

Pre-Employment Plan of Training



PLAN OF TRAINING

Pre-Employment

Boom Truck Operator

April 2022



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

Approved by:

A handwritten signature in black ink, appearing to read "Louise Harnum", is written over a horizontal line.

Chairperson, Provincial Apprenticeship and Certification Board

Date: April 6, 2022

Preface

This curriculum standard describes the curriculum content for the Boom Truck Operator apprenticeship training program.

Acknowledgements

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

We offer you a sincere thank you.

Contact Information

Department of Education and Early Childhood Development
Apprenticeship and Trades Certification Division
Tel: 709-729-2729 / 1-877-771-3737
Email: app@gov.nl.ca
Web: www.gov.nl.ca/atcd

Document Status	Date Distributed	Mandatory Implementation Date	Comments
Approved	March 2022	September 2022	- Updated to align with MCO training

Table of Contents

A. Program Structure.....	5
SECTION 1	8
TS1510 Occupational Health and Safety	8
TS1520 Workplace Hazardous Materials Information System (WHMIS).....	11
TS1530 Standard First Aid	14
BT1101 Crane Operation Safety	15
BT1041 Shop Fundamentals for Boom Truck Operators	17
MB1050 Introduction to Lift Planning	21
MB1055 Introduction to Rigging.....	24
SECTION 2	26
MB1250 Class 3 Driver's License for Mobile Crane Operators	26
BT1130 Boom Truck Operations	30
BT1065 Boom Truck Systems.....	34
BT1261 Rigging for Boom Truck Operators	36
BT1070 Boom Truck Maintenance	40
AM1000 Introduction to Essential Skills	42
AM1101 Math Essentials	44
AM1341 Hoisting Math Fundamentals	47
MC1062 Computer Essentials.....	49
SECTION 3	52
AP1102 Introduction to Apprenticeship	52
CM2161 Communication Essentials.....	55
SD1761 Workplace Essentials.....	58
MB1080 Mentoring.....	61
B. Conditions Governing Apprenticeship Training	62
C. Requirements for Provincial Certification	69
D. Roles and Responsibilities of Stakeholders in the Apprenticeship Process	70

A. Program Structure

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

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

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

LEVEL 1			
Course No.	Course Name	Hours	Pre-Requisite(s)
Section 1			
TS1510	Occupational Health and Safety	6	None
TS1520	WHMIS	6	None
TS1530	Standard First Aid	14	None
BT1101	Crane Operation Safety	75	None
BT1041	Shop Fundamentals for Boom Truck Operators	60	None
MB1050	Introduction to Lift Planning	6	None
MB1055	Introduction to Rigging	6	None
Section Total		173	
Section 2			
MB1250	Class 3 Driver's License for Mobile Crane Operators	90	None
BT1130	Boom Truck Operations	60	BT1101
BT1065	Boom Truck Systems	6	None
BT1261	Rigging for Boom Truck Operators	60	None
BT1070	Boom Truck Maintenance	45	None
AM1000	Introduction to Essential Skills	9	None
*AM1101	Math Essentials	42	None

LEVEL 1			
Course No.	Course Name	Hours	Pre-Requisite(s)
AM1341	Hoisting Math Fundamentals	42	AM1101
MC1062	Computer Essentials	15	None
Section Total		369	
Section 3			
AP1102	Introduction to Apprenticeship	12	None
CM2161	Communication Essentials	36	None
SD1761	Workplace Essentials	24	None
MB1080	Mentoring	4	None
Section Total		76	
Total Level Hours		618	

***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.**

Notes:

1. All entrants must have a valid Class 5 License for a minimum of 6 months prior to the commencement of this training program.
2. Use of a simulator by an educational institution in place of actual seat time on a piece of equipment requires prior approval by the Department. Requests for simulator use will be reviewed by the Provincial Trade Advisory Committee (PTAC) to ensure it meets audio / visual / sensory feedback quality. The PTAC will review the simulator specifications and its application in delivering POT content to determine how many hours could be credited towards practical seat time for an individual piece of equipment. This may involve on-site evaluation by one or more members representing the PTAC.

Use of simulators as a supplemental instruction tool, without hour credit, is unlimited and does not require approval by the Department or PTAC.

3. For instruction, the following maximum student/instructor ratios apply:

In the yard, instruction and demonstration (for Boom Truck training)8/1

On the road, in the vehicle (For Class 3 training)3/1

In the yard, in the vehicle (For Class 3 training)3/1

SECTION 1

TS1510 Occupational Health and Safety

Learning Outcomes:

- Demonstrate knowledge of how to prevent accidents and illnesses.
- Demonstrate knowledge of 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 a 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.

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

Duration: 14 Hours

Pre-Requisite(s): None

BT1101 Crane Operation Safety

Learning Outcomes:

- Demonstrate knowledge of various codes and regulations required for the safe operation of boom trucks.
- Demonstrate knowledge of good safety practices in boom truck operations.

