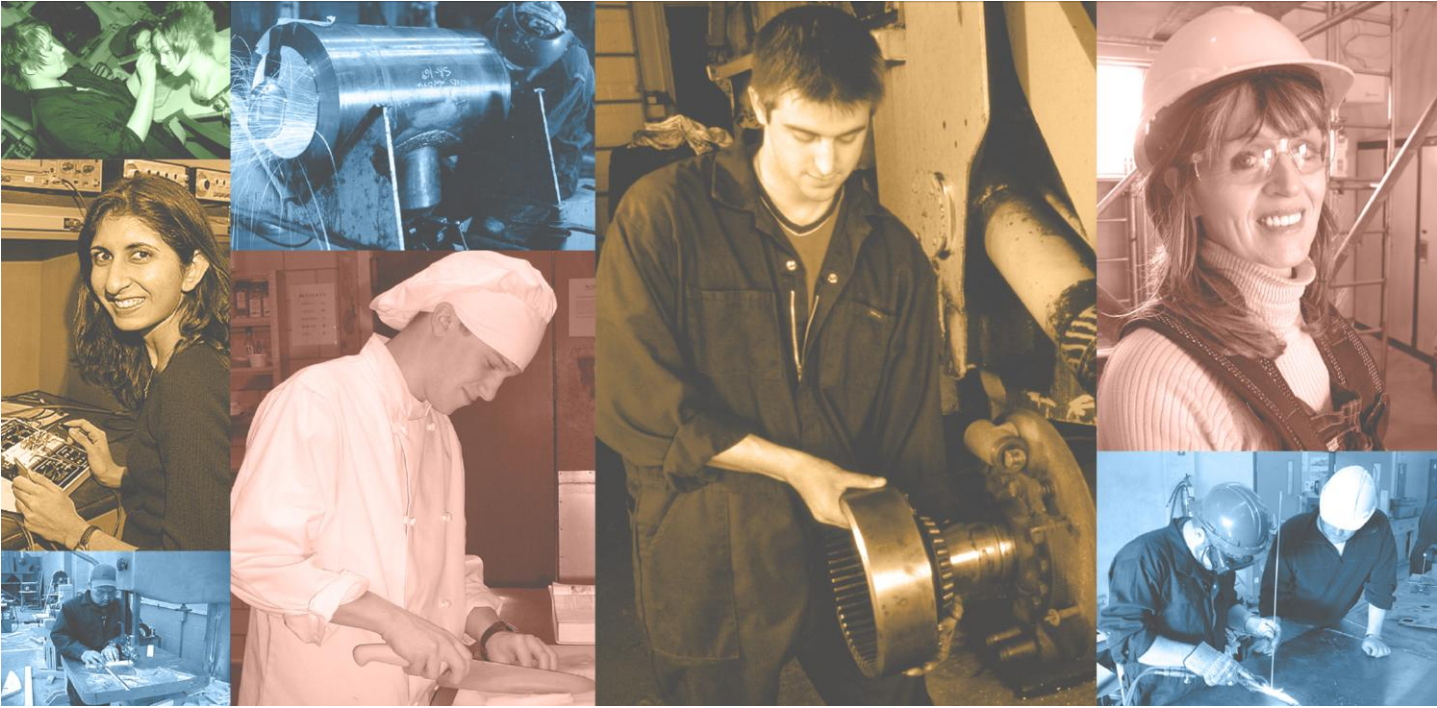

Plan of Training

Boom Truck Operator



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

December 2012

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Boom Truck Operator

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Approved by:

A handwritten signature in black ink, appearing to read "R. [unclear]".

Chairperson, Provincial Apprenticeship and Certification Board

Date: December 11, 2012

Preface

This document describes the curriculum content for the Boom Truck Operator apprenticeship training program and outlines each of the technical training units necessary for the completion of apprenticeship.

Acknowledgements

Advisory committees, industry representatives, instructors and apprenticeship staff provided valuable input to the development of this Apprenticeship Curriculum Standard. Without their dedication to quality apprenticeship training, this document could not have been produced.

We offer you a sincere thank you.

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A. Program Structure

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

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

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

Course No.	Course Name	Hours	Pre-Requisite(s)
TS1510	Occupational Health and Safety	6	None
TS1520	WHMIS	6	None
TS1530	Standard First Aid	14	None
LC1040	Shop Fundamentals for Crane Operators	60	None
LC1100	Crane Operation Safety	75	None
LC1110	Crane Maintenance	60	None
LC1130	Crane Operations	60	LC1100 LC1110 LC1200
LC1200	Hydraulics and Applications to Crane Control	15	LC1040
MB1231	Class 3 Driver's License for Mobile Crane Operators	90	LC1040
LC1260	Rigging for Crane Operators	60	None
AP1101	Introduction to Apprenticeship	15	None
*AM1100	Math Essentials	30	None
AM1340	Hoisting Math Fundamentals	30	AM1100
CM2160	Communication Essentials	45	None
SD1760	Workplace Essentials	45	None

