A PLAN OF TRAINING

FOR

MOTOR VEHICLE BODY REPAIRER (METAL & PAINT)

OCCUPATION

Approved by
Provincial Apprenticeship Board

April, 1997
Revised June, 2000

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 Contract of Apprenticeship 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 an interprovincial examination. Passing this examination will result in the apprentice receiving Red Seal Certification which gives the journeyperson national mobility of 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 Red Seal 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 apprentice able occupation as a career choice will receive high quality training and thus will be prepared to compete for jobs worldwide.

_____ _____

Chair, Provincial Apprenticeship Board 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 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 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 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 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 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 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 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 Education within 30 days of the decision.

REQUIREMENTS FOR RED SEAL CERTIFICATION
IN THE MOTOR VEHICLE BODY REPAIRER (METAL & PAINT) 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 7200 hours

   Or

   Have a total of 9000 hours of suitable work experience.

3. Completion of a National Red Seal 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 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 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 Board

- to set policies to ensure that the provisions of the Apprenticeship Training 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.

SUGGESTED COURSE LAYOUT FOR THE MOTOR VEHICLE BODY REPAIRER (METAL & PAINT) OCCUPATION

Program & Apprenticeship Registration

ENTRY LEVEL COURSES

AB1400 - Motor Vehicle Body Repairer (Metal & Paint)Fundamentals	75hrs.
WD1210 - Oxy-Fuel Cutting and Welding	60hrs.
AB1130 - Metal Panel Repair	90hrs.
AB1210 - Non-Integral Components I	75hrs.
AB1320 - Corrosion.	45hrs.
AB1220 - Surface Preparation	120hrs.
AB1211 - Non-Integral Components II	75hrs.
AB1140 - Glass	60hrs.
WD1130 - GMAW Fundamentals	.45hrs.
MV1240 - Steering and Suspension	75hrs.
AB1500 - Position Welding (GMAW) for Motor Vehicle Body Repairer (Metal & Paint)Repair	45hrs.
AB1230- Paint I	60hrs.
OT1210 - On-the-Job Training	60hrs.
*CM2150 - Work Place Correspondence	45hrs.
*MC1050 - Intro into Computers	30hrs.
*SP2330 - QA/QC	30hrs.
*MR1210 - Customer Service	30hrs.
*SD1700 - Workplace Skills	30hrs.
*SD1720 - Entrepreneurial Awareness	15hrs.
*SD1710 - Job Search Techniques	15hrs.

*Note: Related courses must be completed during the entry level

Required Work Experience(*if applicable)*

Required Work Experience

ADVANCED LEVEL COURSES

AB1330 - Uni-Body & Frame Repair	90hrs.
AB1340 - Structural Panel Repair	90hrs.
AB1150 - Non-Metal Panel Repair	90hrs.
AB1410 - Mechanical Components	90hrs.
MV1400 - Body Electrical Circuits	90hrs.
AB1180 - Estimating & Appraisal	45hrs.
AB1231 - Paint II	90hrs.

Journeyperson Certification

TECHNICAL COURSE OUTLINES

NAME & NUMBER AB1400 - Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

DESCRIPTION

This general studies course requires the use of safety equipment, tools, fasteners, shop equipment and facilities and manuals. It involves the development of safety practices in the operation and maintenance of shop tools, equipment and facilities.. It includes information on general safety regulations, occupational health and safety, and fire prevention and suppression.

MAJOR TOPICS/TASKS

Practice safety; Complete a St. John's Ambulance Standard First Aid Course; Complete a Workplace Hazardous Materials Information Systems Course; Use and maintain gripping and turning tools, measuring devices and levels; Use and maintain flaring tools; Use and maintain cutting tools; Use and maintain threading devices; Install fasteners; Safely and effectively use, maintain and store pullers, drivers and presses; Solder metals; Use power tools; Drill materials; Cut metals (power); Grind and finish metals; Use and maintain compressed air system; Use and maintain shop equipment

PURPOSE / AIMS

1. To gain an appreciation of the need for safety regulations in the operation and maintenance of shop tools, equipment and facilities
2. To be able to administer first aid and CPR
3. To develop an awareness of hazardous workplace materials