Duration: 75 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Obtain 3rd party certificates.
 - i. Professional Driver Improvement
 - ii. Transportation of Dangerous Goods
 - iii. Powerline Hazards
 - iv. Traffic Control and Flagging
2. Personal Protective Equipment.
 - i. identify the compulsory personnel protective equipment required for Boom Truck Operators and state its purpose
 - ii. state the minimum or C.S.A. codes for compulsory safety gear
 - iii. explain when safety items should be replaced
3. Warning signs, symbols and danger tags.
 - i. locate and identify, using operator's manual or the actual machine, any warning tag or warning symbol
 - ii. correctly match symbols to corresponding meanings
 - iii. state the steps to follow when a warning tag or symbol is discovered or when an operator is required to attach a warning tag or symbol to a machine
4. Mount and dismount equipment.
 - i. identify, from diagrams or from the actual machine, all safety grab-irons, handrails, steps, and foot-pegs used when mounting or dismounting equipment
5. Safe clearance in work areas.
 - i. state the minimum safe operating clearance for the overhead, sides, forward and rearward clearance of obstacles
 - ii. state the conditions for determining equipment operating clearances on the job

6. Dangerous operating situations.
 - i. identify factors that lead to dangerous operating situations
 - physiological (body)
 - psychological (mental)
 - mechanical failures
 - meteorological (weather)
 - terrestrial (land) conditions
 - ii. identify operational malpractice and poor habits that lead to accidents
7. Enclosed areas.
 - i. explain the safety procedures to use when running an engine in an enclosed area
 - ii. identify the toxic fumes that are associated with engine exhaust gases
 - iii. identify hoses and attachments needed to connect the engine exhaust pipe to a central ventilation system in a maintenance shop
 - iv. identify devices used to control exhaust fumes from engines when working in an underground work site
8. Fire prevention.
 - i. identify the components of the fire triangle
 - ii. identify types of fire extinguishers and explain how they work
9. Environmental concerns and safe practices regarding work site.
 - i. state the provincial regulations governing exhaust flame or spark arrestor while operating machinery in the forest
 - ii. list overhead/underground services that may be found on federal, provincial, municipal, and private lands
 - iii. identify the issues the operator should have knowledge of before actual set-up
 - iv. state the importance of containing and reporting spills
 - v. state the procedure for containment and reporting spills

Practical Requirements:

1. Clean and inspect safety gear.
2. Adjust and fasten fall arrest equipment (seat belts & safety harnesses).
3. Mount/dismount equipment.
4. Demonstrate the use of a fire extinguisher.

BT1041 Shop Fundamentals for Boom Truck Operators

Learning Outcomes:

- Demonstrate knowledge of various shop tools and equipment and their applications.
- Demonstrate knowledge of safety regulations in the operation and maintenance of shop tools.
- Demonstrate knowledge of the use of shop tools in a safe and competent manner.
- Demonstrate knowledge of operating oxy-fuel heating and cutting equipment.

Duration: 60 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Shop Safety.
 - i. explain the importance of safe work habits
 - ii. identify the required personal safety equipment for boom truck operators
 - iii. explain the importance of implementing exhaust control procedures
 - iv. explain the effects of excessive noise on hearing
 - v. identify factors that contribute to spontaneous combustion
 - vi. identify potential hazards to personal safety
 - vii. identify unsafe work conditions
 - viii. explain the importance of reporting accidents
2. Fasteners.
 - i. identify fasteners such as rivets, nails, wood screws, sheet metal screws, bolts, nuts, washers, masonry anchors, and shields
 - ii. describe specific sizes for each fastener
 - iii. identify sizes of fasteners
 - iv. identify bolt grades
 - v. identify miscellaneous anchoring devices

3. Describe the procedures to select, safely use, and maintain hand tools.
 - i. screwdrivers
 - standard
 - phillips
 - robertson
 - 5 point star
 - ii. pliers
 - combination
 - gripping
 - cutting
 - vise-grips
 - snap ring
 - needle nose
 - iii. special hose clamp tools
 - iv. wrenches
 - open-end
 - box ends
 - ratcheting box ends
 - special purpose (box)
 - adjustable
 - pipe
 - spanner
 - hex and multi-spline (metric and imperial)
 - v. sockets and drives (metric and imperial)
 - drive sizes
 - socket points
 - deep sockets
 - flexible sockets
 - drive handles
 - speed handles
 - ratchets
 - universal joints
 - adapters
 - extensions
 - vi. hammers
 - ball peen
 - cross peen
 - plastic tip
 - brass-headed
 - rubber mallets
 - dead blow
 - sledge hammers
 - hammer handles
 - vii. punches
 - starting