MC1060	Computer Essentials	15	None
Total Course Credit Hours		626	

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

Required Work Experience

BLOCK I

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 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

LC1040 Shop Fundamentals for Crane 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 crane 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 the following hand tools.
 - i. screwdrivers
 - standard
 - phillips
 - robertson
 - torx
 - 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
 - Allen 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 the following power tools.
 - i. portable
 - ii. cleaning equipment
 - 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 the following 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 the following 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.
10. Pre-check, light and adjust oxy-fuel welding and cutting equipment.
11. Perform flame cutting with oxy-fuel equipment.
12. Perform proper shut down procedures with oxy-fuel welding and cutting equipment.

LC1100 Crane Operation Safety

Learning Outcomes:

- Demonstrate knowledge of various codes and regulations required for the safe operation of cranes.
- Demonstrate knowledge of good safety practices in crane operations.
- Obtain the following certificates:
 - Professional Driver Improvement
 - Transportation of Dangerous Goods
 - Powerline Hazards
 - Traffic Control and Flagging

Duration: 75 Hours

Pre-requisite(s): None

Objectives and Content:

1. Personnel Protective Equipment.
 - i. identify the compulsory personnel protective equipment required for Crane 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
2. 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

3. 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
4. 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
5. Dangerous operating situations.
 - i. identify factors that lead to dangerous operating situations: physiological (body), psychological (mental) mechanical failures, meteorological (weather) and terrestrial (land) conditions
 - ii. identify operational malpractice and poor habits that lead to accidents
6. 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
7. Fire prevention.
 - i. identify the components of the fire triangle
 - ii. identify types of fire extinguishers and explain how they work
8. 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.

LC1110 Crane Maintenance

Learning Outcomes:

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

Duration: 60 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. Servicing and charging batteries.
- i. identify the rules pertaining to the care and maintenance of batteries
 - ii. explain the procedure to clean and service a battery
 - iii. explain how to measure battery electrolyte with a hydrometer
 - iv. explain how to connect a charger to battery terminals
6. Maintaining fuel systems.
- i. identify the components of a fuel system
 - ii. explain how to prime a fuel system
 - iii. state the procedure used to service a fuel system
 - iv. state the procedure to follow in refueling a machine
 - v. state the precautions to be followed during refueling
7. Maintaining cooling systems.
- i. identify the components of the cooling system
 - ii. select a coolant for a given machine
 - iii. explain the process used to test anti-freeze solution
 - iv. explain the importance of and ways to maintain a cooling system by checking for plugged radiator core or bent fan blades
8. Identify start-up and shut down procedures as prescribed in the service manual.
9. Identify the various attachments available, the purpose and maintenance of each attachment.
10. 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. Assist in priming and servicing a fuel system.
 - i. drain water from tank and sediment bowl
 - ii. change fuel filters
 - iii. change a water separator
5. Refuel a machine.
6. Service and charge a storage battery.
 - i. follow rules pertaining to the care and maintenance of batteries
 - ii. clean and service a battery
 - iii. measure battery electrolyte with a hydrometer
 - iv. connect a charger to battery terminals

LC1130 Crane Operations

Learning Outcomes:

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

Duration: 60 Hours

Pre-Requisites: LC1100, LC1110, LC1200

Objectives and Content:

1. Describe the crane operation occupation in terms of the work of a crane operator.
 - i. the crane operator's working conditions
 - ii. the responsibilities of the various parties involved with crane operation
2. Describe cranes.
 - i. identify types and uses of cranes
 - ii. describe various crane attachments
3. State the characteristics of hydraulic boom and lattice boom cranes.
4. Explain the principles of leverage associated with crane operation.
 - i. leverage and stability
 - ii. forward and backward stability factors
 - iii. rotation of upperworks (leverage and capacity)
 - iv. leverage calculations

5. Describe the purpose and applications of signaling.
 - i. identify all hand signals used in crane operations
 - ii. identify other construction hand signals which may cause confusion for crane operation
 - iii. interpret signals
 - iv. identify audible signals for cranes

6. Define quadrants of operation.
 - i. define quadrants and sweep area
 - ii. explain division of sweep area into quadrants

7. Interpret load charts for pre-lift planning and hoisting operations.
 - i. describe configuration of crane 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

8. Define jib and jib offset.
 - i. fixed jibs
 - ii. luffing jibs

9. State the differences between gross capacity versus net capacity load on a crane.
 - i. identify the purpose of range diagrams
 - ii. describe how to use range diagrams

