A PLAN OF TRAINING

FOR

HEAVY EQUIPMENT OPERATOR

OCCUPATION

Approved by
Provincial Apprenticeship and Certification Board
April, 1997
Revised June, 2000
Amended February 11, 2004

Foreword

Apprenticeship training in the Province of Newfoundland and Labrador is undergoing considerable change. This change is prompted by the need to keep pace with technological changes in industry, the need to be competitive, and the desire to be efficient and effective in meeting the needs of the apprentice. We feel that this training plan will lay the groundwork to meet both the demands of industry and the needs of the apprentice.

The plan that follows is a comprehensive one. It recognizes that apprenticeship training begins when a student first registers at a training institution, or signs a Memorandum of Understanding with an employer, and continues until such time as the apprentice has completed all of the required technical training and has received the required industry experiences necessary to write a provincial examination. Passing this examination will result in the apprentice receiving Provincial Certification which gives the journeyperson provincial qualifications. This plan also recognizes the need to provide flexible access to training based on the needs of the employer and the apprentice while at the same time recognizing the end goal is to complete the requirements for Provincial Certification.

It is realized that change in all facets of education and industry is continuous and sometimes rapid. This change will necessitate the review of this document on a continuous basis to ensure that current needs of industry and apprentices are being satisfied. Through a process of accreditation, regular input from industry advisory committees, as well as input from those involved in the administration and delivery of the training, we are confident that residents of our province who elect to pursue an apprenticeable occupation as a career choice will receive high quality training and thus will be prepared to compete for jobs worldwide.

Chair, Provincial Apprenticeship	Minister of Education

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CONDITIONS GOVERNING APPRENTICESHIP TRAINING

1.0 GENERAL

The following general conditions will apply to all apprenticeship training programs approved by the Provincial Apprenticeship and Certification Board in accordance with the Apprenticeship Act. Where an occupation requires additional conditions, these will be noted in the specific plan of training for that occupation. In no case should there be a conflict between these conditions and the additional requirements specified in certain plans of training.

2.0 ENTRANCE REQUIREMENTS

2.1 Entry into the occupation as an apprentice requires:

The completion of designated first year courses specific to the occupation

OR

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

OR

Enrolment in a program of studies that includes all entry and advanced level skills and required work experiences as approved by the Provincial Apprenticeship and Certification Board.

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 particular plans of training. Mature students, at the discretion of the Director of Institutional and Industrial Education, 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 Institutional and Industrial Education, credit towards the apprenticeship program may be awarded to an apprentice for previous work experience and/or training as validated through prior learning assessment.

2.4 A Registration for Apprenticeship form must be duly completed.

3.0 PROBATIONARY PERIOD

The probationary period for each memorandum of understanding will be six months. Within that period the memorandum may be terminated by either party upon giving the other party and the Provincial Apprenticeship and Certification Board one week notice in writing.

4.0 TERMINATION OF A MEMORANDUM OF UNDERSTANDING

After the probationary period referred to in Section 3.0 herein, the memorandum of understanding may be terminated by the Board by mutual consent of the parties thereto or cancelled by the Board for proper and sufficient cause in the opinion of the Board.

5.0 APPRENTICESHIP PROGRESSION SCHEDULE AND WAGE RATES

5.1 Progression Schedule

7200 Hour Programs	**Requirements for Progression**	**Progress To**
First Year Apprentice	25% of Course Credit Hours, **Plus** relevant work experience totaling 1800 hours	Second Year
Second Year Apprentice	50% of Course Credit Hours, **Plus** relevant work experience totaling 3600 hours	Third Year
Third Year Apprentice	75% of Course Credit Hours, **Plus** relevant work experience totaling 5400 hours	Fourth Year
Fourth Year Apprentice	100% of Course Credit Hours, **Plus** completion and sign-off of workplace skills required for certification totaling 7200 hours	Write Certification Examination
5400/4800 Hour Programs		
First Year Apprentice	33% of Course Credit Hours, **Plus** relevant work experience totaling 1800/1600 hours	Second Year
Second Year Apprentice	66% of Course Credit Hours, **Plus** relevant work experience totaling 3600/3200 hours	Third Year
Third Year Apprentice	100% of Course Credit Hours, **Plus** completion and sign-off of workplace skills required for certification totaling 5400/4800 hours	Write Certification Examination

5.2 For the duration of each Apprenticeship Training Period, the apprentice, who is not covered by a collective agreement, shall be paid a progressively increased schedule of wages which shall not be less than:

Program Duration	Wage Rates		Comments
7200 Hours	1st Year	55%	These wage rates are percentages of the prevailing journeyperson's wage rate in the place of employment of the apprentice. No apprentice shall be paid less than the wage rate established by the Labour Standards Act (1988), as now in force or as hereafter amended, or by other Order, as amended from time to time replacing the first mentioned Order.
	2nd Year	65%	
	3rd Year	75%	
	4th Year	90%	
5400 Hours and 4800 Hours	1st Year	55%	
	2nd Year	70%	
	3rd Year	85%	
4000 (Hairstylist) - The apprentice shall be paid no less than the minimum wage for hours worked and a commission agreed upon between the apprentice and the employer.			

6.0 TOOLS

Apprentices shall be required to obtain hand tools as and when specified by the Board.

7.0 PERIODIC EXAMINATIONS

7.1 Every apprentice shall submit to such occupational tests and examinations as the Board shall direct. If after such occupational tests and examinations the apprentice is found to be making unsatisfactory progress, his/her rate of wage shall not be advanced as provided in Section 5 until his/her progress is satisfactory to the Director of Institutional and Industrial Education 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 Board may shorten the term of apprenticeship and advance the date of completion accordingly.

8.0 GRANTING OF CERTIFICATES OF APPRENTICESHIP

Upon the successful completion of apprenticeship, the Board 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 Institutional and Industrial Education shall provide copies of the Registration for Apprenticeship form to all signatories to the document.

11.0 RATIO OF APPRENTICES TO JOURNEYPERSONS

The ratio of Apprentices to Journeypersons normally shall not exceed one apprentice to every one journeyperson employed. Exceptions for specific occupations may occur with the approval of the Provincial Apprenticeship and Certification Board.

12.0 RELATIONSHIP OF THE PLAN OF TRAINING TO A COLLECTIVE BARGAINING AGREEMENT

Collective agreements take precedence over the conditions outlined in the plan of training.

13.0 AMENDMENTS TO A PLAN OF APPRENTICESHIP TRAINING

A plan of training may be amended at any time by the Provincial Apprenticeship and Certification Board.

14.0 EMPLOYMENT, RE-EMPLOYMENT AND TRAINING REQUIREMENTS

14.1 The plan of training requires Apprentices to attend regularly their place of employment.

14.2 The plan of training requires Apprentices to regularly attend training programs for that occupation as prescribed by The Provincial Apprenticeship and Certification Board.

14.3 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 opportunity to be re-employed before another is hired.

14.4 The employer will permit each apprentice to attend regularly training programs as prescribed by the Provincial Apprenticeship and Certification Board.

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 Youth Services and Post-Secondary Education within 30 days of the decision.

SPECIFIC CONDITIONS GOVERNING THE HEAVY EQUIPMENT OPERATOR OCCUPATION

REQUIREMENTS FOR PROVINCIAL CERTIFICATION IN THE HEAVY EQUIPMENT OPERATOR OCCUPATION

1. Evidence that the required work experiences outlined in this plan of training has been obtained. This evidence must be in a format that clearly outlines the experiences and a signature (s) of an appropriate person(s) attesting that these experiences have been obtained to the level required.

2. Normally, have a combination of training from an accredited training program and suitable work experience totalling 1800 hours for each piece of equipment. The total required time for all three pieces of equipment is 5400 hours.

   Or

   Have a total of 7200 hours of suitable work experience.

3. Completion of a Provincial examination to be set at a place and time determined by the Industrial Training Division of the Department of Education.

4. Pay the appropriate examination fee.

ROLES AND RESPONSIBILITIES OF STAKEHOLDERS
IN THE APPRENTICESHIP PROCESS

Apprenticeship process involves a number of stakeholders playing significant roles in the training of apprentices. This section captures, in a broad sense, these roles and the responsibilities that result from them.

Apprentices

- to complete all required technical training courses as approved by the Provincial Apprenticeship and Certification Board.
- to find appropriate employment
- to complete all required work experiences in combination with the required hours.
- to ensure that the work experiences are well documented
- to approach apprenticeship training with an attitude and commitment that fosters the qualities necessary for a successful career as a qualified journeyperson.
- to obtain the required hand tools as specified by the Board for each period of training of the apprenticeship program.
- to provide feedback to Training Institutions, the Industrial Training Division and Employers in an effort to establish a process of continuous quality improvement**.**

Employers

- to provide high quality work experiences in an environment that is conducive to learning.
- to remunerate apprentices as set out in the Plan of Training or Collective Agreements.
- to provide feedback to Training Institutions, Industrial Training Division and Apprentices in an effort to establish a process of continuous quality improvement.
- where appropriate, to release apprentices for the purpose of returning to a training institution to complete the necessary technical courses.
- to ensure that work experiences of the apprentices are documented.

Training Institutions

- to provide a high quality learning environment.
- to provide the necessary student support services that will enhance an apprentices ability to be successful.
- to participate with other stakeholders in the continual updating of programs.

Industrial Training Division

- to establish and maintain provincial program advisory committees under the direction of the Provincial Apprenticeship and Certification Board.
- to promote apprenticeship training as a viable career option to prospective apprentices and other appropriate persons involved such as career guidance counsellor, teachers, parents, etc.
- to establish and maintain a protocol with apprentices, training institutions, employers and other appropriate stakeholders to ensure the quality of apprenticeship training programs.
- to ensure that all apprentices are appropriately registered and records are maintained as required.
- to schedule all necessary technical training periods for apprentices to complete requirements for certification.
- to administer provincial/interprovincial examinations.

Provincial Apprenticeship and Certification Board

- to set policies to ensure that the provisions of the Apprenticeship and Certification Act are implemented.
- to ensure that advisory and examination committees are established and maintained.
- to accredit institutions to deliver apprenticeship training programs.
- to designate occupations for apprenticeship training and / or certification.

TECHNICAL COURSE OUTLINES

SUGGESTED COURSE LAYOUT FOR THE HEAVY EQUIPMENT OPERATOR OCCUPATION

JOURNEYPERSON CERTIFICATION

↑

WORK EXPERIENCE

↑

SEMESTER TWO

MC1050 Introduction to Computers . . . . . 30 Hrs.
CM2150 Workplace Correspondence . . . . . 45 Hrs.
SP2330 Quality Assurance/Quality Control . . . . . 30 Hrs.
MR1210 Customer Service . . . . . 30 Hrs.
SD1700 Work Place Skills . . . . . 30 Hrs.
SD1710 Job Search Techniques . . . . . 15 Hrs.
SD1720 Entrepreneurial Skills . . . . . 15 Hrs.
*Choose one extra course from the following for . . . . . 75 Hrs.

The following courses will consist of a minimum of 60 Hours operating time per student per piece of equipment.

HE1500 Bulldozers . . . . . 75 Hrs.
HE1510 Graders . . . . . 75 Hrs.
HE1520 Backhoes . . . . . 75 Hrs.
HE1530 Front End Loaders . . . . . 75 Hrs.
HE1540 Tandem Dump Trucks . . . . . 75Hrs.
HE1550 Off Highway Trucks . . . . . 75 Hrs.
HE1560 Excavators . . . . . 75 Hrs.

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SEMESTER ONE

HE1100 Equipment Operation Safety . . . . . 50 Hrs.
HE1120 Grades and Stakes . . . . . 30 Hrs.
HE1200 Equipment Maintenance . . . . . 45 Hrs.
HE1300 Regulation / Emergency Procedures . . . . . 45 Hrs.
*Choose two courses from the following for . . . . . 150 Hrs.