- pin
 - centre
 - aligning
 - viii. torque wrenches
 - types
 - sizes
 - purpose
 - ix. torque multiplier
 - x. hacksaws
 - types and designs
 - blade classification and selection
 - xi. files
- 4. Describe the procedures to select, safely use and maintain power tools.
 - i. portable wrenches
 - ii. cleaning equipment wrenches
 - iii. drilling equipment
 - iv. metal cutting
 - v. grinders
- 5. Identify types of compressors.
- 6. Describe the procedures to select, safely use, and maintain compressors.
- 7. Describe the procedures to select, safely use, and store shop equipment.
 - i. jacks
 - ii. shop cranes
 - iii. chain hoists
 - iv. steam cleaners
 - v. solvent cleaning tanks
- 8. Describe the procedures to select, safely use, and maintain measuring tools.
 - i. calipers
 - ii. measuring tapes
 - iii. wire rope gauges
 - iv. sheave gauges
 - v. anemometers
 - vi. feeler gauges
- 9. Describe procedures to operate oxy-fuel heating and cutting equipment to industrial safety standards for the removal and/or installation of parts.
 - i. follows safety precautions
 - safety apparel
 - storage and handling of welding gases
 - pre-operational inspection

- ii. setting up equipment
 - cylinders
 - gauges
 - regulators
 - valves-flame arrestor
 - torches and tips
 - hoses
 - testing for leaks
 - iii. operating the torch
 - lighting procedures
 - types of flames and effect on materials
 - shutting down procedures
10. Describe procedures to perform braze welding using oxy-acetylene equipment.
11. Describe procedures to perform flame cutting with oxy-acetylene equipment.

Practical Requirements:

1. Use and maintain personnel protective equipment.
2. Complete a shop safety inspection.
3. Implement exhaust control procedures in a shop.
4. Use hand tools.
5. Use and maintain various cutting tools.
6. Use various fasteners.
7. Use power tools.
8. Use compressed air systems.
9. Use and store of shop equipment.

MB1050 Introduction to Lift Planning

Learning Outcomes:

- Demonstrate knowledge of basic load charts, their characteristics and applications.
- Demonstrate knowledge of boom truck computers, their applications and procedures for use.
- Demonstrate knowledge of integrated computerized components, their applications and procedures for use.

Duration: 6 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Identify types of trade related documents and describe their applications.
 - i. manufacturers' specifications
 - load charts
 - manuals
 - ii. codes and standards
 - federal
 - provincial
 - municipal
 - iii. reference materials
 - iv. work orders
 - v. drawings
 - vi. permits
 - vii. maintenance schedules
 - viii. maintenance records
 - ix. log books
 - x. lift plans
 - xi. policies
 - site
 - company
 - xii. job hazard assessment
2. Describe the procedures used to prepare and/or complete applicable trade related documents.
3. Define terminology associated with load charts.
 - i. gross capacity

- ii. net capacity
 - iii. gross load
 - iv. net load
- 4. Identify codes, standards and regulations pertaining to load charts.
- 5. Identify parts of a load chart and describe their characteristics and applications.
 - i. notes
 - factors affecting capacity
 - ii. capacity charts
 - radius
 - boom length
 - boom angle
 - between listed values
 - iii. range diagram
 - iv. technical data
- 6. Interpret data from load charts required to plan lifts.
 - i. parts of line
 - ii. quadrants of operation
 - iii. capacity reductions for various configurations
- 7. Identify factors that influence boom truck capacity in basic lifting operations and describe their impact.
 - i. temperature
 - ii. wind conditions
 - iii. boom truck configuration
- 8. Interpret basic load chart data and determine boom truck capacities for various configurations.
- 9. Define terminology associated with computerized operational aids and integrated computerized components.
- 10. Identify hazards and describe safe work practices pertaining to the use of computerized operational aids and integrated computerized components.
- 11. Identify types of computerized operational aids and integrated computerized components and describe their applications and procedures for use.
 - i. computer assisted safety devices
 - ii. load moment indicators (LMI)
 - central unit
 - load transducers or load cells
 - boom length and angle transducers
 - anti-two block

- display (inside cab)
 - iii. load-monitoring devices
 - iv. maintenance monitors
 - v. range limiting devices
- 12. Describe the procedures used to set up computerized operational aids for boom truck operation.
 - i. manufacturers' specifications
- 13. Identify sources of information relevant to job task planning.
 - i. supervisor
 - ii. drawings
 - iii. related professionals
 - iv. clients
 - v. manufacturers
- 14. Describe the considerations to plan and organize job tasks.
 - i. scheduling
 - ii. tools and equipment
 - iii. load weights
 - iv. company/site policy
- 15. Identify the sequence of job tasks to be performed.

Practical Requirements:

None.

MB1055 Introduction to Rigging

Learning Outcomes:

- Demonstrate knowledge of fasteners, retaining devices, wires ropes and rigging hardware, their applications, limitations and procedures for use.
- Demonstrate knowledge of the procedures used to install, monitor, inspect, maintain, store and dispose of fasteners, retaining devices, wire ropes and rigging hardware.
- Demonstrate knowledge of rigging and hoisting applications.
- Demonstrate knowledge of sling configurations, their characteristics and applications.
- Demonstrate knowledge of working load limits (WLL).

Duration: 6 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Define terminology associated with rigging hardware, rigging and hoisting.
2. Identify hazards and describe safe work practices pertaining to rigging hardware, rigging and hoisting.
3. Identify tools and equipment relating to rigging hardware and describe their applications and procedures for use.
4. Interpret codes, standards and regulations pertaining to rigging hardware, rigging and hoisting.
5. Identify types of rigging hardware and describe their applications, limitations and procedures for use.
 - i. hooks
 - ii. tag lines
 - iii. shackles
 - iv. slings
 - v. spreader bars
 - vi. equalizer beams
 - vii. specialized lifting devices
6. Describe the procedures used to select, install and connect rigging hardware.

