a thermostat.
4. Remove, service, and install a radiator/pressure cap.
5. Remove, repair and install a water pump.
6. Check antifreeze strength in a cooling system.

SV1331 Intake and Exhaust Systems

Learning Outcomes:

- Demonstrate knowledge of intake and exhaust systems, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair intake and exhaust systems.

Duration: 25 Hours

Pre-Requisite(s): SV1166, SV1303

Objectives and Content:

1. Define terminology associated with intake and exhaust systems.
2. Identify hazards and describe safe work practices pertaining to intake and exhaust systems.
3. Identify specialty tools and equipment used to service and repair intake and exhaust systems and describe their applications and procedures for use.
4. Identify types of air filtration systems and describe their applications and operation.
5. Identify intake system components and describe their purpose and operation.
6. Identify exhaust system components and describe their purpose and operation.
7. Describe the procedures used to inspect and maintain intake and exhaust systems and components.
8. Identify intake and exhaust system problems and their causes.
9. Describe the procedures used to diagnose intake and exhaust systems and components.
10. Describe the procedures used to remove and install intake and exhaust system components.
11. Describe the procedures used to repair intake and exhaust systems and components.

Practical Requirements:

1. Service air cleaner assemblies.
2. Inspect and maintain intake and exhaust systems and components.
3. Remove, inspect and replace exhaust system components.
4. Check intake restrictions using manometers.
5. Check exhaust restrictions using backpressure gauge.

SV1361 Diesel Fuel Supply Systems

Learning Outcomes:

- Demonstrate knowledge of diesel fuel supply systems, their components and operation.
- Demonstrate knowledge of the procedures used to service and repair diesel fuel supply systems.

Duration: 25 Hours

Pre-Requisite(s): SV1166, TS1520

Objectives and Content:

1. Define terminology associated with diesel fuel supply systems.
2. Identify hazards and describe safe work practices pertaining to diesel fuel supply systems.
3. Identify the properties and characteristics of diesel fuels and describe their handling and storage procedures.
4. Identify specialty tools and equipment used to service and repair diesel fuel supply systems and describe their applications and procedures for use.
5. Identify diesel fuel supply system components and describe their purpose and operation.
6. Describe the procedures used to inspect and maintain diesel fuel supply systems and components.
7. Identify diesel fuel supply system problems and their causes.
8. Describe the procedures used to diagnose diesel fuel supply system and components.
9. Describe the procedures used to remove and install diesel fuel supply system components.
10. Describe the procedures used to disassemble and assemble diesel fuel supply system components.
11. Describe the procedures used to repair and adjust diesel fuel supply systems and component.

Practical Requirements:

1. Use specialty tools and equipment to service and repair diesel fuel supply systems.
2. Inspect and maintain diesel fuel supply systems and components.
3. Check transfer pump performance.
 - i. pressure
 - ii. vacuum
 - iii. delivery
4. Change fuel filters, bleed system and start engine.

SV2669 Introduction to Heating, Ventilation and Air Conditioning (HVAC) Systems

Learning Outcomes:

- Demonstrate knowledge of HVAC systems, their components and operation.
- Demonstrate knowledge of the procedures used to service HVAC systems.

Duration: 15 Hours

Pre-Requisite(s): SV1131, SV1166

Objectives and Content:

1. Define terminology associated with HVAC systems.
2. Identify hazards and describe safe work practices pertaining to HVAC systems.
3. Identify types of HVAC systems and describe their applications and operation.
 - i. cab
 - ii. auxiliary
4. Identify codes and regulations pertaining to air conditioning systems.
 - i. certification requirements
5. Identify specialty tools and equipment used to service and repair HVAC systems, and describe their applications and procedures for use.
6. Identify refrigerant types and describe their characteristics and applications.
7. Identify HVAC system components and describe their purpose and operation.
8. Describe the procedures used to inspect and maintain HVAC system and components.
9. Identify cab-sealing systems and describe their purpose and operation.

Practical Requirements:

1. Test a blower motor resistor.

SV1111 Ozone Depleting Substances

Learning Outcomes:

- Demonstrate knowledge of handling ozone-depleting substances (refrigerants) used in motor vehicle.

Duration: 6 Hours

Pre-Requisite(s): SV2669

Objectives and Content:

1. Define terminology associated with ozone depleting substances.
2. Identify hazards and describe safe work practices pertaining to ozone depleting substances
3. Identify and interpret codes and provincial regulations pertaining to ozone depleting substances.