10. Describe boom extension types and lengths.
 - i. full power telescopic
 - ii. pinned telescopic booms

11. 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

12. Discuss safety considerations for short-term and long-term shutdowns.

13. Describe structural failure and stability failure.
14. Determine conditions of a load chart.
 - i. calculate parts of line
 - ii. calculate weight of line
 - iii. weight of hook block
15. Determine main boom capacities.
 - i. list capacity deductions
 - ii. calculate net capacities
16. Describe the principles of crane operation.
 - i. define leverage and stability
 - ii. perform leverage calculations
 - iii. describe changes in crane 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 crane running and stationary ropes
17. Describe main boom gross capacity for:
 - i. lattice boom
 - ii. hydraulic boom
 - iii. pinned telescopic boom
 - iv. jibs and/or boom extension(s) installed for all crane types
18. 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
19. Determine jib and boom extension capacities for lattice booms.
 - i. determine effective weight of jib
 - ii. list capacity deductions
 - iii. calculate net jib capacities using each method
20. 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
21. 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
22. Describe inspection procedures for a crane carrier.
23. Describe the procedures for starting, moving, and proper shut down of a crane carrier.
24. Describe the procedures to transport and operate cranes.
- i. safety pre-cautions for preparing and travelling cranes
 - ii. identify municipal considerations for travelling cranes
 - iii. define the operator's responsibility to prevent accidents, and the need for safety when travelling and operating cranes
 - iv. identify manufacturer's recommendations or special precautions regarding travelling of cranes to and from job sites
 - v. determine the maximum allowable ground speed while travelling, corresponding to the cranes that are selected
 - vi. identify what warning sign(s) if any, must be attached to cranes while travelling to and from job sites
 - vii. determine clearances required for transporting and operating cranes
25. Describe conditions which prohibit crane operation.
- i. identify machine configurations that do not meet specifications
 - ii. describe improper use of outriggers
 - iii. state the importance of the crane being level and the potential danger of instability
 - iv. describe crane leveling procedures
 - v. describe ground conditions and blocking procedures
 - vi. identify what weather and atmospheric conditions that can restrict crane operation
 - vii. describe eccentric reeving

26. 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
 - v. plan a multiple crane lift

27. Identify and describe new model cranes.
 - i. range of capacities available
 - ii. range of boom lengths available
 - iii. manufacturers
 - iv. advantages/disadvantages

28. Describe the upper structure characteristics of new model cranes.
 - i. boom technology
 - ii. telescoping and pinning systems
 - iii. heavy lift attachments

Practical Requirements:

1. Prepare and perform a multi-crane lift.
 - i. receive and respond to signals in an actual crane operation

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

LC1200 Hydraulics and Applications to Crane Control

Learning Outcomes:

- Demonstrate knowledge of the principles of hydraulic systems.
- Demonstrate knowledge required for inspecting and maintaining crane hydraulic systems.
- Demonstrate knowledge of good safety practices when inspecting and maintaining hydraulic systems.
- Demonstrate knowledge of conservation and environmental issues.

Duration: 15 Hours

Pre-Requisite(s): LC1040

Objectives and Content:

1. Describe the principles of power transfer through hydraulic systems.
 - i. basic principles of hydraulics
 - ii. how a hydraulic system works
 - iii. open and closed systems
 - iv. implications for crane hydraulics

2. Describe the transmission of engine power to hydraulic power through such functions as:
 - i. swinging/slewing
 - ii. boom/up/down
 - iii. boom extension and retraction of hydraulic booms
 - iv. hydraulic pumps and motors

3. Describe the construction and operation of a basic hydraulic system.

4. Describe how hydraulic fluid is used in the operation of:
 - i. different types of valves
 - ii. different types of pumps
 - displacement of pumps
 - iii. different types of hydraulic cylinders
 - piston cylinders
 - cylinders on cranes

5. Describe the operation of the following hydraulic system components.
 - i. motors
 - ii. accumulators
 - iii. filters
 - iv. reservoirs
 - v. monitoring devices
 - vi. hoses and fittings
 - vii. adapters
 - viii. SAE O-rings
 - ix. flangeheads
 - x. seals

6. Describe the qualities required for hydraulic fluids.
 - i. properties of fluids

7. Describe the effect of cold weather and contaminants in a system.

8. Describe the maintenance of fluid levels and precautions when checking.

9. Describe the relationship of electric systems to hydraulic systems.

10. Identify the following components and describe how they are tested.
 - i. controls
 - ii. basic components
 - solenoids
 - relays
 - iii. components and spools

11. Identify hydraulic systems used for all types of cranes.
 - i. closed centre systems
 - ii. open centre systems
 - iii. speed-o-matic system (Link Belt)
 - iv. hydraulically-powered (lattice boom cranes)
 - v. independent systems
 - vi. combined systems
 - vii. independent clutch
 - viii. independent steering
 - ix. hydraulic systems (Grove Cranes)
 - boom lift system-hydraulic boom
 - boom extension system
 - swing system
 - hoist system
 - outrigger system
 - hydraulic counter-weight exterior system
 - x. lattice boom crane upperworks
 - independent hydraulic system (gantry operation)
 - independent hydraulic system (boom operation)
 - independent hydrostatic drive system

Practical Requirements:

1. Perform routine maintenance and inspections for crane hydraulic systems:
 - i. safety practices on a hydraulic system
 - ii. general safety precautions
 - iii. cleanliness and inspection
 - iv. reservoir inspection
 - v. inspection for leaks
 - vi. leakdown
 - outrigger
 - boom hoist cylinders
 - boom extension cylinders
2. Test and replace defective components: controls, solenoids, relays and spools.