7. Describe the procedures used to monitor rigging hardware during lifting operations.
8. Describe the procedures used to troubleshoot rigging hardware.
9. Describe the procedures used to inspect, maintain and store rigging hardware.
10. Describe the procedures used to dispose of damaged rigging hardware.
11. Interpret information pertaining to rigging and hoisting found on drawings and specifications.
 - i. lift plans
 - ii. manufacturers' specifications
12. Identify types of hitches used with slings and describe their applications and procedures for use.
 - i. Diameter to diameter (D to d) ratio with wire rope slings
13. Describe the procedures used to ensure the work area is safe for hoisting.
 - i. supervision of lift
 - ii. securing work area
 - iii. communication
14. Identify the factors to consider when rigging material/equipment for hoisting.
 - i. load characteristics
 - ii. workplace environment
 - chemical hazards
 - grounding requirements
 - iii. weather conditions

Practical Requirements:

None.

SECTION 2

MB1250 Class 3 Driver's License for Mobile Crane Operators

Learning Outcomes:

- Demonstrate knowledge of procedures to inspect vehicles and perform maintenance to ensure safe operation.
- Demonstrate knowledge of procedures to operate a truck competently and safely.
- Demonstrate knowledge of procedures to operate a truck with a load competently and safely.
- Demonstrate the ability to obtain a Class 03 driver's license and an Air Brake Endorsement with adjustment 09A.

Duration: 90 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Describe the procedure for adjusting lap and shoulder belts.
2. Describe the role of the driver in industry.
 - i. qualifications of a good commercial driver
 - ii. signs of fatigue, effects of fatigue, corrective action to take if overtired
3. Describe the Highway Traffic Act and National Safety Codes.
 - i. Registrar of Motor Vehicles refusal to issue a driver's license
 - ii. Registrar of Motor Vehicles refusal to register a vehicle
 - iii. provincial regulations
 - parking
 - following other vehicles
 - passing/being passed
 - emergency vehicles
 - signaling
 - safety procedures at railway crossing
 - warning devices
 - school buses
4. Describe traffic signs and signals.
 - i. the purpose of traffic signs
 - ii. the classifications of traffic signs

- iii. sign classification
 - by colour
 - by shape
 - iv. interpret the message of a sign from a given symbol
 - v. signalized intersection operations as required by the Newfoundland and Labrador Highway Traffic Act
5. Describe vehicle regulations.
- i. conditions for special permit requirements for highway operations
 - ii. operation of vehicles registered in other jurisdictions
 - iii. load security regulations
 - iv. securement requirements when transporting material
 - coiled metal
 - miscellaneous metal articles
 - tie down assemblies
 - hooks and bolts attached to tie down assemblies
 - working load limits
6. Describe the Motor Carrier Act & Regulations.
- i. application requirements for a Motor Carrier certificate.
 - ii. terminology
 - Interline carrier
 - Bill of lading
 - consignee
 - shipper
 - cosigner
7. Identify the driver's responsibilities when involved in an accident.
8. Identify the contents of a Roadside Warning and Safety kit.
9. Identify all gauges on a tandem truck.
10. Identify all controls on a tandem truck.
11. Identify the components of a tandem truck.
12. Describe shifting procedures.
- i. types of transmissions
 - ii. shift control levers
 - iii. standard shift transmission operations
 - iv. double clutching on the upshift and downshift
13. Describe the operation of a clutch brake.

14. Describe road maps and their legends.
 - i. finding locations on a map
 - communities
 - roads
 - park locations
 - airports
 - hospitals
 - ferry lines
 - ii. identify the most practical route between two given points (on a road map) and list all the route numbers to follow
15. Describe acts and regulations pertaining to the use of commercial vehicle driver certification requirements.
 - i. licensing and permitting Road Users Guide for Class 03 and Air Brakes 09A
16. Identify regulations and practices to complete and use a driver's logbook.

Practical Requirements:

1. Draw to scale a diagram of a given accident scene.
 - i. direction of travel
 - ii. point of impact
 - iii. relation of traffic lanes
 - iv. signs and signals
2. Perform a vehicle safety inspection using an inspection sheet.
3. Enter and exit a truck cab.
4. Operate and maintain seat belts.
5. Perform pre-trip inspections and complete basic maintenance on a vehicle.
 - i. use the check-list and operators guide book
 - ii. top up fluids and oil as required
6. Start-up and shut-down a diesel powered vehicle in accordance with the Operator's Guide and/or Start-up checklist.
7. Clean and maintain vehicle.
 - i. parking procedures
 - ii. water pressure usage
 - iii. use of steam jenny