The following courses will consist of a minimum of 60 Hours operating time per student per piece of Equipment.

HE1500 Bulldozers . . . . . 75 Hrs.
HE1510 Graders . . . . . 75 Hrs.
HE1520 Backhoes . . . . . 75 Hrs.
HE1530 Front End Loaders . . . . . 75 Hrs.
HE1540 Tandem Dump Trucks . . . . . 75Hrs.
HE1550 Off Highway Trucks . . . . . 75 Hrs.
HE1560 Excavators . . . . . 75 Hrs.

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Program and Apprenticeship Registration

COURSE OUTLINE - HE1100

NAME: Heavy Equipment Operation 1100

DESCRIPTIVE TITLE: Equipment Operation Safety

DESCRIPTION:

This course in heavy equipment operation fundamentals requires environment, equipment, operator, education, engineering and enforcement. It involves following safety regulations, assessing variable conditions (road, vehicle, driver, light weather and traffic), planning strategies, operating equipment, and preventing emergencies. It includes information on passing and being passed, power line hazards, and types of collisions (head on, ahead, behind and intersection).

PREREQUISITES:

CO-REQUISITES: None

CREDIT VALUE: 50 Hours

TEXT BOOK(S) / SOFTWARE USED BY LEAD INSTITUTION:

COURSE AIMS:

1. To develop the skills and knowledge required for the safe operation of heavy equipment with respect to various codes and regulations

2. To practice safety in potentially harmful situations

3. To develop an appreciation for conservation and environmental issues

COURSE OBJECTIVES (KNOWLEDGE):

1. List five items of compulsory safety gear for this specific occupation

2. State the minimum specifications or C.S.A. codes for any three items from the list in #3 above

3. List safety apparel suitable for all weather/all season heavy equipment operation in accordance with Occupational Health and Safety Regulations and/or as common sense dictates

4. State any hazard that could develop if a warning sign such as "DO NOT OPERATE - BRAKES INOPERATIVE" is not heeded

5. State at least 2 steps to follow if you either
   a. discover a warning tag or symbol, or
   b. find it necessary to attach a warning tag or symbol to a machine

6. Explain why it is important to check the security of as well as adequately clean all the items in #5 above

7. State at least five precautions to follow when mounting/dismounting, thereby preventing slipping, falling, missing hardware, or other near-miss accidents

8. State the minimum safe operating clearance for the overhead, sides, forward, and rearward clearance of obstacles

9. State the conditions which should be considered in determining equipment operating clearances on the job and while in training

10. List safety procedures to use when running an engine in an enclosed area

11. List at least 4 toxic fumes that are associated with engine exhaust gases

12. Identify hoses and attachments needed to connect the engine exhaust pipe to a central ventilation system in a maintenance shop

13. List at least one device used to control exhaust fumes from engines when working in an underground work site

14. State 5 emergency procedures for an emergency situation

15. List at least 3 common physiological (body) states which could lead to a dangerous operating situation

16. List at least 3 common psychological (mental) states which could lead to a dangerous operating situation

17. List at least 5 common mechanical failures which could lead to a dangerous operating situation

18. List at least 8 common meteorological (weather) and terrestrial (land) conditions which could lead to a dangerous operating situation

19. List at least 10 operational malpractice and poor habits which could lead to a dangerous operating situation

20. Outline, in accordance with the Dept. of Forest Resources and Lands, the regulations governing exhaust flame or spark arrester while operating machinery in the forest

21. List at least 6 kinds of overhead/underground services that may be found on federal, provincial, municipal, and private lands

22. List at least 6 questions or issues the operator should have knowledge of before actual digging begins

23. State, using 120 volt current, how many milliamps (approximately) does it take to cause a person's heart to stop pumping blood

24. State the normal working clearance in meters when working around any electric powered line

25. List the four types of fire extinguisher and the specific applications of each

26. Draw or explain the symbol used for each type of fire extinguisher

27. State the usual operation of each type of fire extinguisher

28. List the checks for each type of fire extinguisher that determine if authorized servicing or maintenance is required

29. Describe safety procedures for using power wood saws

30. Explain or demonstrate how to adjust and fasten properly the operator's harness and/or seat belt

31. State, regardless of appearance, when a seat belt and/or restraining harness should be replaced

32. State the regulation(s) regarding the usage of a harness and/or seat belt

33. Explain the effects of speed and weight on stopping distance

34. Show in a simple drawing how force multipliers are used in an air brake system

35. Define the following terms: Reaction Time, Brake Lag, Braking Distance, Stopping Distance

36. List the major components of an air brake system and briefly describe the function of each component

37. Explain with the use of a Schematic diagram how the air flows in an air brake system on a combination vehicle when the brakes are applied by hand or foot valve

38. State the characteristics of oxy-acetylene fuels and describe potential hazards when exposed to environments where oxy-acetylene cutting is performed

39. Identify the components of the fire tetrahedron

40. Identify the components of a fire suppression system

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Wear protective clothing and equipment
    a. Identify potential hazards to personal safety
    b. Keep work area clean and tidy
    c. Demonstrate personal safety

2. Interpret warning signs, symbols and danger tags
    a. Locate and identify, using operator's manual or the actual machine, any warning tag or warning symbol
    b. Correctly match symbols to corresponding meanings

3. Mount and dismount equipment properly
    a. Identify, from diagrams or from the actual machine, all safety grab-irons, handrails, steps, and foot-pegs used when mounting or dismounting equipment
    b. Mount/dismount equipment properly at all times

4. Verify safe clearance in work areas

5. Recognize dangerous operating actions for enclosed areas

6. Use fire extinguishing equipment
   a. Select and use proper fire extinguisher for simulated fire conditions

7. Use chain saws safely

8. Use seat belts and safety harness

9. Qualify for professional drivers improvement course certificate
   a. Participate in a Professional Driver's course
   b. Obtain a valid Professional Driver's Improvement Course Certificate

10. Qualify for a Transportation of Dangerous Goods certificate

11. Complete a flagperson certification seminar

12. Complete a St. John's Ambulance Standard First Aid Course

13. Complete a Powerline Hazards Course

14. Complete a WHMIS course

15. Complete a trenching safety course

EVALUATION:

Written reports and/or tests.
Competence in simulated work and/or experiential endorsements.

LEAD INSTITUTION:

DEVELOPMENT HISTORY:

Date Developed: May 1994
Revised: February 2002

INSTRUCTOR'S NOTES:

COURSE OUTLINE HE1120

NAME: Heavy Equipment and Operation

DESCRIPTIVE TITLE: Grades and Stakes

DESCRIPTION:

This course in Grades and Stakes involves knowledge of the use of basic survey equipment. It includes equipment setup and layout of survey stakes. It requires some reference to planning design fundamentals, construction terminology, building materials and road building.

PRE-REQUISITES: None

CO-REQUISITES: None

CREDIT VALUE: 30 hours

COURSE AIMS:

1. To develop the knowledge required to understand the layout of survey grade stakes.
2. To develop the skills and knowledge required to read grade stakes.
3. To develop an appreciation of road design and construction.

COURSE OBJECTIVES (knowledge):

1. Identify on design drawings survey stakes used in the construction industry.
2. State the purpose for various grade stakes used in the construction industry.
3. List the four basic survey work stakes used in road construction.
4. List five classes of soils used in road construction.

5. Identify on a road cross section nine common terms used in road construction.

6. List three common ditch types.

7. Describe earth moving terms used in the construction industry.

8. List five utility warning stakes.

9. List the flag or ribbon color for each utility warning stake.

10. Calculate metric cubic measurements for a given situation.

11. Identify the various measuring tools used to establish grade levels.

12. Define the meaning of slope ratio e.g. 2:1.

13. Describe the use of a hand level in transferring elevation.

14. Describe the use of a survey rod used in survey measurement.

15. Define the term Final Grade (Finish Grade) in reference to the construction industry.

16. List the factors considered in the classification system for public roads.

17. Describe the procedure for setting up a survey level.

18. Describe the use of a survey chain (measuring tape for survey).

MAJOR TASKS/SUB-TASKS (Skills):

1. **Identify survey stakes.**
    a. Demonstrate the ability to identify survey stakes used in road construction.

2. **Identify survey stake layouts in a given field exercise.**
    a. Identify survey grade stakes used in a layout.
    b. Read and record each survey grade stake as per design.

3. **Perform a cut slope check.**
    a. Demonstrate the ability to check a cut slope.
    b. Record the cut slope check using a diagram.

4. **Identify a ditch stake layout as a given field exercise.**
    a. Read and record the ditch stake layout on a diagram.

5. **Calculate the slope ratio for a given slope dimension.**

6. **Operate a hand level.**
    a. Transfer stake information from a survey stake to another using a hand level.
    b. Check a ditch grade using a hand level.

7. **Demonstrate the ability to use a survey rod in an actual survey operation.**

DEVELOPMENT HISTORY:

December 2003

COURSE OUTLINE HE1200

NAME: Heavy Equipment Operation 1200

DESCRIPTIVE TITLE: Equipment Maintenance

DESCRIPTION:

This course in heavy equipment operation fundamentals requires the use of tools and equipment, and materials and supplies. It involves following manufacturers recommendations for the maintenance of equipment and adjustment of components. It includes information on types and operation of equipment and component parts.

PREREQUISITES: HE1100

CO-REQUISITES: None

CREDIT VALUE: 45 Hours

TEXT BOOK(S) / SOFTWARE USED BY LEAD INSTITUTION:

COURSE AIMS:

1. To develop the skills and knowledge required for maintaining heavy equipment with respect to various codes and regulations

2. To practice safety in potentially harmful situations

3. To develop an appreciation for conservation and environmental issues

COURSE OBJECTIVES (KNOWLEDGE):

1. State the volume of oil to be used when servicing the various components

2. Describe the maintenance procedures required on the various systems to ensure the successful operation of the machine

3. State what servicing, maintenance or lubrication is required for each of the given service/hour meter reading listed (machine running hours) as they apply to the machine you are now operating.