MB1231 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.
- Obtain the following certificate:
 - Air Brake Endorsement

Duration: 90 Hours

Pre-Requisite(s): LC1040

Objectives and Content:

1. Warning signs, symbols, and danger tags.
 - i. locate and identify (from diagrams or on the actual vehicle) any warning tag(s) or warning symbol(s)
 - ii. define symbols and warning signs
 - iii. state any hazard that could develop if a warning sign "DO NOT OPERATE –BRAKE INOPERATIVE" is not heeded
 - iv. list the steps required if
 - a warning tag or symbol is located on equipment
 - a warning tag or symbol has to be attached on equipment
2. Mounting and dismounting vehicles.
 - i. explain the primary rule to follow when entering or exiting a cab
 - ii. identify the condition of the steps and handrails, especially in adverse conditions

3. Seat belts.
 - i. state the recommended procedure for adjusting lap and shoulder belts
 - ii. explain how seat belts protect the driver involved in a collision, rollover or run-off-the-road accident
 - iii. state the conditions for exemption from the seat belt regulations
 - iv. define the conditions for use of seat belts by passengers

4. The role of the driver in industry.
 - i. list the qualifications of a good commercial driver
 - ii. list the principle causes of accidents
 - iii. identify signs of fatigue, the effects of and the corrective action to take if overtired
 - iv. state the factors that affect driver and/or corporate image on the road

5. Highway Traffic Act and National Safety Codes.
 - i. state the reasons why the Registrar of Motor Vehicles may refuse to issue a driver's license
 - ii. state the reasons why the Registrar of Motor Vehicles may refuse to register a vehicle
 - iii. state the provincial regulations regarding:
 - parking
 - following other vehicles
 - passing/being passed
 - emergency vehicles
 - signaling
 - safety procedures at railway crossing
 - warning devices
 - school buses

6. Traffic signs and signals.
 - i. state the purpose of traffic signs
 - ii. list the three classifications of traffic signs
 - iii. classify signs by colour
 - iv. classify signs by shape
 - v. interpret the message of a sign from a given symbol
 - vi. explain the procedure of operating at signalized intersections as required by the Newfoundland and Labrador Highway Traffic Act

7. Vehicle regulations.

- i. state the conditions when a special permit is required to operate on a highway
- ii. outline the conditions for operating vehicles in Newfoundland and Labrador while registered under the laws of another province
- iii. outline the circumstances under which a bond may be required before a special permit is issued
- iv. state the conditions under which the vehicle regulations are not applicable
- v. outline the securement requirements when transporting :
 - coiled metal
 - miscellaneous metal articles
 - crushed stone
- vi. outline the acceptable standards of:
 - tie down assemblies
 - hooks and bolts attached to tie down assemblies

8. Licensing & equipment regulations.

- i. outline the provincial regulations as they apply to:
 - tail lamps
 - stop lamps
 - signal lamps
 - clearance lamps
 - identification lamps
 - reflectors
 - hazard lamps
 - marker lamps
 - brakes
 - tires and wheels
 - exhaust systems
 - other equipment

9. Motor Carrier Act & Regulations.

- i. state the information required on an application for a Motor Carrier certificate.
- ii. list the eight classifications of freight specialty services.
- iii. describe the eight classifications of freight specialty services.

- iv. define the following terms:
 - Interline
 - Bill of Lading
 - consignee
 - shipper
 - cosigner
 - v. outline the information required to prepare a Bill of Lading
 - vi. list the goods for which a carrier shall not be required to issue a Bill of Lading
 - vii. outline the conditions for which a motor carrier shall not be held liable
10. Accident reporting.
- i. classify a given accident as “preventable” or “non-preventable”
 - ii. define “Reportable Accidents”
 - iii. outline the driver’s responsibilities if involved in an accident
11. List the contents of a “Roadside Warning Kit” for:
- i. Trans-Canada Highway (NL)
 - ii. superhighways
12. State the proper procedure for:
- i. sending for help
 - ii. assisting the injured
 - iii. notifying police
 - iv. completing formal written report for Registrar of Motor Vehicles
 - v. fire prevention
 - vi. cleaning the highway
13. Identify the direct and indirect cost of accidents.
14. State the “Good Samaritan Law” as it applied to assisting injured persons in NL.
15. Prevention of hydroplaning.
- i. list the factors which contribute to hydroplaning
 - ii. explain how the following situations affect vehicle control:
 - front wheels locked
 - rear wheels locked
 - all wheels locked
 - iii. explain how tire tread and tire pressure contribute to hydroplaning