8. Complete a standard accident report form.
9. Observe vehicle operations **(30 hours)**.
10. Demonstrate vehicle operations **(30 hours)**.
 - i. select appropriate gear
 - ii. co-ordinate the use of the clutch and accelerator
 - iii. position hands properly on the steering wheel
 - iv. put vehicle in motion
 - v. regulate speed with transmission
 - vi. regulate speed with brakes
 - vii. operate vehicle displaying smooth shifting and steering
 - viii. use signals in the correct manner
 - ix. operate in reverse, with mirrors and when view is obstructed
 - x. demonstrate the ability to shift the various types of transmissions
 - xi. demonstrate the ability to successfully complete the following obstacles:
 - right angled turn
 - offset alley
 - alley dock
 - 30m alley
 - Overhead
11. Operate vehicle with load **(6 hours)**.
 - i. position truck at location
 - ii. transport load to site
 - iii. observe traffic patterns and driving speed for road conditions
 - iv. observe overhead obstructions
 - v. demonstrate proper parking procedures
 - vi. perform the proper parking procedures for parking between two trucks at a loading dock entering from left and/or right

BT1130 Boom Truck Operations

Learning Outcomes:

- Demonstrate knowledge of various codes and regulations required for operating boom trucks.
- Demonstrate knowledge of good safety practices when operating boom trucks.
- Demonstrate knowledge of conservation and environmental issues related to boom truck operations.
- Demonstrate knowledge of new boom truck technology.
- Demonstrate knowledge of computer assisted safety devices, LMI/Load Indicators and procedures for use.

Duration: 60 Hours

Pre-Requisites: BT1101

Objectives and Content:

1. Describe the boom truck operation occupation in terms of the work of a Boom Truck Operator.
 - i. the boom truck operator's working conditions
 - ii. the responsibilities of the various parties involved with boom truck operation
2. Describe boom trucks.
 - i. identify types and uses of boom trucks
 - ii. describe various boom truck attachments
3. Explain the principles of leverage associated with boom truck operation.
 - i. leverage and stability
 - ii. forward and backward stability factors
 - iii. rotation of upperworks (leverage and capacity)
 - iv. leverage calculations
4. Describe the purpose and applications of signaling.
 - i. identify all hand signals used in boom truck operations
 - ii. identify other construction hand signals which may cause confusion for boom truck operation
 - iii. interpret signals
 - iv. identify audible signals for boom trucks
5. Define quadrants of operation.
 - i. define quadrants and sweep area
 - ii. explain division of sweep area into quadrants

6. Interpret load charts for pre-lift planning and hoisting operations.
 - i. describe configuration of boom truck bases and booms
 - ii. describe quadrants of operation and their effects on load charts
 - iii. describe boom lengths and their effects on load charts
 - iv. describe effects on values of boom angle, boom length, and load radius for chart listings
7. Define jib and jib offset.
 - i. fixed jibs
 - ii. luffing jibs
8. State the differences between gross capacity versus net capacity load on a boom truck.
 - i. identify the purpose of range diagrams
 - ii. describe how to use range diagrams
9. Describe boom extension types and lengths.
 - i. full power telescopic
 - ii. pinned telescopic booms
10. State the factors that reduce capacity.
 - i. effects of increased load radius
 - ii. effects of rapid swing rate
 - iii. effects of impact loading and rapid acceleration or deceleration of load
 - iv. effects of high wind speeds
 - v. duty cycle operations
11. Discuss safety considerations for short-term and long-term shutdowns.
12. Describe structural failure and stability failure.
13. Determine conditions of a load chart.
 - i. calculate parts of line
 - ii. calculate weight of line
 - iii. weight of hook block
14. Determine main boom capacities.
 - i. list capacity deductions
 - ii. calculate net capacities
15. Describe the principles of boom truck operation.
 - i. define leverage and stability
 - ii. perform leverage calculations

- iii. describe changes in boom truck leverage and capacity during rotation of upperworks
 - iv. describe forward and backward stability factors
 - v. describe structural failure
 - vi. describe wire rope safety factors for boom truck running and stationary ropes
16. Describe main boom gross capacity for jibs and/or boom extension(s) installed for all boom truck types.
17. Determine main boom capacities with jibs or boom extensions installed.
- i. determine the effective weight of jibs and boom extensions
 - ii. list capacity deductions
 - iii. calculate net capacities
18. Determine jib and boom extension capacities for full telescopic booms.
- i. calculate boom extension capacities
 - ii. calculate jib capacities
 - iii. calculate boom extension and jib combination capacities
19. Determine jib and boom extension capacities for pinned telescopic booms.
- i. calculate boom extension capacities
 - ii. calculate jib capacities
 - iii. calculate boom extension and jib combination capacities
20. Describe inspection procedures for a crane carrier.
21. Describe the procedures for starting, moving, and proper shut down of a crane carrier.
22. Describe the procedures to transport and operate boom trucks.
- i. safety precautions for preparing and boom trucks
 - ii. identify municipal considerations for boom trucks
 - iii. define the operator's responsibility to prevent accidents, and the need for safety when travelling and operating boom trucks
 - iv. identify manufacturer's recommendations or special precautions regarding travelling of boom trucks to and from job sites
 - v. determine the maximum allowable ground speed while travelling, corresponding to the boom trucks that are selected
 - vi. identify what warning sign(s) if any, must be attached to boom trucks while travelling to and from job sites
 - vii. determine clearances required for transporting and operating boom trucks
23. Describe conditions which prohibit boom truck operation.
- i. identify machine configurations that do not meet specifications