   Service/Hour Meter Readings: 10 hrs. (or daily); 50 hrs. (or weekly); 100 hrs. (or bi-monthly); 125 hrs; 150 hrs; 200 hrs; 250 hrs; 300 hrs; 500 hrs. (or 3 months); 600 hrs; 1000 hrs. (or 6 months); 1200 hrs; 1500 hrs. (or 9 months); 2000 hrs. (or 1 year); or when required

4. State why there is a need for record keeping of lubrication and servicing

5. State the kind of information to be compiled in a Work Record Sheet (or Time Card) and Log Book Corresponding to the machines the student selects

6. Explain the purpose of lubrication and the need for greasing the machine on a regular basis

7. List two important functions of grease under extreme load and heat

8. List four precautions to use when refuelling equipment

9. List five functions of engine oils

10. List four additives found in engine oil

11. List two functions and two additives of gear oils

12. Identify the components of the engines lubrication system from a diagram

13. List the American Petroleum Institute (A.P.I.) Engine Service classification for "S" Service Station and "C" Commercial

14. List five Viscosity numbers that have been designated by the Society of Automobile Engineers for engine oils

15. List two types of fuel systems used on engines

16. List two grades of commercial diesel fuel used

17. List the fuel combustion cycle

18. List correct procedures for storing fuel

19. Explain the purpose of the cooling system in an engine

20. List at least 12 basic hand tools and 3 power tools used in the HEO occupation

21. State the basic metallurgical composition of hand tools

22. State rules for safe use of power tools

23. State rules for safe use of hand tools

24. List procedures for the care, cleaning and storage of hand and power tools

25. Describe safety procedures for using hand tools

26. Describe safety procedures for metal-cutting power tools

27. Determine the correct tire inflation pressure(s) for operating and travelling equipment corresponding to the machines the student selects

28. Explain how a storage battery operates

29. Describe the types of batteries used in heavy equipment and heavy-duty trucks

30. Explain the basic battery troubleshooting procedures

31. Identify the components of a heavy equipment and heavy-duty truck charging system

32. Identify the components of a heavy equipment and heavy-duty truck starting system

33. Identify the components of a lighting system for heavy equipment and heavy-duty trucks

34. State the functions of a starter, generator and alternator

35. State the functions of glow plugs

36. Determine components and fluids to be checked on a daily or shift basis

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Occupational orientation and related tasks
    a. Locate the various components of the lubrication system and list the servicing period for each
    b. Locate and state the purpose of the service meter
    c. Identify the various grades of oils to use under various temperature conditions
    d. Locate the serial number of the machine
    e. State the slack allowed in belts and tracks and the procedure to follow when adjusting
    f. State the procedure to follow when starting-up, operating and shutting down the machine under various weather conditions
    g. Identify the various attachments available from the equipment dealer, the purpose of each and the maintenance procedures to ensure the successful operation of each

2. Maintain lubrication and servicing records
    a. Identify the appropriate lubrication/servicing/maintenance manuals corresponding to the machine you are now operating
    b. Demonstrate the ability to affix a "warning" sign where it can be easily recognized on some piece of heavy equipment machinery. *(This is applicable in industry whenever lubrication, servicing or other scheduled maintenance is performed)

3. Maintain work record and log book
    a. Complete a sample Work Record Sheet (or Time Card) or a Log Book corresponding to the machines the student selects

4. Order parts
    a. From an actual machine or given resources and upon completion of this module, the student will be able to:
        i. Locate the machine serial number or Vehicle Identification Number (V.I.N.) embossed plate corresponding to the machines you are now operating
        ii. Match the appropriate parts book to the correct make, model and serial number of the machine you are now operating
        iii. Locate the engine specifications plate and serial number

5. Grease, lubricate and refuel equipment
    a. Select correct greases for equipment with the aid of a Service Manual
    b. Load a grease gun
    c. Grease the machine
    d. Refuel the machine

6. Service and charge storage battery
   a. Select from a list of safety rules, those pertaining to care and maintenance of batteries
   b. State general rules of the need for charging a battery
   c. Arrange in order procedures for operating a battery charger
   d. Clean and service a battery
   e. Measure battery electrolyte with a hydrometer
   f. Connect a charger to battery terminals

7. Change lubricating oils and filters
   a. Change engine oil and filter
   b. Change transmission filter

8. Service fuel systems
   a. Using a diagram, identify the components of a fuel system
   b. Prime a fuel system
   c. Service a fuel system
      i. Drain water from tank and sediment bowl
      ii. Change fuel filters
      iii. Change a water separator

9. Service cooling systems
   a. Identify the components of the cooling system from a drawing
   b. Select, from a list, the requirements of a good coolant
   c. Identify the components of the cooling system on the machine he/she operates
   d. Test anti-freeze solution
   e. Service cooling system by checking for plugged radiator core or bent fan blades

10. Use power and hand tools safely

11. Match tool description and terminology to correct hand and power tools

12. Select and use fasteners
   a. Identify and describe types of fasteners
   b. Identify sizes of fasteners
   c. Use fasteners
   d. Torque bolts

13. Qualify for air brake endorsement
   a. Service and replace air filters

b. Perform Air Brake maintenance and adjustments
c. Inspect any given air brake vehicle and determine whether it is roadworthy or not
d. Diagnose running faults and recommend corrective action on a given vehicle

EVALUATION:

Written reports and/or tests.
Competence in simulated work and/or experiential endorsements.

LEAD INSTITUTION:

DEVELOPMENT HISTORY:

Date Developed: May 1994
Revised: February 2002

INSTRUCTOR'S NOTES:

COURSE OUTLINE HE1300

NAME: Heavy Equipment Operation 1300

DESCRIPTIVE TITLE: Regulations and Emergency Procedures

DESCRIPTION:

This course in heavy equipment operation fundamentals requires the use of an appropriate environment and equipment. It involves becoming aware of, accessing, interpreting, integrating and gaining experience with the implementation of regulations and emergency procedures. It includes information on regulations and emergency procedures, national safety code and fuel conservation (pro trucker).

PREREQUISITES: HE1100

CO-REQUISITES: None

CREDIT VALUE: 45 Hours

TEXT BOOK(S) / SOFTWARE USED BY LEAD INSTITUTION:

COURSE AIMS:

1. To develop the skills and knowledge required for implementing various codes and regulations

2. To practice safety in potentially harmful situations

3. To develop an appreciation for conservation and environmental issues

COURSE OBJECTIVES (KNOWLEDGE):

1. Interpret the definitions used in the Highway Traffic Act

2. Outline the requirements for the Registration and licensing of vehicles

3. Outline the regulations for licensing of drivers

4. Identify all hand signals pertaining to heavy equipment.

5. Given a diagram of different vehicle configurations, identify the maximum permitted mass and maximum wheel or axle mass

6. Outline the licensing and equipment regulations regarding, fog lamps, maximum and minimum permitted number of lamps visible from the front of the vehicle, maximum permitted candle power lamps, park lights, headlights, clearance lights, brake (stop) lights, identification lights, back-up lights, signal lights, emergency lights, road servicing vehicles, tires, brakes, exhaust systems, mud flaps, mirrors, horns and speedometers

7. Describe hydroplaning causes and preventions

8. Explain driving procedures which conserve fuel

9. Explain the following types of insurance coverage:
   a. Collision
   b. Comprehensive
   c. Accident Benefits

10. Outline the action which may be taken by the registrar against a driver involved in an accident if unable to produce a motor vehicle liability insurance card (pink) or a Financial Responsibility Card

11. Correctly list and explain the operational functions of shut-down controls, and safety controls used during emergency engine stops

12. Select from a list regulations pertaining to operating and travelling machines on public roads using the Occupational Health and Safety Regulations

13. Identify manufacturer's recommendations or special precautions regarding travelling of vehicles to and from job sites, corresponding to the machines the student selects

14. Identify what warning sign(s) if any, must be attached to machines while travelling to and from job sites

15. State roll-over protection (ROPS) regulations

16. Describe the use of straps, slings and tow cables

17. Describe the safety clothing required for handling wire ropes and link-chains

18. State situations when using wire rope which can affect its performance, service life and safety

19. State situations when using link-chain which can affect its performance, service life and safety

20. Describe the different types of load builders used to lash equipment and materials on floats and lo-boys for transport

21. List other hardware necessary for lashing down equipment and materials on floats and lo-boys in preparation for transport

22. List the factors for preventing excessive wear for possible damage when moving disabled equipment

23. Select from a list guidelines for safe towing of disabled machines

24. List safety factors in selection of tow bars, cables and tow pins

25. Define terms associated with loading, lashing and unloading equipment

26. State safety procedures for loading and moving equipment

27. State the reasons for floating equipment and the advantages even for short distances

28. Explain the proper positioning on the float for loading and unloading each type of equipment

29. State legal heights and widths for machines in transport

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Interpret Highway Traffic Act and National Safety Codes

2. Identify and interpret hand and audible signals pertaining to heavy equipment operation

3. Given an appropriate vehicle and checklist inspect the vehicle and indicate on checklist all items not meeting the licensing and equipment standards

4. Report accidents utilizing appropriate forms and relevant documentation

5. Maintain motor vehicle operators daily log

6. Interpret load security regulations

7. Perform emergency stopping procedures
   a. Locate correctly all emergency engine stops, shut-down controls, and safety controls on the machines selected
   b. Demonstrate emergency stopping procedures with the machines

8. Travel machine on public highways

9. Demonstrate the ability to lash down equipment and materials on floats and lo-boys for transport

10. Travel equipment to and from job sites
    a. Check and inflate tires to correct pressure
    b. Indicate to instructor where slow moving vehicle signs should be located on machine
    c. Obey all traffic regulations
    d. Travel machine on a public highway (this applies to machine in the band allowed by law to travel on public road systems)

11. Plan movement of disabled equipment
    a. Select correct tow cables, tow pins to be used
    b. Position equipment, select gear range, and tow a machine

12. Load and unload equipment
    a. Demonstrate the proper use of binders and chains used to secure the load
    b. Load and unload the machine from rear to float

EVALUATION:

Written reports and/or tests.
Competence in simulated work and/or experiential endorsements.

LEAD INSTITUTION:

DEVELOPMENT HISTORY:

Date Developed: May 1994
Revised: February 2002

INSTRUCTOR'S NOTES:

COURSE OUTLINE 1500

NAME: Heavy Equipment Operation 1500

DESCRIPTIVE TITLE: Bulldozers

DESCRIPTION:

This course in heavy equipment operation requires the use of an appropriate environment, and equipment. It involves inspection, start-up, manoeuvring, planning strategies, cutting and spreading, winching, ripping, pushing, sloping and benching, excavating and stripping and shut-down. It includes information on bulldozer operation and maintenance. **It is intended that this course will address the new technologies evolving in the industry.**

PREREQUISITES: HE1100, HE1120, HE1200, HE1300

CO-REQUISITES: None

CREDIT VALUE: 75 Hours

TEXT BOOK(S) / SOFTWARE USED BY LEAD INSTITUTION:

COURSE AIMS:

1. To develop the skills and knowledge required for the operation of bulldozers with respect to various codes and regulations

2. To practice safety in potentially harmful situations

3. To develop an appreciation for conservation and environmental issues

COURSE OBJECTIVES (KNOWLEDGE):

1. Identify all gauges on Bulldozers using the operator's guide

2. State the functions of the gauges

3. Identify controls on Bulldozers using operator's guide and/or information sheet

4. Match Bulldozer controls to their correct functions

5. Identify the components of an Bulldozers using information sheet or operator's guide

6. List the common types of materials used in highway construction and at what stage of construction would these materials be used

7. List safety factors to consider when winching a load

8. Describe the difference between a power controlled and direct drive winch

9. List appropriate gear range and speed for ripping different materials

10. List the difference between single shank and multi shank (Parallelogram) rippers

11. Identify vegetation common to areas of unstable terrain

12. Explain the term floatation in relation to machine operated versus soft ground

13. Select from a list grouser pads used to improve floatation

14. State the need for proper drainage

15. Compare, using a chart, the difference in the weight of dry versus wet material

16. List safety procedures to use when operating bulldozer as a pusher

17. List safety procedures used when using bulldozer as a pusher in a tandem ripping application

18. List the steps in cutting and building a slope

19. List safety procedures to use when operating a tractor on a slope

20. Define the meaning of 2 - 1, 3 - 1 slopes

21. List two machines used in stripping of right-of-way

22. List three methods used in stripping of right-of-way; explain the reason for using each method

23. State suggestions for effective dozer operation when moving overburden

24. List the width of stripping required for a 79, 80, and 90km/h highway

25. Identify road systems

26. State the purpose of road classifications and explain characteristics of the various classifications

27. List the departments of government that are responsible for forest access, and the public road system in the province of Newfoundland and Labrador

28. Explain the necessity for the preparation of a profile and its relationship to active construction

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Interpret construction drawings and markings
    a. Study drawings of a 90 km/h and a 80 km/h cross section and list their differences
    b. Record the width of right-of-way, road top, final construction and ditches using a cross section drawing of a 90 km/h highway
    c. List the sizes and types of materials used in final construction of a 90 km/h highway
    d. List eight of the survey markings used in road construction noting the abbreviations and symbol for each
    e. List the following using a drawing of a municipal service plan for water and sewer installation
    f. Type of pipe used
    g. Size of pipe used