- iv. outline the speeds and water depths at which tires of a given inflation, pressure and tread depth will hydroplane
 - v. outline the defensive driving principles to be used by a driver driving on wet road surfaces and surfaces covered with foreign material
16. Fuel conservation.
- i. list factors that should be considered for a vehicle with regard to fuel consumption
 - ii. list the five steps to fuel efficiency in vehicles
 - iii. list devices which may be installed in or on diesel engines to improve cold weather operation
 - iv. explain the effect of speed on fuel consumption
 - v. explain “Aerodynamic Drag” and what can be done to reduce it
 - vi. explain “ Progressive Shifting” and outline the advantages of this procedure
17. Regulations governing vehicle and cargo insurance.
- i. define commonly used insurance terms
 - ii. explain the following types of insurance coverage:
 - collision
 - comprehensive
 - accident benefits
 - iii. list four reasons why the costs of insurance premiums vary
 - iv. state the duties of a motor carrier concerning the insurance of goods transported
 - v. outline the action which may be taken by the Registrar of Motor Vehicles against a driver involved in an accident if the driver does not have a Motor Vehicle Liability Insurance card
18. Drive on highways.
- i. define highway terminology
 - ii. list in order, the steps for entering a highway
 - iii. list in order, the steps for entering a super highway
 - iv. identify signs of “highway hypnosis”
 - v. list methods to maintain alert while driving

19. Interpret load-security regulations.
 - i. explain the following terms as they apply to the load security regulations
 - tonnage
 - tie down assembly
 - working load limit
 - coil insert
 - ii. outline the owner operator responsibilities regarding load security

20. Outline power train operation.
 - i. list the major components of a truck power train.
 - ii. state the function of each component.
 - iii. locate lubrication points of a power train.
 - iv. explain the correct method of checking clutch alignment.
 - v. explain the operation and purpose of a power divide

21. Maintain suspension systems.
 - i. explain the functions of a suspension system
 - ii. outline the damages that may be caused by an overloaded suspension
 - iii. state the advantages of an air ride suspension
 - iv. define spring rate
 - v. state the simplest form of interconnection in a double drive layout.
 - vi. list types of dampers
 - vii explain the function of the various types of dampers

22. Clean and park vehicles.
 - i. list the steps to clean a Class 7 or Class 8 vehicle
 - ii. list the tools used to clean a Class 7 or Class 8 vehicle
 - iii. list the components of the vehicle which are affected when not cleaned
 - iv. list the reasons why vehicles should be parked on level ground
 - v. list the procedures to follow when parking a vehicle for prolonged periods

23. Hydraulic braking systems.
 - i. explain the difference between “static friction” and “kinetic friction” and how they apply to the braking of a vehicle
 - ii. explain “coefficient of friction” and how it applies to the braking of a vehicle
 - iii. list the major parts of a hydraulic brake system
 - iv. describe the function of each part of a hydraulic brake system

- v. explain how power brakes operate
24. Gauges, controls and components of tandem trucks.
- i. identify all gauges
 - ii. describe the function of gauges
 - iii. identify all controls
 - iv. describe the function of controls
 - v. identify all components
 - vi. identify defective components
25. Transmissions.
- i. identify the different types of transmissions
 - ii. differentiate between different letter designations on transmissions
 - iii. explain the problems that may arise if a transmission is not shifted correctly
 - iv. identify the inspection points of a transmission
 - v. explain how to synchronize a transmission
 - vi. state the purpose and location of clutch brake
26. Principles of driving.
- i. list the factors that affect defensive driving
 - ii. list the main parts of a “6-by-6” check
 - iii. explain the importance of selecting and driving in the correct gear
 - iv. list the two important things that must be adjusted after entering a cab of a truck
 - v. explain the proper position that a driver should have his/her hands placed on the steering wheel
 - vi. explain why a truck should be in neutral to start
 - vii. identify the five clearances drivers have to watch continually
 - viii. list adverse driving conditions
 - ix. explain the importance of giving the proper signals while driving
27. Procedures for loading.
- i. explain the first step required before proceeding into a yard or loading area
 - ii. explain the role of a “ spotter” in the trucking industry
 - iii. list the major types of docks
 - iv. list the five basic rules to apply while parallel parking
 - v. list the types of docks that acquire straight backing

- vi. explain how a driver should react if the available parking space is on the left side of the vehicle
 - vii. explain the trucking procedure required for a dog leg dock and a dead end yard of an underground docking complex
28. Road maps and their legends
- i. explain how to find locations on a map
 - ii. identify types of roads, park locations, airports, hospitals and ferry lines using a map
 - iii. identify the most practical route between two given points (on a road map) and list all the route numbers to follow.