- ii. describe improper use of outriggers
 - iii. state the importance of the boom truck being level and the potential danger of instability
 - iv. describe boom truck leveling procedures
 - v. describe ground conditions and blocking procedures
 - vi. identify what weather and atmospheric conditions that can restrict boom truck operation
 - vii. describe eccentric reeving
24. Plan for performing a lift.
- i. identify and evaluate work to be performed
 - ii. describe considerations influencing lifting procedures
 - iii. analyze factors influencing equipment selection
 - iv. interpret an engineered lift
25. Identify and describe new model boom trucks.
- i. range of capacities available
 - ii. range of boom lengths available
 - iii. manufacturers
 - iv. advantages/disadvantages
26. Describe the upper structure characteristics of new model boom trucks.
- i. boom technology
 - ii. telescoping and pinning systems
 - iii. heavy lift attachments

Practical Requirements:

- 1. Inspect, start-up and shut down a crane carrier.

BT1065 Boom Truck Systems

Learning Outcomes:

- Demonstrate knowledge of engines and drive systems, mechanical systems and hydraulic systems, their purpose and operation.
- Demonstrate knowledge of engines and drive systems, mechanical systems and hydraulic systems components, their characteristics and applications.
- Demonstrate knowledge of the procedures used to inspect, maintain and troubleshoot engines and drive systems, mechanical systems and hydraulic systems.

Duration: 6

Pre-Requisite(s): None

Objectives and Content:

1. Define terminology associated with engines and drive systems, mechanical systems and hydraulic systems.
2. Identify hazards and describe safe work practices pertaining to engines and drive systems, mechanical systems and hydraulic systems and their components.
 - i. lockout/tagout
 - ii. de-energize
3. Interpret codes, standards and regulations pertaining to engines and drive systems, mechanical systems and hydraulic systems.
4. Identify tools and equipment relating to engines and drive systems, mechanical systems and hydraulic systems and their components and describe their applications and procedures for use.
5. Identify types of engine and drive systems and describe their purpose and operation.
 - i. gas
 - ii. diesel
 - iii. propane
 - iv. automatic
 - v. manual
 - vi. hydraulic
 - vii. mechanical
 - viii. electrical

6. Identify types of mechanical systems and describe their purpose and operation.
 - i. air
 - ii. electrical
 - iii. monitoring and warning
 - iv. steering
 - v. hoisting
 - hydraulic
 - friction
 - vi. travel systems
 - vii. outriggers
 - viii. travel brakes
7. Identify types of hydraulic systems and describe their purpose and operation.
 - i. closed centre
 - ii. open centre
8. Identify hydraulic system components and describe their characteristics and applications.
 - i. hoses
 - ii. pumps
 - iii. motors
 - iv. filters
 - v. tanks
 - vi. cylinders
 - vii. valves
9. Explain the power transfer principles of hydraulic systems.
10. Identify engines and drive systems, mechanical systems and hydraulic systems components and describe their characteristics and applications.
11. Describe the procedures used to troubleshoot engines and drive systems, mechanical systems and hydraulic systems and their components.

Practical Requirements:

None.

BT1261 Rigging for Boom Truck Operators

Learning Outcomes:

- Demonstrate knowledge of the procedures to use safety harnesses.
- Demonstrate knowledge of the procedures to perform rigging operations.

Course Duration: 60 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Describe the responsibilities of riggers.
2. Identify and describe the composition of wire rope.
 - i. wire
 - ii. strand
 - iii. core (fibre or wire or strand)
3. Interpret and describe rope lay.
 - i. regular
 - ii. lang
 - iii. right and left
 - iv. alternate
 - v. herringbone or twin strand
 - vi. specialty ropes
4. Identify specialty ropes and how/where they are used including limitations.
5. Describe and interpret sizes, grades and construction of all types of rigging and hoisting ropes.
6. Identify and compare preformed versus non-preformed types of ropes.
7. Identify and describe the fatigue and abrasion resistance of wire ropes.
8. Identify safety factors.
 - i. rigging slings (IWRC and anti-rotation)
 - ii. running ropes
 - iii. standing ropes
 - iv. hoisting personnel

9. Calculate safe working loads.
10. Identify the classification group.
11. Identify and describe uses for non-rotation and rotating resistant ropes.
12. Describe proper installation procedures for all types of wire rope.
13. Explain the importance of lubricating and cleaning wire ropes.
14. Identify end fittings and connections and explain how they are installed.
15. Identify the minimum rope wraps on a drum that is to be maintained.
16. Identify grades of chain.
 - i. strength
 - ii. inspection
 - iii. care and use
17. Describe reeving.
18. Determine the parts of line required for rigging.
19. Describe the effect of winch diameter.
 - i. multi-layer (wire rope)
 - ii. line speed versus torque
20. Compare the SWL of rope versus line pull.
21. Describe the effect of sheave friction during a lift.
22. Identify the mechanical advantage of reeving.
23. Describe wire block reeving methods.
 - i. lacing
 - ii. square or angle
 - iii. skip
24. Identify and describe types and configurations for slings.
 - i. wire rope
 - ii. synthetic web
 - iii. jacketed round synthetic
 - iv. metal mesh
 - v. chain
 - vi. sling configurations