2. Identify gauges, controls and components using equipment with the latest technology
    a. Identify all gauges on a tractor using the operator's guide
    b. State the functions of the gauges
    c. Identify controls on a dozer using the operator's guide and/or information sheet
    d. Match dozer controls to their corrective action
    e. Identify the components of a dozer using information sheet or operator's guide
    f. Demonstrate the ability to identify all gauges, controls, and components

3. Perform walk-around and pre-start checks
   a. Complete the walk-around inspection using the walk-around checklist provided
   b. Perform minor repairs and adjustments if required as determined from the walk-around inspection
   c. Report major repairs and adjustments required to higher or proper authority as determined from the walk-around inspection
   d. Complete the pre-start checks using the pre-start checklist provided
   e. Perform minor maintenance, servicing, and topping-up of various fluids and liquids in the appropriate compartments and locations, as determined from the pre-start checks

4. Perform start-up and shut-down procedures
   a. Start up correctly and safely a tractor powered by a diesel engine under normal and cold temperature conditions
   b. Check all systems after the engine is running, confirming that they are in safe operating range
   c. Park equipment properly
   d. Correctly shut-down tractor at end of shift
   e. Report any repairs or servicing verbally to the instructor

5. Perform basic manoeuvring skills
   a. Drive the tractor in a safe manner, displaying smooth starts and stops
   b. Drive the tractor displaying smooth shifts, and steering

6. Perform cutting and spreading of materials
   a. Check work area for unusual conditions
   b. Start out with machine in a level position
   c. Operate bulldozer controls in quick short movements
   d. Use of decelerator to control machine spread
   e. Cut material to within 75mm of grade
   f. Spread material to within 75mm of grade

7. Perform ripping operations
   a. Identify components of front and rear mounted ripper attachments
   b. Match ripper controls to their correct functions
   c. Select proper tip recommended for use in loose, hard packed, and abrasive materials
   d. Perform ripping operations

8. Construct slopes and benches
   a. Demonstrate the ability to cut and build a 2 - 1 slope

9. Perform excavations
    a. Dig basement to grade level as indicated on the grade stake
    b. Store materials that should be saved (topsoil)
    c. Protect trees and shrubs
    d. Produce a finished excavation in good enough order to accommodate the desired specifications without extra labour being involved

EVALUATION:

Written reports and/or tests.
Competence in simulated work and/or experiential endorsements.

LEAD INSTITUTION:

DEVELOPMENT HISTORY:

Date Developed: May 1994
Revised: February 2002

INSTRUCTOR'S NOTES:

COURSE OUTLINE 1510

NAME: Heavy Equipment Operation

DESCRIPTIVE TITLE: Graders

DESCRIPTION:

This course in heavy equipment requires the use of heavy equipment and an appropriate environment. It involves inspecting, start-up/shut-down, manoeuvring, planning strategies, grading, scarifying, spreading, ditching, shouldering, finishing and removing snow. It includes information on operations, techniques, attachments road systems and construction drawings. **It is intended that this course will address the new technologies evolving in the industry.**

PREREQUISITES: HE1100, HE1120, HE1200, HE1300

CO-REQUISITES: None

CREDIT VALUE: 75 Hours

TEXT BOOK(S) / SOFTWARE USED BY LEAD INSTITUTION:

COURSE AIMS:

1. To develop the skills and knowledge required for the operation of graders with respect to various codes and regulations

2. To practice safety in potentially harmful situations

3. To develop an appreciation for conservation and environmental issues

COURSE OBJECTIVES (KNOWLEDGE):

1. Identify all gauges on a grader using the diagram and/or operator's guide manual
2. State the functions of all gauges
3. Identify controls on a grader using operator's guide manual
4. Match grader controls to their correct functions
5. Identify the components of a grader using the information sheet and/or operator's guide manual
6. List 3 methods or procedures used in maintaining roads with motor graders
7. State 5 blade positions used in road maintenance
8. Identify components of laser/GPS levelling equipment
9. List steps for effective grader operation when scarifying materials
10. Given description of existing road conditions, describe the procedure to follow when spreading material to form a crown on a roadway
11. List two types of ditching patterns
12. List the steps in proper setting of blade for V-ditch and flat-bottom ditching
13. Identify common attachments used in snow removal from a drawing
14. Describe the purpose of the side mounted wing
15. Describe the purpose of the front mounted plow
16. Match hydraulic controls to their correct functions
17. Describe the purpose of the side mounted wing
18. Describe the purpose of the front mounted plow
19. Match hydraulic controls to their correct functions
20. State the purpose of road classifications and explain characteristics of the various

classifications

21. List the departments of government that are responsible for forest access, and the public road system in the province of Newfoundland and Labrador

22. Explain the necessity for the preparation of a profile and its relationship to active construction

23. Identify common attachments

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Identify grader gauges, controls and components using equipment with the latest technology
   a. Demonstrate the ability to identify all gauges, controls and components at the machine

2. Perform walk around and pre-start checks
   a. Complete the walk-around inspection using the check list and the operator's guide booklet provided
   b. Complete the minor repairs and adjustments if required
   c. Report major problems if any to proper authority
   d. Complete the pre-start check using the check list and the operator's guide booklet provided
   e. Perform minor maintenance, servicing and topping up of various fluids and liquids in appropriate compartment

3. Perform start-up and shut-down procedures
   a. Start up correctly and safely a machine powered by a diesel engine
   b. Check all systems after the engine is running to establish that they are operational
   c. Correctly shut down grader at the end of shift
   d. Park equipment properly
   e. Report any repairs, or servicing verbally to the instructor

4. Perform basic manoeuvring skills
   a. Drive the grader in a safe manner, displaying smooth starts and stops
   b. Drive the grader displaying smooth shifting and steering
   c. Drive the grader with blade and scarifier attachments, raised and placed in a position so as not to obstruct movement of grader

5. Maintain roads

6. Perform scarifying operations
   a. Demonstrate the ability to scarify a section of hard packed road surface

7. Spread Materials
   a. Assess the work area, and identify grade stake markings and how they relate to the job at hand
   b. Spread material with allowable tolerance of 5 cm (2 inches) above or below grade

8. Construct ditches
   a. Set the blade at proper angle to dig a V-ditch
   b. Select proper speed and gear range
   c. Dig a V-ditch 50m long and 25cm deep
   d Cut material from shoulder--spread toward road centre

9. Perform shouldering operations
   a. Demonstrate the ability to assess the area, identify grade stake markings
   b. Set blade in proper position to spread material
   c. Control blade down pressure to avoid damaging pavement
   d. Select proper gear range and engine speed for this job

10. Perform finish work operations
   a. Assess the work area and identify grade stake markings and how they relate to the job
   b. Recognize different materials, (pit run, and crushed stone) and know how the machine should be used to spread materials
   c. Spread materials with allowable tolerance of 3cm (1 inch) above or below grade
   d. Demonstrate the ability to remove snow with a grader using the regular blade

11. Operate grader using various attachments

EVALUATION:

Written reports and/or tests.
Competence in simulated work and/or experiential endorsements.

LEAD INSTITUTION:

DEVELOPMENT HISTORY:

Date Developed: May 1994

Revised: February 2002

INSTRUCTOR'S NOTES:

COURSE OUTLINE 1560

NAME: Heavy Equipment Operation

DESCRIPTIVE TITLE: Excavators

DESCRIPTION:

This course in heavy equipment requires the use of machinery and a suitable environment. It involves inspection, start-up/shut-down, manoeuvring, setting-up, planning strategies, ditching, excavating, loading trucks, lifting, sloping and benching, and stripping. It includes information on operations, techniques, attachments, road systems and construction drawings. **It is intended that this course will address the new technologies evolving in the industry.**

PREREQUISITES: HE1100, HE1120, HE1200, HE1300

CO-REQUISITES: None

CREDIT VALUE: 75 Hours

Note: Where a student has completed the Backhoe course with operational time exclusively on a machine with joystick controls, a credit of 15 hours will be awarded towards the excavator operational time requirement. This would mean that the student would require only 45 hours of operational time on the excavator as opposed to 60 hours. As well, where such a backhoe is available, the student may operate and receive credit up to 15 hours towards excavator operational time requirement.

TEXT BOOK(S) / SOFTWARE USED BY LEAD INSTITUTION:

COURSE AIMS:

1. To develop the skills and knowledge required for operating excavators with respect to various codes and regulations

2. To practice safety in potentially harmful situations

3. To develop an appreciation for conservation and environmental issues

COURSE OBJECTIVES (KNOWLEDGE):

1. Identify all gauges on Excavator using the operator's guide
2. State the functions of the gauges
3. Identify controls on an Excavator using operator's guide and/or information sheet
4. Match Excavator controls to their correct functions
5. Identify the components of an Excavator using information sheet or operator's guide
6. List safety rules to follow when operating hoisting equipment
7. List the steps in selection of cables and proper hook-up of excavator to pipe
8. List point to consider to prepare the excavation floor when installing underground services
9. State the procedures to follow when backfilling underground services
10. State safety rules for trenching
11. List types of trench patterns that may be used when trenching
12. List steps in planning the job when trenching
13. List four safety factors to consider when using an excavator for crane work
14. List responsibilities expected from an operator in lifting and moving heavy objects
15. List the various attachments that can be installed and their uses on the machine you operate
16. List the steps in cutting and shaping a slope
17. List safety procedures to use when operating an excavator on a slope
18. Define the meaning of 2:1 and 3:1 slopes
19. List two machines used in stripping of right-of-way

20. List three methods used in stripping of right-of-way; explain the reason for using each method

21. State suggestions for effective excavator operation when moving overburden

22. List the width of stripping required for a 79, 80, and 90km highway

24. State the purpose of road classifications and explain characteristics of the various classifications

25. List the departments of government that are responsible for forest access, and the public road system in the province of Newfoundland

26. Explain the necessity for the preparation of a profile and its relationship to active construction

27. Be able to determine when it is better to change attachments rather than bring in a different machine to complete the job

28. Be familiar with the procedures to install an attachment whether it is mounted mechanically or hydraulically

29. Explain the process of stripping right-of-way

30. Explain concerns and cautions with respect to operating an excavator in unstable soil, using mats

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Identify excavator gauges, controls and components using equipment with the latest technology
    a. Demonstrate the ability to identify all gauges, controls and components at the machine

2. Perform walk around and pre-start checks on excavator
    a. Complete the walk-around inspection using the check list and the operator's guide manual
    b. Complete the minor repairs and adjustments if required
    c. Report major problems to the proper authority
    d. Complete the pre-start check using the check list and the operator's guide manual

e. Perform minor maintenance, servicing and topping up of fluids and liquids in appropriate compartment

3. Perform start-up and shut-down procedures on excavator
   a. Start-up correctly and safely a machine powered by a diesel engine using the start-up checklist and operator's guide
   b. Check all systems after the engine is running to establish that they are operational
   c. Park equipment correctly
   d. Correctly shut down excavator at the end of shift
   e. Report any repairs or servicing verbally to his/her instructor

4. Perform basic excavator manoeuvring skills
   a. Drive the excavator in a safe manner, displaying smooth starts and stops
   b. Drive the excavator displaying smooth shifts and steering (avoid oversteering)

5. Load trucks
   a. Position truck and excavator for efficient loading
   b. Load a truck from a excavator
   c. Load a truck from stockpile
   d. Load a truck from the top of a pit

6. Install underground services
   a. Prepare ditch for installing underground services
   b. Demonstrate hook up of cable sling to pipe and excavator bucket
   c. Install pipe in bottom of ditch
   d. Backfill pipe

7. Perform trenching operations
   a. Excavate a number of trenches of various size and layout as decided by instructor

8. Excavate footings/basements
   a. Recognize dangerous operating situations involved in basement excavation
   b. Excavate basement to size and depth as indicated on the grade stakes
   c. Store materials that should be saved (conserve and store topsoil)
   d. Protect trees and shrubs
   e. Finish the floor of the basement to within (plus /minus) 12cm

9. Perform crane operations
   a. Check cable or chain hook-up to insure load can be handled safety
   b. Perform crane work in accordance with the Occupational, Health and Safety Regulations

c. Lift and manoeuvre objects safely without damaging property

10. Construct slopes and benches
    a. Demonstrate the ability to cut and build a 2:1 slope

EVALUATION:

Written reports and/or tests.
Competence in simulated work and/or experiential endorsements.