Practical Requirements:

1. Draw to scale a diagram of a given accident scene, indicating:
 - direction of travel
 - point of impact
 - relation of traffic lanes
 - signs and signals
2. Perform a vehicle safety inspection using an inspection sheet.
3. Demonstrate the steps for entering and exiting a truck cab.
4. Demonstrate the ability to operate and maintain seat belts.
5. Perform pre-trip inspections and complete basic maintenance on a vehicle
 - i. using the check-list and operators guide book
 - ii. top up fluids and oil as required
6. Start-up and shut-down, correctly and safely, a diesel powered vehicle in accordance with the Operator's Guide and/or Start-up checklist.
7. Clean and maintain vehicle.
 - i. proper 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.

Student/Instructor Ratio for Practical:

On the road, in the vehicle.....	3/1
In the yard, in the vehicle.....	3/1
In the yard, instruction and demonstration.....	6/1
In the classroom.....	25/1

LC1260 Rigging Crane 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 vs. non-preformed types of ropes.
7. Identify and describe the fatigue and abrasion resistance of wire ropes.

8. Identify safety factors for:
 - 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 including.
 - i. strength
 - ii. inspection
 - iii. care and use of
17. Describe reeving.
18. Determine the parts of line required.
19. Describe the effect of winch diameter for:
 - i. multi-layer (wire rope)
 - ii. line speed vs. torque
20. Compare the SWL of rope vs. 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 including.
 - 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 frayed, 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.
3. Calculate loads on equalizer beams.
4. 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.

AP1101 Introduction to Apprenticeship

Learning Outcomes:

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

Duration: 15 Hours

Pre-Requisite(s): None

Objectives and Content:

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

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

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

6. Explain the Interprovincial Standards Red Seal Program.
 - i. designated Red Seal trade
 - ii. the National Occupational Analysis (NOA)
 - iii. Interprovincial (IP) Red Seal Endorsement Examination
 - iv. relationship of NOA to IP Examination
 - v. qualification recognition and mobility
7. Identify the current financial incentives available to apprentices.
8. Explain the NL apprenticeship and trades certification division's out-of- province apprenticeship policy.

Practical Requirements:

1. Use the Provincial Apprenticeship and Trades Certification web site at www.gov.nl.ca/app to:
 - i. locate, download, and complete the Application for Apprenticeship and Memorandum of Understanding (MOU)
 - ii. locate, download, and complete the Out of Province registration forms
 - Application for Apprenticeship (out of province)
 - Letter of Understanding (LOU)
 - Acceptance of Conditions Letter
 - iii. locate, download, and complete the Work Experience Credits form
 - iv. identify the locations of all Industrial Training offices
 - v. locate and review the following learning resources relevant to the trade:
 - Study Guide
 - Exam Preparation Guide
 - Plan of Training
2. Use a logbook for this trade to:
 - i. identify the hours for the trade (in-school and on-the-job)
 - ii. identify the number of blocks
 - iii. identify the courses in each block
 - iv. identify the workplace skills to be completed and verified

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

AM1100 Math Essentials

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

Learning Outcomes:

- Demonstrate knowledge of the numeracy skills required to begin the 2nd level math course.
- Demonstrate knowledge of mathematics as a critical element of the trade environment.
- Demonstrate knowledge of mathematical principles in trade problem solving situations.
- Demonstrate the ability to solve simple mathematical word problems.

Duration: 30 Hours

Pre-Requisite(s): None

Objectives and Content:

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

1. Use multiplication tables from memory.
2. Perform whole number operations.
 - i. read, write, count, round off, add, subtract, multiply and divide whole numbers
3. Apply the order of operations in math problems.
4. Perform fraction and mixed number operations.
 - i. read, write, add, subtract, multiply and divide fractions

5. Perform decimal operations.
 - i. read, write, round off, add, subtract, multiply and divide decimals
6. Perform percent/decimal/fraction conversion and comparison.
 - i. convert between fractions, decimals and percents
7. Perform percentage operations.
 - i. read and write percentages
 - ii. calculate base, rates and percentages
8. Perform ratio and proportion operations.
 - i. use a ratio comparing two quantities with the same units
 - ii. use a proportion comparing two ratios
9. Use the imperial measurement system in math problems.
 - i. identify units of measurement for:
 - length
 - mass
 - area
 - volume
 - capacity
10. Use the metric measurement system in math problems.
 - i. identify units of measurement for:
 - length
 - mass
 - area
 - volume
 - capacity

Practical Requirements:

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

AM1340 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.
- Demonstrate knowledge of solving mathematical word problems.
- Demonstrate knowledge of mathematical principles for the purposes of problem solving, job and materials estimation, measurement, calculation, system conversion, diagram interpretation and scale conversions, formulae calculations, and geometric applications.