- vii. single vertical hitch
 - viii. bridle hitch
 - ix. single and double basket hitch
 - x. double wrap basket hitch
 - xi. single and double choker hitch
 - xii. double wrap choker hitch
 - xiii. endless slings or grommet
 - xiv. braided
 - xv. sling angles
 - xvi. safe working loads
25. Read and interpret manufacturer identification tags.
26. Describe rigging precautions when using synthetic and specialty slings.
27. Explain the importance of removing rayed, cut, damaged and worn equipment from service.
28. Describe rigging procedures and perform rigging calculations.
29. Determine load weights.
30. Determine the centre of gravity for various loads.
31. Determine tensions on sling legs.
32. Identify the hand signals used for hoisting operations.

Practical Requirements:

- 1. Plan rigging operations.
- 2. Calculate safe working loads and sling angles.
- 5. Calculate loads on equalizer beams.
- 6. Demonstrate proper signaling for hoisting procedures.
- 5. Demonstrate installation of multiple parts of line.
 - i. lacing
 - ii. reeving (square or angle/skip)
- 6. Demonstrate proper installation and procedures for all types of wire rope.

7. Inspect, use, handle and maintain wire rope.
 - i. lubrication
 - ii. cleaning
8. Install wire rope wedge socket end termination.
9. Demonstrate the use of:
 - i. drums and winches
 - ii. sheaves
 - iii. hooks
 - iv. rings, links and swivels
 - v. shackles
 - vi. eye bolts and lugs
 - vii. turnbuckles
 - viii. come-a-long and chain hoist
 - ix. spreader and equalizer beams
 - x. crane blocks
 - xi. wire rope blocks
 - xii. snatch block
 - xiii. block and tackle
 - xiv. wire rope clips
10. Assemble rigging in a safe and efficient manner.
11. Select appropriate rigging hardware for a given job.
12. Perform maintenance and properly store rigging.
13. Demonstrate proper rigging procedures and calculations.
14. Plan and demonstrate various rigging operations.

BT1070 Boom Truck Maintenance

Learning Outcomes:

- Demonstrate knowledge of various codes and regulations required for inspecting and maintaining boom trucks.
- Demonstrate knowledge of good safety practices when maintaining boom trucks.
- Demonstrate knowledge of conservation and environmental issues when maintaining boom trucks.

Duration: 45 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Service manuals.
 - i. identify the various sections of service manuals
 - maintenance
 - servicing
 - lubrication procedures
 - ii. interpret information in the manual
 - iii. explain the importance of complying with service manuals
2. Ordering parts.
 - i. locate the machine serial number or Vehicle Identification Number (V.I.N.)
 - ii. locate the engine specifications plate and serial number
 - iii. complete a sample order form
3. Lubricants and their purposes.
 - i. locate the various components of the lubrication system and list the servicing period for each
 - ii. identify the various grades of oils to use under various temperature conditions
 - iii. identify correct greases
 - iv. identify the performance of grease under extreme load and heat
 - v. state the functions of engine oil
 - vi. identify the various additives used in engine oil and the advantages and disadvantages of each
 - vii. identify the characteristics of gear lubricants
 - viii. define the Engine Service Classification as presented by the American Petroleum Institute (A.P.I.)

4. Crane log book.
 - i. locate and state the purpose of the service meter
5. Identify start-up and shut down procedures as prescribed in the service manual.
6. Identify the various attachments available, the purpose and maintenance of each attachment.
7. Describe the maintenance and adjustments required for tracks, tires and wheels.

Practical Requirements:

1. Follow a maintenance procedure.
2. Assist in changing lubricating fuels and filters.
 - i. select correct grease
 - ii. load a grease gun
 - iii. grease a piece of equipment
 - iv. assist in changing engine oil and a filter on a piece of equipment
 - v. assist in changing transmission fluid and filter on a piece of equipment
 - vi. adhere to the regulations pertaining to storage and disposal fluids
3. Affix a warning sign where it can be easily recognized on a piece of equipment.
4. Refuel a machine.

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 percentages
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.

AM1341 Hoisting 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.
- Demonstrate knowledge of mathematical principles for the purposes of problem solving, job and materials estimation, measurement, calculation, system conversion, diagram interpretation and scale conversions, formulae calculations, and geometric applications.

Duration: 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.

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.

SECTION 3

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 2 apprentice and the wage percentage of that level

CM2161 Communication Essentials

Learning Outcomes:

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

Duration: 36 Hours

Pre-Requisite(s): None

Objectives and Content:

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

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

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

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

Practical Requirements:

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

SD1761 Workplace Essentials

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

Learning Outcomes:

- Demonstrate 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 WorkplaceNL
 - 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.