LEAD INSTITUTION:

DEVELOPMENT HISTORY:

Date Developed: May 1994
Revised: February 2002

INSTRUCTOR'S NOTES:

COURSE OUTLINE 1530

NAME: Heavy Equipment Operation

DESCRIPTIVE TITLE: Front End Loaders

DESCRIPTION:

This course in heavy equipment requires the use of machinery and a suitable environment. It involves inspection, start-up/shut-down, manoeuvring, planning strategies, digging and dumping, excavating, loading trucks, dozing, lifting, sloping and benching, stockpiling and removing snow. It includes information on operations, techniques, attachments, road systems and construction drawings. **It is intended that this course will address the new technologies evolving in the industry.**

PREREQUISITES: HE1100, HE1120, HE1200, HE1300

CO-REQUISITES: None

CREDIT VALUE: 75 hours

TEXT BOOK(S) / SOFTWARE USED BY LEAD INSTITUTION:

COURSE AIMS:

1. To develop the skills and knowledge required for operating front end loaders with respect to various codes and regulations

2. To practice safety in potentially harmful situations

3. To develop an appreciation for conservation and environmental issues

COURSE OBJECTIVES (KNOWLEDGE):

1. Identify gauges, controls and components
   a. Identify all gauges on a loader using the operator's guide and/or information sheet
   b. State the functions of all gauges

2. Identify all controls on a loader using operator's guide and/or information sheet

3. Match loader controls to their correct functions

4. Identify the components of a loader using the operator's guide

5. State safety rules that the operator must use when loading materials into trucks

6. List four techniques that can improve the loading cycle

7. State the proper procedures for loading various types of materials

8. Define the term "stockpile" and list the (10) ten specific directives found in the specifications for building a stockpile, as laid down by the Province of Newfoundland Department of Transportation, Division 3 -310.10.

9. List safety rules to follow when using the loader for hoisting

10. List the steps in selection of cables and proper hookup of loader to pipe

11. List point to consider to prepare the excavation floor when installing underground services

12. State the procedures to follow when backfilling underground services

13. Identify common attachments used in snow removal

14. Describe the purpose of a side mounted wing

15. Describe the purpose of a front mounted plow

16. Match hydraulic controls to their correct functions

17. List the various attachments that can be installed and their uses on the machine you operate. (Examples: straight bucket, rock bucket, 4 in 1 bucket (multi purpose), log fork, ripper, bach, side wing (snow removal) and snow blade)

18. State the purpose of road classifications and explain characteristics of the various

classifications

19. List the departments of government that are responsible for forest access, and the public road system in the province of Newfoundland

20. Explain the necessity for the preparation of a profile and its relationship to active construction

21. Be able to determine when it is better to change attachments rather than bring in a different machine to complete the job

22. Be familiar with the procedures to install an attachment whether it is mounted mechanically or hydraulically

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Identify gauges controls and components using equipment with the latest technology
    a. Demonstrate the ability to identify all gauges, controls, and components at the machine

2. Perform walk-around and pre-start checks
    a. Complete the walk-around inspection using the check list and the Operator's Guide book provided
    b. Perform minor repairs and adjustments if required
    c. Report major problems to proper authority
    d. Complete the pre-start check using the checklist and the Operator's Manual as a guide
    e. Top up any compartment with the proper oil

3. Perform start-up and shut-down procedures
    a. Start up correctly and safely a loader powered by a diesel engine (under normal and cold weather conditions)
    b. Check all systems after the engine is running, confirming that all systems are in safe operating range
    c. Park equipment properly
    d. Correctly shut down loader at end of shift
    e. Log any repair or servicing requirements

4. Perform basic manoeuvring skills
    a. Drive the machine in a safe manner displaying smooth starts and stops
    b. Drive machine displaying smooth shifting and steering

c. Drive the loader with bucket close to ground for good visibility and stability

5. Perform digging/dumping operations
   a. Fill the bucket
   b. Travel with bucket loaded
   c. Dump material from bucket
   d. Keep floor of pit smooth and level
   e. Keep dumped material in a neat and tidy pile

6. Perform dozing operations
   a. Check work area for unusual ground conditions
   b. Use correct work pattern when starting to spread materials
   c. Spread and level materials maintaining a smooth finish
   d. Avoid spinning of tires or tracks while dozing
   e. Perform dumping and spreading while moving

7. Load trucks
   a. Demonstrate ability to load trucks according to following procedures:
      i. Select correct gear range for ground conditions and materials being loaded
      ii. Fill the bucket
      iii. Position the loader so the truck can be back under the lift arms
      iv. Dump materials into truck
      v. Load a number of trucks from a pit or stockpile. Number of loads to be decided by instructor depending on students progress
      vi. Maintain a level and smooth pit

8. Perform excavations
   a. Dig basement to grade level as indicated on the grade stake
   b. Store materials that should be saved (conserve and store topsoil)
   c. Protect trees and shrubs
   d. Complete a finished excavation in good enough order to accommodate the desired specifications without extra labour being involved - size of excavation or footing to be determined by instructor and student

9. Build stockpile
   a. Demonstrate the knowledge of procedures and the basic skills required to build a stock pile

10. Install underground services
    a. Prepare ditch for installing underground services
    b. Demonstrate hookup of cable sling to pipe and loader bucket

c. Install pipe in bottom of ditch
d. Backfill pipe

EVALUATION:

Written reports and/or tests.
Competence in simulated work and/or experiential endorsements.

LEAD INSTITUTION:

DEVELOPMENT HISTORY:

Date Developed: May 1994
Revised: February 2002

INSTRUCTOR'S NOTES:

COURSE OUTLINE HE1540

NAME: Heavy Equipment Operation 1540

DESCRIPTIVE TITLE: Tandem Dump Trucks

DESCRIPTION:

This course in tandem dump truck operation requires the use of machinery and a suitable environment. It involves inspection, start-up/shut-down, changing gears, manoeuvring, positioning, hauling and dumping, and driving. It includes information on operations and techniques. **It is intended that this course will address the new technologies evolving in the industry.**

PREREQUISITES: HE1100, HE1120, HE1200, HE1300

CO-REQUISITES: None

CREDIT VALUE: 75 Hours

Note: Where a student has completed the Off-highway Truck course, a credit of 15 hours will be awarded towards the Tandem Dump Truck operational time requirement. This would mean that the student would require only 45 hours of operational time on the Tandem Dump Truck as opposed to 60 hours. As well, where an off-highway truck is available, the student may operate and receive credit up to 15 hours towards the tandem dump truck operational time requirement.

TEXT BOOK(S) / SOFTWARE USED BY LEAD INSTITUTION:

COURSE AIMS:

1. To develop the skills and knowledge required for operating tandem dump trucks with respect to various codes and regulations

2. To practice safety in potentially harmful situations
3. To develop an appreciation for conservation and environmental issues

COURSE OBJECTIVES (KNOWLEDGE):

1. Identify all gauges on a tandem dump truck using the Operators Guide and/or Information Sheet
2. State the functions of the gauges
3. Identify all control on a tandem dump truck using Operators Guide and/or Information Sheet
4. Match tandem dump truck controls to their correct functions
5. Identify the components of a truck using the Operators Guide and/or Information Sheet
6. Describe proper shifting procedure
7. Describe the shift control lever.
8. State the steps involved in this operation of a standard shift transmission
9. State the procedures for double clutching on the upshift and downshift
10. State the operation of the clutch brake
11. State how to prevent engine over-speeding while driving
12. State the purpose of road classifications and explain characteristics of the various classifications
13. List the departments of government that are responsible for forest access, and the public road system in the province of Newfoundland and Labrador
14. Explain the necessity for the preparation of a profile and its relationship to active construction

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Identify gauges, controls and components using equipment with the latest technology
   a. Demonstrate the ability to identify all gauges, controls and components at the machine
2. Perform walk around and pre-start checks
   a. Complete the walk around inspection using the check list and the operators guide

book
- b. Perform the minor repairs and adjustments that may be necessary
- c. Report minor or major problems to instructor
- d. Complete the pre-start check using the check list and operators manual as a guide
- e. Perform minor maintenance, servicing and topping up of various fluids, oils and liquids in appropriate compartments

3. Perform start-up and shut-down procedures
   - a. Start up correctly and safely a machine powered by a diesel engine using the start up check list and operators guide
   - b. Check all systems after the engine is running to establish that they are operational
   - c. Park equipment properly
   - d. Correctly shut down truck at the end of shift
   - e. Log any repair or servicing requirements

4. Perform basic manoeuvring skills through an established course
   - a. Drive the truck in a safe manner displaying smooth starts and stops
   - b. Drive the truck displaying smooth shifting and steering
   - c. Demonstrate the ability to complete:
     - i. Forward and reverse clearance through an alley
     - ii. Forward, stop and backing through 30m alley
     - iii. Forward Zig-Zag
     - iv. Off-set alley
     - v. Overhead clearance

5. Perform back-up operations
   - a. Observe area to be backed into while still going forward and state any potential hazards
   - b. Warn or alert loading and dumping personnel of his/her intentions
   - c. Back-up vehicle in a straight line
   - d. Select proper axle and/or transmission range
   - e. Back into position for loading and dumping using rear view mirrors
   - f. State the minimum frontal and side clearance required for the driver of a Tandem Truck to see personnel in his/her area

6. Operate standard shift transmission
   - a. Demonstrate proper shift sequence

7. Haul and dump materials
   - a. Position truck at pit location

b. Haul material to dump site
c. Observe traffic patterns and driving speed for road conditions
d. Observe overhead obstruction
e. Operate controls and dump materials while maintaining level truck position

8. Drive in traffic
   a. Put vehicle in motion
   b. Select and shift gears
   c. Co-ordinate the use of the clutch and accelerator
   d. Handle the steering wheel
   e. Regulate speed with brakes
   f. Regulate speed with transmission
   g. Use signals in the proper manner
   h. Drive in proper lane
   i. Observe traffic signs and speed limits as posted
   j. Operate in reverse with mirrors and using a spotter
   k. Secure vehicle in position designated by instructor (parallel or perpendicular)

EVALUATION:

Written reports and/or tests.
Competence in simulated work and/or experiential endorsements.

LEAD INSTITUTION:

DEVELOPMENT HISTORY:

Date Developed: May 1994
Revised: February 2002

INSTRUCTOR'S NOTES:

COURSE OUTLINE HE1550

NAME: Heavy Equipment Operation 1550

DESCRIPTIVE TITLE: Off-Highway Trucks

DESCRIPTION:

This course in heavy equipment requires the use of machinery and a suitable environment. It involves inspection, start-up/shut-down, changing gears, manoeuvring, positioning, hauling and dumping, and driving. It includes information on operations and techniques. **It is intended that this course will address the new technologies evolving in the industry.**

PREREQUISITES: HE1100, HE1120, HE1200, HE1300

CO-REQUISITES: None

CREDIT VALUE: 75 Hours

Note: Where a student has completed the Tandem Dump Truck course, a credit of 15 hours will be awarded towards the Off-highway Truck operational time requirement. This would mean that the student would require only 45 hours of operational time on the Off-highway Truck as opposed to 60 hours. As well, where a tandem dump truck is available, the student may operate and receive credit up to 15 hours towards the off-highway truck operational time requirement.