Duration: 30 Hours

Pre-Requisite(s): AM1100

Objectives and Content:

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

1. Employ percent/decimal/fraction conversion and comparison in trade specific situations.
2. Apply ratios and proportions to trade specific problems.
3. Use the Imperial Measurement system in trade specific applications.
4. Use the Metric Measurement system in trade specific applications.
5. Complete Imperial/Metric conversions in trade specific situations.
 - i. convert between imperial and metric measurements
 - ii. convert to another unit within the same measurement system

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

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

8. Use practical math skills to complete administrative trade tasks.
 - i. material estimation
 - ii. material costing
 - iii. time & labour estimates
 - iv. taxes & surcharges
 - v. markup & projecting revenue

Practical Requirements:

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

Note:

This course has been designated as NON-TRANSFERABLE to other trades programs, and NOT ELIGIBLE FOR PRIOR LEARNING ASSESSMENT. Students completing training in this trade program are required to complete this math course.

CM2160 Communication Essentials

Learning Outcomes:

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

Duration: 45 Hours

Pre-Requisite(s): None

Objectives and Content:

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

1. Identify the principles for writing clear, concise, complete sentences and paragraphs which adhere to the conventions of grammar, punctuation, and mechanics.
2. Identify the principles of effective workplace writing.
 - i. describe the value of well-developed writing skills to career success
 - ii. discuss the importance of tone, and language or word choice in workplace communication, regardless of the circumstances
 - iii. demonstrate an awareness of cultural differences when preparing workplace correspondence
 - iv. describe the writing process as it applies to workplace communication
 - planning
 - writing

- editing/revising
 - v. identify the parts of a business letter and memo, and when each should be used in the workplace
 - vi. identify the standard formats for business letters and memos
 - vii. identify guidelines for writing sample letters and memos which convey:
 - acknowledgment
 - routine request
 - routine response
 - complaint
 - refusal
 - persuasive request
 - letters of appeal
- 3. Identify types of informal workplace documents.
 - i. identify types & purposes of reports
 - incident
 - process
 - progress
 - ii. identify common trade specific forms
 - iii. describe primary and secondary methods used to gather information
 - iv. discuss the importance of accuracy and completeness in reports and forms
- 4. Identify the elements of presentations used in the workplace.
 - i. identify presentation types
 - impromptu
 - informative
 - demonstration
 - persuasive
 - ii. identify the components of an effective presentation
 - eye contact
 - body language
 - vocal qualities
 - audience analysis
 - multimedia tools
 - keeping on topic

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

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

Practical Requirements:

1. Write well-developed, coherent, unified paragraphs.
2. Write sample letters and memos.
3. Write one short informal report.
4. Complete a selection of at least 3 trade-related forms.
5. Deliver an effective oral presentation.

SD1760 Workplace Essentials

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

Learning Outcomes:

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

Duration: 45 Hours

Pre-Requisite(s): None

Objectives and Content:

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

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

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

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

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

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

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

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

Practical Requirements:

1. Create a resume.
2. Create a cover letter.
3. Participate in a mock job interview.

MC1060 Computer Essentials

Learning Outcomes:

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

Duration: 15 Hours

Pre-Requisite(s): None

Objectives and Content:

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

1. Identify the major external components of a microcomputer system.
 - i. input devices
 - ii. output devices
 - iii. central control unit
2. Use operating system software.
 - i. start and quit a program
 - ii. use the help function
 - iii. use the find function
 - iv. maximize and minimize a window
 - v. use the task bar
 - vi. adjust desktop settings such as screen savers, screen resolution, and backgrounds
 - vii. shut down a computer
3. Perform file management commands.
 - i. create folders
 - ii. copy files and folders
 - iii. move files and folders
 - iv. rename files and folders

- v. delete files and folders
4. Use word processing software to create documents.
 - i. enter text
 - ii. indent and tab text
 - iii. change text attributes (bold, underline, font, etc.)
 - iv. change layout format (margins, alignment, line spacing)
 - v. spell check and proofread
 - vi. edit text
 - vii. save document
 - viii. print document
 - ix. close document
 - x. retrieve documents
5. Use spreadsheet software to create spreadsheets.
 - i. enter data in cells
 - ii. create formulas to add, subtract, multiply and divide
 - iii. save spreadsheet
 - iv. print spreadsheet
 - v. close spreadsheet
 - vi. retrieve spreadsheet
6. Access the Internet.
 - i. access websites using the world wide web(www)
 - ii. identify examples of web browsers
 - iii. use search engines with common searching techniques
 - iv. describe security issues
7. Use electronic mail.
 - i. describe e-mail etiquette
 - grammar and punctuation
 - privacy and legal issues when sharing and forwarding e-mail
 - work appropriate content
 - awareness of employer policies
 - ii. manage e-mail using the inbox, sent, and deleted folders
 - iii. send an e-mail message with attachment(s)
 - iv. print e-mail

Practical Requirements:

None.