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 tradespersons³
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 AM1101 be delivered in the first semester of the Pre-employment program.

Learning Outcomes:

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

Duration: 42 Hours

Pre-Requisite(s): None

Objectives and Content:

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

1. Describe whole number operations.
 - i. read, write, count, round off, add, subtract, multiply and divide whole numbers.
2. Describe the application of the order of operations in math problems.
3. Describe fraction and mixed number operations.
 - i. read, write, add, subtract, multiply and divide fractions.
4. Describe decimal operations.
 - i. read, write, round off, add, subtract, multiply and divide decimals.

5. Describe percent/decimal/fraction conversion and comparison.
 - i. convert between fractions, decimals and percents.
6. Identify percentage operations.
 - i. read and write percentages
 - ii. calculate base, rates and percentages
7. Identify ratio and proportion operations.
 - i. use a ratio comparing two quantities with the same units
 - ii. use a proportion comparing two ratios
8. Describe the use of the imperial measurement system in math problems.
 - i. identify units of measurement
 - length
 - mass
 - area
 - volume
 - capacity
9. Describe the use of the metric measurement system in math problems.
 - i. identify units of measurement
 - length
 - mass
 - area
 - volume
 - capacity
10. Identify angles, lines and geometric shapes.
 - i. use a protractor to measure angles
 - ii. determine whether an angle is right, acute or obtuse
 - iii. identify parallel, perpendicular, horizontal and vertical lines
 - iv. identify types of triangles, quadrilaterals, and 3-dimensional shapes
11. Describe estimation strategies.
 - i. estimate a linear measure using a referent
 - ii. estimate length, area and volume of objects in metric and imperial systems
12. Describe problem solving that involves linear measurement using instruments such as rulers or tape measures, in the metric and imperial systems.

Practical Requirements:

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

AM1370 Heavy Duty and Truck Transport Math Fundamentals

Learning Outcomes:

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

Duration: 42 Hours

Pre-Requisite(s): AM1101

Objectives and Content:

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

1. Describe percent/decimal/fraction conversions and comparisons in trade specific situations.
2. Describe ratios and proportions as they relate to trade specific problems.
3. Describe the use of the Imperial and Metric measurement systems in trade specific applications.
4. Describe Imperial and Metric conversions in trade specific situations.
 - i. convert between imperial and metric measurements
 - ii. convert to another unit within the same measurement system
5. Describe how to manipulate formulas using cross multiplication, dividing throughout, elimination, and substitution to solve trade specific problems.
 - i. right angle triangles
 - ii. area
 - iii. volume
 - iv. perimeter
 - v. density
6. Identify calculations involving geometry that are relevant to the trade.

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

Practical Requirements:

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

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

CM2161 Communication Essentials

Learning Outcomes:

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

Duration: 36 Hours

Pre-Requisite(s): None

Objectives and Content:

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

1. Define communications terminology used in the trade.
2. Identify the principles of effective workplace writing.
 - i. grammar, punctuation, mechanics
 - ii. sentence and paragraph construction
 - iii. tone, language, and word choice
 - iv. the writing process
 - planning
 - writing
 - editing/revising
3. Identify sources of information used to communicate in the workplace.
 - i. regulations
 - ii. codes
 - iii. OH&S requirements
 - iv. prints, drawings and specifications
 - v. company and client documentation
4. Identify types and purposes of informal workplace documents.
 - i. reports
 - incident
 - process
 - progress

- ii. common trade specific forms
 - iii. primary and secondary methods of information gathering
 - iv. accuracy and completeness in reports and forms
5. Demonstrate an understanding of interpersonal communications in the workplace.
- i. recognize group dynamics
 - ii. contribute information and expertise
 - iii. individual learning styles
 - audible
 - visual
 - experiential
 - theoretical
 - iv. recognize respectful and open communication
 - v. accept and provide feedback
 - vi. interpret non-verbal communication cues
 - body language
 - signals
6. Demonstrate an understanding of effective oral communication skills.
- i. listening
 - receiving, understanding, remembering, reflecting, evaluating, paraphrasing, and responding
 - ii. speaking
 - using clear and proper words
 - tone, style, and vocabulary
 - brevity
 - iii. common workplace oral communication situations
 - introducing self and others
 - telephone conversations
 - tool box/safety talks
 - face-to-face conversations
 - communicating with co-workers, supervisors, clients, and other trades people
7. Identify common practices related to workplace meetings.
- i. meeting formats
 - ii. meeting preparation
 - iii. agendas and minutes
 - iv. roles, responsibilities, and etiquette of meeting participants
8. Identify acceptable workplace use of communication technologies
- i. cell / smart phone etiquette
 - ii. voice mail
 - iii. e-mail
 - iv. texting / messaging through social media