TEXT BOOK(S) / SOFTWARE USED BY LEAD INSTITUTION:

COURSE AIMS:

1. To develop the skills and knowledge required for operating off-highway trucks with respect to various codes and regulations

2. To practice safety in potentially harmful situations

3. To develop an appreciation for conservation and environmental issues

COURSE OBJECTIVES (KNOWLEDGE):

1. Identify all gauges on an Off Highway Truck using the Operators Guide and/or Information Sheet

2. State the functions of the gauges

3. Identify all control on an Off Highway Truck using Operators Guide and/or Information Sheet

4. Match Off Highway Truck controls to their correct functions

5. Identify the components of a truck using the Operators Guide and/or Information Sheet

6. Describe proper shifting procedure

7. Describe the shift control lever, retarder and shift light

8. State how to prevent engine over-speeding while driving

9. State the purpose of road classifications and explain characteristics of the various classifications

10. List the departments of government that are responsible for forest access, and the public road system in the province of Newfoundland and Labrador

11. Explain the necessity for the preparation of a profile and its relationship to active construction

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Identify gauges, controls and components using equipment with the latest technology
    a. Demonstrate the ability to identify all gauges, controls and components at the machine

2. Perform walk around and pre-start checks
    a. Complete the walk around inspection using the check list and the operators guide book
    b. Perform the minor repairs and adjustments that may be necessary
    c. Report minor or major problems to the appropriate authority
    d. Complete the pre-start check using the check list and operators manual as a guide

e. Perform minor maintenance, servicing and topping up of various fluids, oils and liquids in appropriate compartments

3. Perform start-up and shut-down procedures
   a. Start up correctly and safely a machine powered by a diesel engine using the start up check list and operators guide
   b. Check all systems after the engine is running to establish that they are operational
   c. Park equipment properly
   d. Correctly shut down truck at the end of shift
   e. Log any repair or servicing requirements

4. Perform basic manoeuvring skills through an established course
   a. Drive the truck in a safe manner displaying smooth starts and stops
   b. Drive the truck displaying smooth shifting and steering
   c. Demonstrate the ability to complete:
      i. Forward and reverse clearance through an alley
      ii. Forward, stop and backing through an alley
      iii. Forward Zig-Zag
      iv. Off-set alley
      v. Overhead clearance

5. Perform back-up operations
   a. Observe area to be backed into while still going forward and state any potential hazards
   b. Warn or alert loading and dumping personnel of his/her intentions
   c. Back-up vehicle in a straight line
   d. Select proper axle and/or transmission range
   e. Back into position for loading and dumping using rear view mirrors
   f. State the minimum frontal and side clearance required for the driver of an Off Highway Truck to see personnel in his/her area

6. Operate power shift transmission
   a. Demonstrate proper shift sequence

7. Haul and dump materials
   a. Position truck at pit location
   b. Haul material to dump site
   c. Observe traffic patterns and driving speed for road conditions
   d. Observe overhead obstruction
   e. Operate controls and dump materials while maintaining level truck position

EVALUATION:

Written reports and/or tests.
Competence in simulated work and/or experiential endorsements.

LEAD INSTITUTION:

DEVELOPMENT HISTORY:

Date Developed: May 1994
Revised: February 2002

INSTRUCTOR'S NOTES:

COURSE OUTLINE 1520

NAME: Heavy Equipment Operation 1520

DESCRIPTIVE TITLE: Backhoes

DESCRIPTION:

This course in heavy equipment requires the use of machinery and a suitable environment. It involves inspection, start-up/shut-down, manoeuvring, setting-up, planning strategies, ditching, excavating, loading trucks, lifting, sloping and benching, and stripping. It includes information on operations, techniques, attachments, road systems and construction drawings. **It is intended that this course will address the new technologies evolving in the industry.**

PREREQUISITES: HE1100, HE1120, HE1200, HE1300

CO-REQUISITES: None

CREDIT VALUE: 75 Hours

Note: Where a student has completed the Excavator course, a credit of 15 hours will be awarded towards the backhoe operational time requirement, provided that the backhoe on which the student operates is equipped with joystick controls. This would mean that the student would require only 45 hours of operational time on the joystick-controlled backhoe as opposed to 60 hours. As well, where an excavator is available, the student may operate and receive credit up to 15 hours towards the backhoe operational time requirement.

TEXT BOOK(S) / SOFTWARE USED BY LEAD INSTITUTION:

COURSE AIMS:

1. To develop the skills and knowledge required for operating backhoes with respect to various codes and regulations

2. To practice safety in potentially harmful situations

3. To develop an appreciation for conservation and environmental issues

COURSE OBJECTIVES (KNOWLEDGE):

1. Identify all gauges on a backhoe using the operator's guide
2. State the functions of the gauges
3. Identify all controls on a backhoe using operator's guide and/or information
4. Match backhoe controls to their correct functions
5. Identify the components of a backhoe using the operator's guide and/or information sheet
6. List 3 reasons why positioning of bach in relation to work is important
7. State 3 advantages of setting up bach using the tripod method
8. List 3 safety hazards associated with setting up machine on sloping terrain and unstable soil
9. Name 4 controls used in setting up machine on level ground
10. List four types of ditching patterns that may be used when ditching
11. List three steps in planning the job when ditching
12. List two different methods that may be used when setting up the machine for ditching
13. List the various attachments that can be installed and their uses on the machine you operate
14. List safety rules to follow when operating hoisting equipment
15. List the steps in selection of cables and proper hook-up of backhoe to pipe
16. List points to consider to prepare the ditch floor when installing underground services
17. State the procedures to follow when backfilling underground services
18. Explain the process of protecting trees and shrubs
19. State safety rules for loading trucks with loader section of backhoe

20. List four techniques that should improve the loading cycle

21. List four safety factors to consider when using a backhoe for crane work

22. List responsibilities expected from an operator in lifting and moving heavy objects

23. Check cable or chain hookup to insure load can be handled safely

24. List the steps and tools needed to change a bucket

25. List the different buckets and their uses

26. State the dangers involved in removing and installing bach attachment

27. Identify road systems

28. State the purpose of road classifications and explain characteristics of the various classifications

29. List the departments of government that are responsible for forest access, and the public road system in the province of Newfoundland and Labrador

30. Explain the necessity for the preparation of a profile and its relationship to active construction

31. Be able to determine when it is better to change attachments rather than bring in a different machine to complete the job

32. Be familiar with the procedures to install an attachment whether it is mounted mechanically or hydraulically
    - i. Various buckets
    - ii. Boom extensions
    - iii. Impactor or demolition hammer

33. Explain the process for changing a bucket

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Identify gauges, controls and components using equipment with the latest technology
    a. Demonstrate the ability to identify all gauges, controls and components of the machine

2. Perform walk around and pre-start checks
   a. Complete the walk-around inspection using the check list and the operator's guide manual
   b. Complete the minor repairs and adjustments if required
   c. Report major problems to proper authority
   d. Complete the pre-start check using the check list and the operator's guide manual
   e. Perform minor maintenance, servicing and topping up of fluids and liquids in the appropriate compartment

3. Perform start-up and shut-down procedures
   a. Start-up correctly and safely a machine powered by a diesel engine using the Start-up check list and Operators guide
   b. Check all systems after the engine is running to establish that they are operational
   c. Park equipment properly
   d. Correctly Shut-down bach at the end of the shift
   e. Log any repair or servicing requirements

4. Perform basic manoeuvring skills
   a. Drive the bach in a safe manner displaying smooth starts and stops
   b. Drive the bach displaying smooth shifts, and steering

5. Set up bach on level ground

6. Set up bach on sloped ground

7. Perform ditching operations
   a. Excavate a number of ditches with different layout patterns (number and shape of layout to be decided by the Instructor)

8. Install underground services
   a. Prepare ditch for installing underground services
   b. Demonstrate hook up of cable sling to pipe and loader bucket
   c. Install pipe in bottom of ditch
   d. Backfill pipe

9. Perform excavations
   a. Recognize dangerous operating situations involved in basement excavation
   b. Dig basement to size and depth as indicated on the grade stakes
   c. Determine which materials should be saved (conserve and store topsoil)
   d. Finish the floor or the basement to within (plus or minus) 12cm

10. Load trucks. Demonstrate the ability to:
    a. Fill the bucket
    b. Travel with bucket loaded
    c. Properly dump the bucket
    d. Load trucks from a stockpile
    e. Maintain an even and smooth pit floor

11. Perform light duty crane operation
    a. Perform crane work in accordance with the Occupational, Health and Safety Regulations
    b. Lift and manoeuvre objects safely without damaging property

EVALUATION:

Written reports and/or tests.
Competence in simulated work and/or experiential endorsements.

LEAD INSTITUTION:

DEVELOPMENT HISTORY:

Date Developed: May 1994
Revised: February 2002

INSTRUCTOR'S NOTES:

REQUIRED RELATED COURSES

COURSE NAME & NUMBER: Workplace Correspondence CM2150

DESCRIPTIVE TITLE: Workplace Correspondence

CALENDAR TITLE:

1.0 Type and Purpose Communications 2150 gives students the opportunity to study the principles of effective writing. Applications include letters, memos, and short report writing.

2.0 Major Topics Review of Sentence and Paragraph Construction; Business Correspondence; Informal Report; Job Search Techniques.

PREREQUISITES: Nil

CO-REQUISITES: Nil

COURSE DURATION 45hrs

SUGGESTED TEXT/ LEARNING RESOURCES:

Textbooks: Business English and Communications, Fourth Canadian Edition, Clark, Zimmer, et al., McGraw-Hill Ryerson, 1990

Student Projects and Activities for Business English and Communications, Fourth Canadian Edition, Clark, et al., McGraw-Hill, 1990

Effective Business Writing, Jennifer MacLennon

Simon and Shuster Handbook for Writers, Second Edition, Troyka Lynn Quitman, Prentice Hall

College English Communication, Third Canadian Edition, Stewart, Zimmer, et al., McGraw-Hill Ryerson Limited, 1989

Business and Administrative Communication, Second Edition, Kitty O. Locker. IRWIN, 1991

References: Pittman Office Handbook, Smith/Hay-Ellis

The Gregg Reference Manual, Fourth Canadian Edition, Sabin/O'Neill

McGraw Hill Handbook

Other Resources: Business Letter Business (Video), Video Arts

Guest Speakers

Sell Yourself (Video)

COURSE AIMS:

1. To help students understand the importance of well-developed writing skills in business and in career development.

2. To help students understand the purpose of the various types of business correspondence.

3. To examine the principles of effective business writing.

4. To examine the standard formats for letters and memos.

5. To provide opportunities for students to practice writing effective letters and memos.

6. To examine the fundamentals of informal reports and the report writing procedure.

7. To provide an opportunity for students to produce and informal report.

MAJOR TOPICS/TASKS:

1.0 Review of Sentence and Paragraph Construction

2.0 Business Correspondence

3.0 Informal Report/Present Orally

COURSE OUTLINE:

1.0 Review of Sentence and Paragraph Construction
- 1.1 Examining and applying principles of sentence construction
- 1.2 Examining and applying principles of paragraph construction

2.0 Business Correspondence
- 2.1 Examining the value of well-developed business writing skills
- 2.2 Examining principles of effective business writing
- 2.3 Examining business letters and memos

3.0 Informal Report
- 3.1 Examining the fundamentals of informal business reports
- 3.2 Applying informal report writing skills

LEARNING OBJECTIVES:

1.0 Review of Sentences and Paragraph Construction
- 1.1.1 Define a sentence and review the four types.
- 1.1.2 Identify the essential parts of a sentence, particularly subject and predicate, direct and indirect object.
- 1.1.3 Differentiate among phrases, clauses, and sentences.
- 1.1.4 Explore the major concepts related to subject-verb agreement.
- 1.1.5 Apply rules and principles for writing clear, concise, complete sentences which adhere to the conventions of grammar, punctuation, and mechanics.