MB1080 Mentoring

Learning Outcomes:

- Demonstrate knowledge of strategies for learning skills in the workplace.

Duration: 4 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Describe the importance of individual experience.
2. Describe the shared responsibilities for workplace learning.
3. Identify one's own learning preferences and how they relate to learning new skills.
4. Recognize the importance of different types of skills in the workplace.
5. Identify and utilize different learning styles.
 - i. seeing it
 - ii. hearing it
 - iii. trying it
6. Identify different roles played by a workplace mentor.
7. Explain the importance of receiving feedback.

Practical Requirements:

None

B. Conditions Governing Apprenticeship Training

1.0 General

The following general conditions apply to all apprenticeship training programs approved by the Provincial Apprenticeship and Certification Board (PACB) in accordance with the **Apprenticeship 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

Boom Truck Operator - 2400 Hours			
Apprenticeship Level and Wages			
Level	Wage Rate	Requirements for Progression to Next Level	Next Level
1 st	75 %	<ul style="list-style-type: none"> Completion of Pre-employment training Pass Level 1 exam Minimum 1200 hours of combined relevant work experience and training 	2 nd Year
2 nd	90%	<ul style="list-style-type: none"> Minimum 2400 hours of combined relevant work experience and training Sign-off of all workplace skills in apprentice logbook Pass certification exam 	Journeyperson Certification
<p>Wage Rates</p> <ul style="list-style-type: none"> Rates are percentages of the prevailing journeyperson's wage rate in the place of employment of the apprentice. Rates must not be less than the wage rate established by the Labour Standards Act (1990), as now in force or as hereafter amended, or by other order, as amended from time to time replacing the first mentioned order. Rates must not be less than the wage rate established by any collective agreement which may be in force at the apprentice's workplace. Employers are free to pay wage rates above the minimums specified. <p>Level Exams</p> <ul style="list-style-type: none"> This program may not currently contain Level Exams, in which case this requirement will be waived until such time as Level Exams are available. 			

Boom Truck Operator - 2400 Hours		
Class Calls (after Apprenticeship Registration)		
Call Level	Requirements for Class Call	Hours Awarded for In-School Training
Direct Entry Level 1	<ul style="list-style-type: none"> Minimum of 1000 hours of relevant work experience 	336
<p>Class calls at Minimum Hours:</p> <ul style="list-style-type: none"> Class calls may not always occur at the minimum hours indicated. Some variation is permitted to allow for the availability of training resources and apprentices. 		

6.0 Tools

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

7.0 Periodic Examinations and Evaluation

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

8.0 Granting of Certificates of Apprenticeship

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

9.0 Hours of Work

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

10.0 Copies of the Registration for Apprenticeship

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

11.0 Ratio of Apprentices to Journeypersons

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

12.0 Relationship to a Collective Bargaining Agreement

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

13.0 Amendments to a Plan of Apprenticeship Training

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

14.0 Employment, Re-Employment and Training Requirements

- 14.1 The Plan of Training requires apprentices to regularly attend their place of employment.
- 14.2 The Plan of Training requires apprentices to attend training for that occupation as prescribed by the PACB.
- 14.3 Failure to comply with Sections 14.1 and/or 14.2 will result in cancellation of the Memorandum of Understanding. Apprentices may have their MOUs reinstated by the PACB but would be subject to a commitment to complete the entire program as outlined in the General Conditions of Apprenticeship. Permanent cancellation in the said occupation is the result of non-compliance.
- 14.4 Cancellation of the Memorandum of Understanding to challenge journeyperson examinations, if unsuccessful, would require an apprentice to serve a time penalty of two (2) years before reinstatement as an apprentice or qualifying to

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

- 14.5 An employer shall ensure that each apprentice is under the direct supervision of an approved journeyperson supervisor who is located at the same worksite as the apprentice, and that the apprentice is able to communicate with the journeyperson with respect to the task, activity or function that is being supervised.
- 14.6 Under the Plan of Training the employer is required to keep each apprentice employed as long as work is available, and if the apprentice is laid off due to lack of work, to give first opportunity to be hired before another is hired.
- 14.7 The employer will permit each apprentice to attend training programs as prescribed by the PACB.
- 14.8 Apprentices who cannot acquire all the workplace skills at their place of employment will have to be evaluated in a simulated work environment at a PACB authorized training institution and have sign-off done by instructors to meet the requirements for certification.

15.0 Appeals to Decisions Based on Conditions Governing Apprenticeship Training

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

C. Requirements for Provincial Certification

1. Evidence the required work experiences outlined in this Plan of Training have been obtained. This evidence must be in a format clearly outlining the experiences and must be signed by an appropriate person or persons attesting that these experiences have been obtained to the level required.
2. Successful completion of all required courses in the program.
3. A combination of training from an approved training program and suitable work experience totaling 2400 hours.
4. Completion of a Provincial certification examination, to be set at a place and time determined by the Apprenticeship and Trades Certification Division.

D. Roles and Responsibilities of Stakeholders in the Apprenticeship Process

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

The Apprentice:

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

The Employer:

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