- v. teleconferencing / videoconferencing for meetings and interviews
 - vi. social networking
 - vii. other emerging technologies
9. Demonstrate an understanding of effective job search techniques
- i. employment trends, opportunities, and sources of employment
 - ii. job ads and the importance of fitting qualifications to job requirements
 - iii. resumes
 - characteristics of effective resumes
 - types of resumes
 - principles of resume formatting
 - iv. effective cover letters
 - v. job interview process
 - pre-interview preparation
 - interview conduct
 - post-interview follow up

Practical Requirements:

1. Write a well-developed, coherent, unified paragraph.
2. Complete a trade-related form.
3. Prepare an agenda for a toolbox safety talk.
4. Participate in a simulated oral workplace communication situation.
5. Prepare a resume.

SD1761 Workplace Essentials

Note: It is recommended that SD1760 be delivered in the second half of pre-employment training.

Learning Outcomes:

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

Duration: 24 Hours

Pre-Requisite(s): None

Objectives and Content:

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

1. Identify personal responsibilities and attitudes that contribute to on-the-job success.
 - i. asking questions
 - ii. working safely
 - iii. accepting constructive feedback
 - iv. time management & punctuality
 - v. respect for authority
 - vi. stewardship of materials, tools and properties
2. Define unions and identify their role in the workplace.
 - i. purpose of unions
 - ii. common union structure
 - iii. unions in this trade
3. Demonstrate an understanding of the Worker's Compensation process.
 - i. aims, objectives, and benefits of the Workplace Health, Safety and Compensation Commission
 - ii. role of the workers advisor
 - iii. internal review process
4. Demonstrate an understanding of worker's rights.
 - i. labour standards
 - ii. regulations, including:
 - hours of work & overtime
 - termination of employment

- minimum wages & allowable deductions
 - statutory holidays, vacation time, and vacation pay
- 5. Demonstrate an understanding of human rights issues.
 - i. awareness of the Human Rights Code and the role of the Human Rights Commission
 - ii. categories of discrimination and strategies for prevention
 - direct
 - systemic
 - adverse effect
 - iii. types of discrimination
 - race
 - ethnic origin
 - colour
 - religion
 - age
 - gender identify
 - sexual orientation
 - marital status
 - family status
 - disability
 - criminal conviction that has been pardoned
 - iv. conduct that constitutes harassment and discrimination
 - objectionable conduct
 - comments or displays made either on a one-time or continuous basis that demeans, belittles, or causes personal humiliation or embarrassment to the recipient
 - v. the value of diversity in the workplace
 - culture
 - gender identify
 - sexual orientation
- 6. Demonstrate an understanding of quality customer service.
 - i. importance of quality service
 - ii. barriers to quality service
 - physical and physiological
 - cultural
 - technological
 - iii. customer needs & common methods for meeting them
 - iv. characteristics & importance of a positive attitude
 - v. interactions with challenging customers
 - vi. addressing complaints and resolve conflict

Practical Requirements:

None

MC1062 Computer Essentials

Course Outcomes:

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

Duration: 15 Hours

Pre-Requisite(s): None

Objectives and Content:

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

1. Identify computer types used in the workplace, and the characteristics of each.
 - i. desktop/laptop computers
 - ii. tablets
 - iii. smartphones
2. Identify common desktop and mobile operating systems.
 - i. Windows
 - ii. Mac OS
 - iii. iOS
 - iv. Android
3. Describe the use of Windows operating system software.
 - i. start and end a program
 - ii. use the help function
 - iii. use the find function
 - iv. maximize and minimize a window
 - v. open and scroll through multiple windows
 - vi. use the task bar
 - vii. adjust desktop settings such as screen savers, screen resolution, and backgrounds
 - viii. shut down a computer
4. Identify the skills necessary to perform file management commands.
 - i. create folders