1.2 Examine and Apply Principles of paragraph Construction
- 1.2.1 Discuss the basic purposes for writing.
- 1.2.2 Define a paragraph and describe the major characteristics of an effective paragraph.
- 1.2.3 Write well-developed, coherent, unified paragraphs which illustrate the following: A variety of sentence arrangements; conciseness and clarity; and adherence to correct and appropriate sentence structure, grammar, punctuation, and mechanics.

2.0 Business Correspondence
- 2.1 Examine the Value of Business Writing Skills
  - 2.1.1 Discuss the importance of effective writing skills in business
  - 2.1.2 Discuss the value of well-developed writing skills to career success
- 2.2 Examine Principles of Effective Business Writing
  - 2.2.1 Discuss the rationale and techniques for fostering goodwill in business communication, regardless of the circumstances
  - 2.2.2 Review the importance of revising and proofreading writing

2.3 Examine Business Letters and Memos
- 2.3.1 Differentiate between letter and memo applications in the workplace
- 2.3.2 Identify the parts of a business letter and memo
- 2.3.3 Explore the standard formats for business letters and memos
- 2.3.4 Examine guidelines for writing an acceptable letter and memo which convey: acknowledgment, routine request, routine response, complaint, refusal, and persuasive request, for three of the six types listed
- 2.3.5 Examine samples of well-written and poorly written letters and memos

3.0 Informal Report

3.1 Examine the Fundamentals of Informal Business Reports
- 3.1.1 Identify the purpose of the informal report
- 3.1.2 Identify the parts and formats of an informal report
- 3.1.3 Identify methods of information gathering

3.2 Apply Informal Report Writing Skills and Oral Reporting Skills
- 3.2.1 Gather pertinent information
- 3.2.2 Organize information into an appropriate outline
- 3.2.3 Draft a five minute informal report
- 3.2.4 Edit, proofread, and revise the draft to create an effective informal report and present orally using visual aids.

RECOMMENDED EVALUATION:
Required Pass Mark 70%

DEVELOPMENT HISTORY:
Date Developed:
Date Revised: 1999 05 03

NAME AND NUMBER: Customer Service MR1210

DESCRIPTIVE TITLE: Customer Service

SUMMARY DESCRIPTION:
This course focuses on the role of providing quality customer service. It is important to have a positive attitude and the necessary skills to effectively listen and interpret customer concerns about a product, resolve customer problems, and determine customer wants and needs. Students will be able to use the skills and knowledge gained in this course to effectively provide a consistently high level of service to the customer.

PREREQUISITES: None

CO-REQUISITES: None

SUGGESTED DURATION: 30 hrs

EVALUATION: Theory and Practical Applications Require a Pass Mark of 70%.

COURSE AIMS:
1. To know and understand quality customer service
2. To know why quality service is important
3. To know and understand the relationship between "service" and "sales"
4. To understand the importance of and to demonstrate a positive attitude
5. To recognize and demonstrate handling of customer complaints

COURSE OBJECTIVES (KNOWLEDGE):
1. Providing Quality Service
    - Define quality service
    - List the types of quality service

- Define Service vs. Sales or Selling
- Explain why quality service is important
- Identify the various types of customers
- Define customer loyalty

2. Determining Customers Wants and Needs
   - List four levels of customer needs
   - Identify important customer wants and needs
   - Identify ways to ensure repeat business

3. Demonstrating a Positive Attitude
   - List the characteristics of a positive attitude
   - Explain why it is important to have a positive attitude
   - List ways that a positive attitude can improve a customer's satisfaction
   - Define perception
   - Explain how perception can alter us and customers
   - Understand how to deal with perception

4. Effectively Communicating with customers
   - Describe the main elements in the communication process
   - Identify some barriers to effective communication
   - Define body language
   - Explain how body language would affect customers
   - Determine why body language is important
   - Define active listening and state why it is important
   - Describe the four components of active living
   - Contrast good and bad listeners
   - List and discuss the steps of the listening process

5. Effectively using Questioning Techniques
   - List questioning techniques
   - Write two example of an open question
   - Perform a questioning and listening role play

6. Using the Telephone Effectively
   - List the qualities of a professional telephone voice
   - Explain why telephone skills are important
   - Demonstrate effective telephone skills

7. Asserting Oneself: Handling Complaints and Resolving Conflict
   - Define assertiveness
   - Define communication behaviors
   - Relate assertions to effective communication

- Practice being assertive
- Understand the process of assertive guidelines for action
- Practice giving an assertive greeting
- Acknowledge multiple customers

8. Dealing with Difficult Customers
   - Describe how you would deal with anger
   - Complete a guide to controlling feelings
   - Determine how you would feel dealing with an upset customer
   - Suggest some techniques that might control your own feelings
   - Understand leadership styles and the nature of organizations
   - List ways to dealing with conflict / customer criticism
   - Be aware of certain guidelines when confronting customers
   - List ways of preventing unnecessary conflict with customers
   - Review current skills and knowledge of customer service
   - Develop a customer satisfaction improvement plan

COURSE OUTLINE - SP 2330

NAME AND NUMBER: QA/QC SP2330

DESCRIPTIVE TITLE: Quality Assurance / Quality Control

DESCRIPTION:
This general studies course requires the use of basic tools and equipment and materials and supplies. It requires controlling drawings and specifications and/or calibrating measuring devices in applicable occupations.It involves interpreting standards, controlling the acceptance of raw materials, controlling quality variables and documenting the process. It includes information on quality concepts, codes and standards, documentation, communications, human resources, company structure and policy, teamwork and responsibilities.

PREREQUISITES: None

CO-REQUISITES: None

SUGGESTED DURATION: 30 Hrs

COURSE AIMS:
1. To develop the skills and knowledge required to apply quality assurance/quality control procedures

2. To develop an awareness of quality management principles and processes

COURSE OBJECTIVES (KNOWLEDGE):
1. Describe the reasons for quality assurance and quality plans.

2. Explain the relationship between quality assurance and quality control.

3. Describe quality control procedures as applied to the production and checking of engineering drawings in applicable occupations.

4. Describe quality control procedures as applied to the acceptance and checking of raw materials.

5. Explain the role of communications in quality management.

6. Explain why it is important for all employees to understand the structure of the company and its production processes.
7. Explain how human resource effectiveness is maximized in a quality managed organization.

8. Explain the role of company policy in quality management.

9. Explain the purpose of codes and standards.

10. Explain the concepts of quality
    a. cost of quality
    b. measurement of quality
    c. quality control and quality assurance
    d. elements of quality
    e. elements of the quality audit
    f. quality standards
    g. role expectations and responsibilities

11. Explain the structure of quality assurance and quality control
    a. Define quality assurance, quality control and documentation terminology
    b. Describe organizational charts
    c. List the elements of a quality assurance system
    d. Explain the purpose of the quality assurance manual
    e. Describe quality assurance procedures
    f. Explain the key functions and responsibilities of personnel

12. Complete quality assurance/quality control documentation
    a. Describe methods of recording reports in industry
    b. Describe procedures of traceability (manual and computer-based recording)
    c. Identify needs for quality control procedures

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Apply quality control to projects
    a. Follow QA/QC procedures for drawings, plans and specifications in applicable occupations.
    b. Calibrate measuring instruments and devices in applicable occupations.
    c. Interpret required standards
    d. Follow QA/QC procedures for accepting raw materials

e. Carry out the project
f. Control the quality elements (variables)
g. Complete QA/QC reports

EVALUATION:

Pass Mark Required 70%

DEVELOPMENT HISTORY:

Date Developed: February 1994
Date Revised: April, 1999

COURSE DESCRIPTION

COURSE NAME & NUMBER: Introduction to Computers MC1050

DESCRIPTIVE TITLE: Introduction to Computers

CALENDAR ENTRY:

Type and Purpose This course is designed to give the student an introduction to computer systems. Particular emphasis is given to word processing, spreadsheet, e-mail and the Internet.

Major Topics Microcomputer System Hardware and Software Components; Word Processing; Electronic Spreadsheets; Electronic Mail and the Internet.

PRE-REQUISITES: Nil

CO-REQUISITES: Nil

SUGGESTED DURATION: 30 hours

SUGGESTED TEXT/ LEARNING RESOURCES:

Textbook(s):

References:

Other Resources:

COURSE AIMS:

1. To provide students with a introduction to computer systems and their operation.

2. To introduce students to popular software packages, their applications and future trends in computer applications.

MAJOR TOPICS:

1. Microcomputer System Hardware and Software Components
2. Word Processing
3. Spreadsheet
4. E-Mail and the Internet

COURSE OUTLINE:

1.0 Microcomputer System Hardware and Software Components
- 1.1 Microcomputer Hardware
  - 1.1.1 System Components
  - 1.1.2 Function of each Component
- 1.2 Microcomputer Software
  - 1.2.1 Software Definition and Types
  - 1.2.2 System Software (Windows 95)
  - 1.2.3 File Management Commands (Windows 95)

2.0 Word Processing
- 2.1 Keyboarding Techniques
- 2.2 Word Processing
  - 2.2.1 Understanding Word Processing
  - 2.2.2 Create a Document
  - 2.2.3 Save, Open and Edit a Document
  - 2.2.4 Edit a Document: Cut and Paste
  - 2.2.5 Understand Hidden codes.
  - 2.2.6 The Select Feature (Block)
  - 2.2.7 Change Layout Format
  - 2.2.8 Change Text Attributes
  - 2.2.9 Use Auxiliary Tools
  - 2.2.10 Select the Print Feature (number of copies and current document)

3.0 Electronic Spreadsheet
- 3.1 Spreadsheet Basics
- 3.2 Operate Menus
- 3.3 Create a Worksheet
- 3.4 Use Ranges

3.5 Print a Worksheet
3.6 Edit a worksheet

4.0 Electronic Mail and the Internet
4.1 Electronic Mail
4.2 The Internet

LEARNING OBJECTIVES:

1. Microcomputer System Hardware and Software Components
   - 1.1 Microcomputer Hardware
     - 1.1.1 System Components
       - 1.1.1.1 Identify major components of a computer system.
     - 1.1.2 Function of each Component
       - 1.1.2.1 Describe the function of the microprocessor.
       - 1.1.2.2 Describe and give examples of I/O DEVICES.
       - 1.1.2.3 Describe primary storage (RAM, ROM, Cache).
       - 1.1.2.4 Define bit, byte, code and the prefixes k.m. and g.
       - 1.1.2.5 Describe secondary storage (diskettes and hard disks, CD ROMS, Zip Drives etc).
       - 1.1.2.6 Describe how to care for a computer and its accessories.
   - 1.2 Microcomputer Software
     - 1.2.1 Software Definition and Types
       - 1.2.1.1 Define software.
       - 1.2.1.2 Describe, operational and application software used in this course.
       - 1.2.1.3 Define file and give the rules for filenames and file extensions..
     - 1.2.2 System Software (Windows 95)
       - 1.2.2.1 Getting Started with Windows
       - 1.2.2.2 Start and quit a Program
       - 1.2.2.3 Get Help
       - 1.2.2.4 Locate a specific file using the **find** function of Win95
       - 1.2.2.5 Changing system settings:wall paper, screen saver, screen resolution, background.
       - 1.2.2.6 Starting a program by using the Run Command
       - 1.2.2.7 Shutting down your computer
     - 1.2.3 File Management Commands (Windows 95)
       - 1.2.3.1 View directory structure and folder content
       - 1.2.3.2 Organizing files and folders