B. Conditions Governing Apprenticeship Training

1.0 General

The following general conditions apply to all apprenticeship training programs approved by the Provincial Apprenticeship and Certification Board (PACB) in accordance with the *Apprenticeship Training and Certification Act (1999)*. If an occupation requires additional conditions, these will be noted in the specific Plan of Training for the occupation. In no case should there be a conflict between these conditions and the additional requirements specified in a certain Plan of Training. All references to Memorandum of Understanding will also apply to Letter of Understanding (LOU) agreements.

2.0 Entrance Requirements

2.1 Entry into the occupation as an apprentice requires:

Indenturing into the occupation by an employer who agrees to provide the appropriate training and work experiences as outlined in the Plan of Training.

2.2 Notwithstanding the above, each candidate must have successfully completed a high school program or equivalent, and in addition may be required to have completed certain academic subjects as specified in a particular Plan of Training. Mature students, at the discretion of the Director of Apprenticeship and Trades Certification, may be registered. A mature student is defined as one who has reached the age of 19 and who can demonstrate the ability and the interest to complete the requirements for certification.

2.3 At the discretion of the Director of Apprenticeship and Trades Certification, credit toward the apprenticeship program may be awarded to an apprentice for previous work experience and/or training as validated through prior learning assessment.

2.4 An Application for Apprenticeship form must be duly completed along with a Memorandum of Understanding as applicable to be indentured into an Apprenticeship. The Memorandum of Understanding must contain signatures of

an authorized employer representative, the apprentice and an official representing the Provincial Apprenticeship and Certification Board to be valid.

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

3.0 Probationary Period

The probationary period for each Memorandum of Understanding will be six months or 900 employment credit hours. Within that period the memorandum may be terminated by either party upon giving the other party and the PACB one week notice in writing.

4.0 Termination of a Memorandum of Understanding

After the probationary period referred to in Section 3.0, the Memorandum of Understanding may be terminated by the PACB by mutual consent of the parties involved, or cancelled by the PACB for proper and sufficient cause in the opinion of the PACB, such as that stated in Section 14.

5.0 Apprenticeship Progression Schedule, Wage Rates and Advanced Training Criteria

Progression Schedule

Boom Truck Operator - 2400 Hours			
APPRENTICESHIP LEVEL AND WAGES			
Program Duration	Wage Rate At This Level	Requirements for progression to next level of apprenticeship	When requirements are met, the apprentice will progress to...
2400 HOURS	**See note below	<ul style="list-style-type: none"> ▪ Completion of Block 1 training. ▪ Minimum 2400 hours of combined relevant work experience and training ▪ Sign-off of all workplace skills in apprentice Logbook ▪ Pass certification exam 	Journeyman Certification
<p>Wage Rates</p> <ul style="list-style-type: none"> ▪ 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. <p>Direct Entry Apprentice</p> <ul style="list-style-type: none"> ▪ Must complete Block 1 courses through PLA and/or in-school training. ▪ Block 1 training is completed via class calls; up to 16 weeks per calendar year. 			

Boom Truck Operator - 2400 Hours		
CLASS CALLS		
Call Level	Requirements for Class Call	Hours awarded for In-School Training
Direct Entry Apprentice: PLA & / or Block 1	<ul style="list-style-type: none"> ▪ Minimum of 1000 hours of relevant work experience ▪ Prior Learning Assessment (PLA) at designated college (if applicable) 	To be determined by the number of courses completed after each class call
<p>Direct Entry Apprentice:</p> <ul style="list-style-type: none"> ▪ Must complete Block 1 courses through PLA and / or in school training. ▪ Block 1 training is to be completed via class calls; up to 16 weeks of training per calendar year. <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 journey person 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 journey person supervisor who is located at the same worksite as the apprentice, and that the apprentice is able to communicate with the journey person 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 Advanced Education and Skills 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 examination, to be set at a place and time determined by the Apprenticeship and Trades Certification Division.

D. Roles and Responsibilities of Stakeholders in the Apprenticeship Process

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

The Apprentice:

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

The Employer:

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

The Training Institution:

- provides a high quality learning environment.
- provides the necessary student support services that will enhance an apprentice's ability to be successful.
- participates with other stakeholders in the continual updating of programs.

The Apprenticeship and Trades Certification Division:

- establishes and maintains program advisory committees under the direction of the PACB.
- promotes apprenticeship training as a viable career option to prospective apprentices and other appropriate persons involved, such as career guidance counsellors, teachers, parents, etc.
- establishes and maintains a protocol with training institutions, employers and other appropriate stakeholders to ensure the quality of apprenticeship training programs.
- ensures all apprentices are appropriately registered and records are maintained as required.
- schedules all necessary technical training periods for apprentices to complete requirements for certification.
- administers block, provincial and interprovincial examinations.

The Provincial Apprenticeship and Certification Board:

- sets policies to ensure the provisions of the *Apprenticeship and Certification Act (1999)* are implemented.
- ensures advisory and examination committees are established and maintained.
- accredits institutions to deliver apprenticeship training programs.
- designates occupations for apprenticeship training and/or certification.