- ii. copy files and folders
 - iii. move files and folders
 - iv. rename files and folders
 - v. delete files and folders
5. Describe the use of word processing software to create documents.
- i. enter & edit text
 - ii. indent and tab text
 - iii. change text attributes
 - bold
 - underline
 - font
 - iv. change layout format
 - margins
 - alignment
 - line spacing
 - v. spell check and proofread
 - vi. save, close & reopen a document
 - vii. print document
6. Describe the use of spreadsheet software to create documents.
- i. enter data in cells
 - ii. format data in cells
 - iii. create formulas to add, subtract, multiply and divide
 - iv. save, close & reopen a spreadsheet
 - v. print spreadsheet
7. Describe the use of the internet in the workplace.
- i. web browsers
 - ii. search engines
 - iii. security issues
 - iv. personal responsibility for internet use at work
8. Describe the role of e-mail.
- i. e-mail etiquette
 - grammar and punctuation
 - privacy issues when sharing and forwarding e-mail
 - work appropriate content
 - awareness of employer policies
 - ii. managing e-mail
 - using folders
 - deleting, forwarding, replying
 - iii. adding attachments to e-mail
 - iv. view e-mail attachments
 - v. printing e-mail

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

Practical requirements:

1. Create, save and print a document using word processing software.
2. Create, save and print a document using spreadsheet software.
3. Send and receive an e-mail with an attachment.

AP1102 Introduction to Apprenticeship

Learning Outcomes:

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

Duration: 12 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Define terminology associated with apprenticeship.
 - i. apprentice
 - ii. registered apprentice
 - iii. trade qualifier
 - iv. journeyperson
 - v. certified journeyperson
 - vi. Certificate of Apprenticeship
 - vii. Certificate of Qualification
 - viii. dual certification
 - ix. compulsory trades
2. Explain the roles and responsibilities of those involved in the apprenticeship system in Newfoundland and Labrador.
 - i. registered apprentice
 - ii. training institution
 - iii. employer
 - iv. journeyperson
 - v. mentor
 - vi. Department of Jobs, Immigration and Growth
 - 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
 - Red Seal
 - written
 - practical - if applicable
 - ix. certification
 - Certificate of Apprenticeship
 - Certificate of Qualification
 - Provincial journeyperson - Blue Seal
 - Interprovincial journeyperson - Red Seal endorsement (RSE)
5. Identify the Conditions Governing Apprenticeship.
6. Discuss cancellation of apprenticeship.
 - i. failure to notify of address change
 - ii. extended periods of unemployment
 - iii. lack of contact with an APO for an extended period
 - iv. failure to respond to class calls
 - v. declining of multiple class calls
7. Explain the Red Seal program.
 - i. designated Red Seal trades

- ii. the Red Seal Occupational Standard (RSOS)
 - iii. relationship of RSOS to Red Seal 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

C. 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 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

Heavy Duty Equipment Technician - 7200 Hours			
Apprenticeship Level and Wages			
Level	Wage Rate	Requirements for Progression to Next Level	Next Level
1 st	60 %	- Completion of Pre-Employment training - Registration as an apprentice - Minimum 1800 hours of combined relevant work experience and training	2 nd Year
2 nd	70%	- Completion of Level 2 training - Pass Level 2 exam* - Minimum 3600 hours of combined relevant work experience and training	3 rd Year
3 rd	80%	- Completion of Level 3 training - Pass Level 3 exam* - Minimum 5400 hours of combined relevant work experience and training	4 th Year
4 th	90%	- Completion of Level 4 training - Pass Level 4 exam* - Minimum 7200 hours of combined relevant work experience and training - Sign-off of all workplace skills in apprentice logbook - Pass certification exam	Journeyman Certification
Wage Rates - Rates are percentages of the prevailing journeyman's wage rate in the place of employment of the apprentice. - Rates must not be less than the wage rate established by the Labour Standards Act (1990), as now in force or as hereafter amended, or by other order, as amended from time to time replacing the first mentioned order. - Rates must not be less than the wage rate established by any collective agreement which may be in force at the apprentice's workplace. - Employers are free to pay wage rates above the minimums specified. *Level Exams - This program may not currently contain level exams, in which case this requirement will be waived until such time as level exams are available.			