1.2.3.3 Copy, delete, and move files and folders
1.2.3.4 Create folders
1.2.3.5 Maximize and minimize a window
1.2.3.6 Print directory/folder content
1.2.3.7 Describe the Windows 95 taskbar

2. Word Processing
   2.1 Keyboarding Techniques
      2.1.1 Identify and locate alphabetic and numeric keys
      2.1.2 Identify and locate function keys: special keys, home keys, page up key, page down key, numeric key pad, shift keys, punctuation keys, tab key
   2.2 Word Processing
      2.2.1 Understanding word processing
         2.2.1.1 The Windows Component
         2.2.1.2 The Menu Bar
         2.2.1.3 Menu Indicators
         2.2.1.4 The Document Window
         2.2.1.5 The Status Bar
         2.2.1.6 The Help Feature
         2.2.1.7 Insertion Point Movements
      2.2.2 Create a document
         2.2.2.1 Change the Display
         2.2.2.2 The Enter Key
         2.2.2.3 Enter Text
      2.2.3 Save, Open and Exit a document.
         2.2.3.1 Save a document
         2.2.3.2 Close a document.
         2.2.3.3 Start a new document Window
         2.2.3.4 Open a document
         2.2.3.5 Exit Word Processor
      2.2.4 Edit a Document
         2.2.4.1 Add New Text
         2.2.4.2 Delete text
         2.2.4.3 Basic Format Enhancement (split and join paragraphs, insert text)
      2.2.5 Understand Hidden Codes
         2.2.5.1 Display Hidden Codes
         2.2.5.2 Delete Text Enhancements
      2.2.6 The Select Feature
         2.2.6.1 Identify a Selection

2.2.6.2 Move a Selection
2.2.6.3 Copy a Selection
2.2.6.4 Delete a Selection
2.2.6.5 Select Enhancements
2.2.6.6 Save a Selection
2.2.6.7 Retrieve a Selection

2.2.7 Change Layout Format
2.2.7.1 Change layout format: (margins, spacing, alignment, paragraph indent, tabs, line spacing, page numbering)

2.2.8 Change Text Attributes
2.2.8.1 Change text attributes: (bold, underline, font, etc.)

2.2.9 Use Auxiliary Tools
2.2.9.1 Spell Check

2.2.10 Select the Print Feature
2.2.10.1 Select the Print Feature: (i.e; number of copies and current document)
2.2.10.2 Identify various options in print screen dialogue box

3. Electronic Spreadsheet
3.1 Spreadsheet Basics
3.1.1 The Worksheet Window
3.2 Operates Menus
3.2.1 Use a Menu Bar
3.2.2 Use a Control Menu
3.2.3 Use a Shortcut Menu
3.2.4 Save, Retrieve form Menus
3.3 Create a Worksheet
3.3.1 Enter Constant Values and Formulas
3.3.2 Use the Recalculation Feature
3.3.3 Use Cell References (relative and absolute references)
3.4 Use Ranges
3.4.1 Type a Range for a Function
3.4.2 Point to a Range for a Function
3.4.3 Select a Range for Toolbar and Menu Commands
3.5 Print a Worksheet
3.5.1 Print to the Screen
3.5.2 Print to the Printer
3.5.3 Print a Selected Range
3.6 Edit a Worksheet
3.6.1 Replace Cell Contents
3.6.2 Insert and Delete Rows and Columns
3.6.3 Change Cell Formats
3.6.4 Change Cell Alignments

- 3.6.5 Change Column Width
- 3.6.6 Copy and Move Cells

4. Electronic Mail and the Internet
   - 4.1 Electronic Mail
     - 4.1.1 Compose and send an e-mail message
     - 4.1.2 Retrieve an e-mail attachments
     - 4.1.3 Send an e-mail message with attachments
     - 4.1.4 Retrieve and save e-mail attachments
     - 4.1.3 Print an e-mail message
     - 4.1.4 Delete an e-mail message
   - 4.2 The Internet
     - 4.2.1 Overview of the World Wide Web
     - 4.2.2 Accessing Web sites
     - 4.2.3 Internet Web Browsers
     - 4.2.4 Internet Search Engines
     - 4.2.5 Searching Techniques

STUDENT EVALUATION:

Required Pass Mark 70%

DEVELOPMENT HISTORY:

Date Designed 1998
Date Revised 1999

COURSE OUTLINE - SD 1700

NAME AND NUMBER: Workplace Skills SD 1700

DESCRIPTIVE TITLE: Workplace Skills

DESCRIPTION:
This course involves participating in meetings, doing safety inspections, completing employment insurance forms, writing letters of employment insurance appeal, and filing a human rights complaint. Includes information on formal meetings, unions, worker's compensation, employment insurance regulations, worker's rights and human rights.

PREREQUISITES: None

CO-REQUISITES: None

SUGGESTED DURATION: 30 Hrs

COURSE AIMS:
1. Participate in meetings (conduct meetings).
2. Be aware of union procedures.
3. Be aware of workers' compensation regulations.
4. Be aware of occupational health and safety regulations.
5. Be aware of employment insurance regulations
6. Be aware of workers' rights.
7. Be aware of human rights

COURSE OBJECTIVES (KNOWLEDGE):

1. Meetings
    a. Explain preparation requirements prior to conducting a meeting
    b. Explain the procedures for conducting a meeting.
    c. Explain participation in meetings.
    d. Explain the purpose of motions.
    e. Explain the procedure to delay discussion of motions.
    f. Explain how to amend and vote upon a motion.

2. Unions
    a. Why do unions exist?
    b. Give a concise description of the history of Canadian labour.
    c. How do unions work?
    d. Explain labour's structure.
    e. Describe labour's social objectives.
    f. Describe the relationship between Canadian labour and the workers.
    g. Describe the involvement of women in unions.

3. Worker's Compensation
    a. Describe the aims, objectives, benefits and regulations of the Workers Compensation Board.
    b. Explain the internal review process.

4. Occupational Health and Safety
    a. Describe the rules and regulations directly related to your occupation.

5. Employment Insurance Regulations
    a. Explain employment insurance regulations
    b. Describe how to apply for employment insurance.
    c. Explain the appeal process.

6. Worker's Rights
    a. Define labour standards.
    b. Explain the purpose of the Labour Standards Act.
    c. List regulations pertaining to:
        i. Hours of work.
        ii. Minimum wage.
        iii. Employment of children.
        iv. Vacation pay

7. Human Rights
    a. Describe what information cannot be included on an application.
    b. Describe what information cannot be included in an interview

c. Why is there a Human Rights Code?
d. Define sexual harassment.

MAJOR TASKS / SUB-TASKS (SKILLS):

1. Participate in meetings.
   a. Follow the form of getting a motion on the floor
   b. Discuss a motion
   c. Amend a motion
   d. Vote on a motion.

2. Complete a safety inspection of your shop.

3. Complete an employment insurance application form.

4. Write a letter of appeal.

5. Analyze a documented case of a human rights complaint with special emphasis on the application form, time-frame, documentation needed, and legal advice available.

EVALUATION:

Required Pass Mark 70%

DEVELOPMENT HISTORY:

Date Developed:
Date Revised: April, 1999

NAME AND NUMBER: Job Search Techniques SD 1710

DESCRIPTIVE TITLE: Job Search Techniques

PREREQUISITES: None

CO-REQUISITES: None

SUGGESTED DURATION: 15 hrs.

EVALUATION: Theory and Practical Applications Require a Pass Mark of 70%.

COURSE OBJECTIVES (KNOWLEDGE):

1. Examine and Demonstrate Elements of Effective Job Search Techniques
    - Identify and examine employment trends and opportunities
    - Identify sources that can lead to employment
    - Discuss the importance of fitting qualifications to job requirements
    - Discuss and demonstrate consideration in completing job application forms
    - Establish the aim/purpose of a resume
    - Explore characteristics of effective resumes, types of resumes, and principles of resume format
    - Explore characteristics of and write an effective cover letter
    - Explore, and participate in a role play of a typical job interview with commonly asked questions and demonstrate proper conduct
    - Explore other employment related correspondence
    - Explore the job market to identify employability skills expected by employer
    - Conduct a self-analysis and compare with general employer expectations

DEVELOPMENT HISTORY:

Date Developed:
Date Revised: 1999 05 03

NAME AND NUMBER: Entrepreneurial Awareness SD 1720

DESCRIPTIVE TITLE: Entrepreneurial Awareness

PREREQUISITES: None

CO-REQUISITES: None

SUGGESTED DURATION: 15 hrs

EVALUATION: Theory and Practical Applications Require a Pass Mark of 70%.

COURSE OBJECTIVES (KNOWLEDGE):

1. Explore Self-Employment: An Alternative to Employment
    - Identify the advantages and disadvantages of self-employment vs. regular employment
    - Differentiate between an entrepreneur and a small business owner
    - Evaluate present ideas about being in business

2. Explore the Characteristic of Entrepreneurs
    - Identify characteristics common to entrepreneurs
    - Relate their own personal characteristics with those of entrepreneurs.
    - Evaluate their present ideas about business people

3. Identifying Business Opportunities
    - Distinguish between an opportunity and an idea.
    - List existing traditional and innovative business ventures in the region.
    - Explain the general parameters between which business ventures should fit.
    - Summarize the role of such agencies Regional Economic Development Boards, Business Development Corporations, etc.
    - Identify potential business opportunities within the region.

4. Demystifying the Entrepreneurial Process.
    - Explain the entrepreneurial process
    - Describe the purpose of a business plan

- Identify the main ingredients of a business plan
- Summarize the role of such agencies as BDC's, ACOA, Women's Enterprise Bureau etc.
- List other agencies where assistance - financial and otherwise - is available to those interested in starting a business venture.

REQUIRED WORK EXPERIENCES

Provincial Certification requires that all Apprentices obtain appropriate industry based work experiences. The required work experiences identified in this section are written in the broadest

terms so as to ensure the apprentices receive experiences in each of the required areas and to ensure that employers have a degree of flexibility in applying the terms and conditions implicit in a Contract of Apprenticeship. What is important is that both the apprentice and the employer understand the obligations laid out in this plan of training which is designed to ensure that at the completion of both the technical training and the required hours of work experience the apprentice has both the knowledge and the skills necessary to successfully complete the Provincial Examination.

REQUIRED WORK EXPERIENCES:

Follow safety regulations, assess variable conditions (road, vehicle, driver, weather, power lines, plan strategies, operate equipment, prevent emergencies.

Follow manufacturers recommendations for the maintenance of equipment and adjustment of components.

Become aware of, interpret, integrate, and gain experience with the implementation of regulations and emergency procedures.

Inspect, start up, and manoeuvre bulldozers; plan strategies, cut and spread, winch, rip, push, slope and bench, excavate and strip, and shut down machine.

Inspect, start up, and manoeuvre graders; plan strategies, grade, scarify, spread, ditch, shoulder, finish, remove snow, and shut down machine.

Inspect, start up, and manoeuvre excavator; plan strategies, ditch, excavate, load trucks, lift, slope and bench, strip, and shut down machine.

Inspect, start up, and manoeuvre bachoe; plan strategies, ditch, excavate, load trucks, lift, slope and bench, strip, and shut down machine.

Inspect, start up, and manoeuvre front end loaders; plan strategies, dig and dump, excavate, load trucks, doze, lift slope and bench, stockpile, remove snow, and shut down machine.

Inspect, start up, and manoeuvre off road / tandem dump trucks; plan strategies, change gears, position, haul, dump, drive, and shut down machine.