Heavy Duty Equipment Technician - 7200 Hours		
Class Calls (After Apprenticeship Registration)		
Call Level	Requirements for Class Call	Hours Awarded for In-School Training
Direct Entry Level 1	- Minimum of 1800 hours of relevant work experience - Prior Learning Assessment (PLA) at designated college (if applicable)	270
Level 2	Minimum of 3000 hours of relevant work experience and training	210
Level 3	Minimum of 5000 hours of relevant work experience and training	210
Level 4	Minimum of 7000 hours of relevant work experience and training	240
Class calls at Minimum Hours Class calls may not always occur at the minimum hours indicated. Some variation is permitted to allow for the availability of training resources and apprentices.		

6.0 Tools

Apprentices shall be required to obtain their own hand tools applicable for the designated occupation of registration or tools as specified by the PACB.

7.0 Periodic Examinations and Evaluation

- 7.1 Every apprentice shall submit to such occupational tests and examinations as the PACB shall direct. If after such occupational tests and examinations the apprentice is found to be making unsatisfactory progress, his/her apprenticeship level and rate of wage shall not be advanced as provided in Section 5 until his/her progress is satisfactory to the Director of Apprenticeship and Trades Certification and his/her date of completion shall be deferred accordingly. Persistent failure to pass required tests shall be a cause for revocation of his/her Memorandum of Understanding.
- 7.2 Upon receipt of reports of accelerated progress of the apprentice, the PACB may shorten the term of apprenticeship and advance the date of completion accordingly.
- 7.3 For each and every course, a formal assessment is required for which 70% is the pass mark. A mark of 70% must be attained in both the theory examination and the practical project assignment, where applicable as documented on an official transcript.

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

8.0 Granting of Certificates of Apprenticeship

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

9.0 Hours of Work

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

10.0 Copies of the Registration for Apprenticeship

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

11.0 Ratio of Apprentices to Journeypersons

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

12.0 Relationship to a Collective Bargaining Agreement

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

13.0 Amendments to a Plan of Apprenticeship Training

A Plan of Training may be amended at any time by the PACB.

14.0 Employment, Re-Employment and Training Requirements

- 14.1 The Plan of Training requires apprentices to regularly attend their place of employment.
- 14.2 The Plan of Training requires apprentices to attend training for that occupation as prescribed by the PACB.
- 14.3 Failure to comply with Sections 14.1 and/or 14.2 will result in cancellation of the Memorandum of Understanding. Apprentices may have their MOUs reinstated by

the PACB but would be subject to a commitment to complete the entire program as outlined in the General Conditions of Apprenticeship. Permanent cancellation in the said occupation is the result of non-compliance.

- 14.4 Cancellation of the Memorandum of Understanding to challenge journeyperson examinations, if unsuccessful, would require an apprentice to serve a time penalty of two (2) years before reinstatement as an apprentice or qualifying to receive a class call to training as a registered Trade Qualifier. Cancellation must be mutually agreed upon by the employer and the apprentice.
- 14.5 An employer shall ensure that each apprentice is under the direct supervision of an approved journeyperson supervisor who is located at the same worksite as the apprentice, and that the apprentice is able to communicate with the journeyperson with respect to the task, activity or function that is being supervised.
- 14.6 Under the Plan of Training the employer is required to keep each apprentice employed as long as work is available, and if the apprentice is laid off due to lack of work, to give first opportunity to be hired before another is hired.
- 14.7 The employer will permit each apprentice to attend training programs as prescribed by the PACB.
- 14.8 Apprentices who cannot acquire all the workplace skills at their place of employment will have to be evaluated in a simulated work environment at a PACB authorized training institution and have sign-off done by instructors to meet the requirements for certification.

15.0 Appeals to Decisions Based on Conditions Governing Apprenticeship Training

Persons wishing to appeal any decisions based on the above conditions must do so in writing to the Minister of Education and Early Childhood Development within 30 days of the decision.

D. Requirements for Red Seal Endorsement

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

Or

A total of 10800 hours of suitable work experience.

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

E. Roles and Responsibilities of Stakeholders in the Apprenticeship Process

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

The Apprentice:

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

The Employer:

- provides high quality work experiences in an environment conducive to learning.
- remunerates apprentices as set out in the Plan of Training or Collective Agreements.
- provides feedback to training institutions, Apprenticeship and Trades Certification Division and apprentices in an effort to establish a process of continuous quality improvement.
- where appropriate, releases apprentices for the purpose of returning to a training institution to complete the necessary technical courses.
- ensures work experiences of the apprentice are documented.
- ensures a certified journeyperson is currently on staff in the same trade area as the apprentice and whose certification is recognized by the NL Department of Education and Early Childhood Development.

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 Red Seal 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.