PREREQUISITES None

COURSE DURATION hrs

LEARNING RESOURCES

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

DATE DEVELOPED March 1998

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Practice safety
   a. List general workplace safety regulations
   b. List fire safety regulations
   c. Describe the operation and uses of different types of fire extinguishers
   d. Explain the safety standards prescribed by the Occupational Health and Safety

Regulations
- e. Interpret occupational safety code
- f. Apply safe work habits at all times
- g. Use and maintain personal safety equipment
- h. Implement exhaust control procedures
- i. Use fire fighting equipment
- j. Respect noise level regulations
- k. Reduce factors that contribute to spontaneous combustion
- l. Identify potential hazards to personal safety
- m. Check for unsafe conditions
- n. Report accident

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

3. Complete a Workplace Hazardous Materials Information Systems Course

4. Use and maintain gripping and turning tools, measuring devices and levels
   - a. Describe the pliers (all types), screwdrivers (all types), wrenches (all types), clamps (all types) and vices (all types) used for fitting and assembling as per assigned information to within specifications required
   - b. Describe the use of the different types of precision measuring tools
   - c. Use measuring tools (measuring tapes, rules, scale rules, calipers, micrometers, gauges, straight edges, plumb bobs, squares, and calculators) and levels
   - d. Use pliers, screwdrivers, wrenches, torque multipliers, hammers and mallets and other gripping and turning tools
   - e. Use torque wrench
   - f. Use scribers and markers

5. Use and maintain flaring tools
   - a. Describe types of tubing and flaring tools and explain the application of each
   - b. Single and double flare tubing
   - c. Bend tubing
   - d. Measure and cut tubing
   - e. Use compression fittings
   - f. Anneal tubing before flaring as may be necessary
   - g. Test and inspect flared fittings

6. Use and maintain cutting tools
   - a. Identify, maintain and use punches, chisels, files and saws
   - b. Sharpen chisels and twist drills and drill bits
   - c. Shape and sharpen a cold chisel
   - d. Maintain and store cutting tools
   - e. Cut sheet metal
   - f. Make bench projects
   - g. Cut bolts

h. Drill and ream holes

7. Use and maintain threading devices
   a. Explain the purpose of threading taps and dies
   b. Select and safely use proper tools for given job
   c. Maintain threading tools
   d. Make an internal thread
   e. Make and external thread
   f. Restore damaged thread
   g. Remove broken screw
   h. Use tap and drill chart

8. Install fasteners
   a. Describe safety requirements for using hand tools and fasteners
   b. Describe the different types of fasteners
   c. Explain oxidation, corrosion, tensile strength and shear strength
   d. Describe the types of fastener tools
   e. Describe as per the assigned information, rivets, keys, nuts, screws, pins, splines, studs, bolts, snaprings, bonds (thread locking compounds), washers, lock wires and self-locking nuts
   f. Use and identify fasteners such as rivets, nails, sheet metal screws, bolts, nuts, washers
   g. Describe specific uses for each fastener
   h. Recognize sizes of fasteners
   i. Rivet and soft solder lap joint in galvanized sheet
   j. Torque bolts
   k. Identify bolt grades
   l. Identify miscellaneous anchoring devices

9. Safely and effectively use, maintain and store pullers, drivers and presses
   a. Describe types and explain the uses of pullers, drivers and presses

10. Solder metals
   a. Describe soldering tools, materials and applications
   b. Describe methods of tinning and soldering
   c. Describe types of solders
   d. Select solder and heating unit
   e. Solder wire connections, sheet metal, and copper fittings and tubing
   f. Shut down and store equipment

11. Use power tools
   a. Describe the different types of power tools
   b. Describe types of hydraulic and pneumatic lines and fittings and explain their applications
   c. Describe the different types of hydraulic tools

d. Describe safety requirements for using power tools
e. Operate portable power tools
f. Operate treading machines
g. Operate power cleaning equipment
h. Operate hydraulic punches, pullers, drivers and presses

12. Drill materials
    a. Describe the parts of a twist drill
    b. Describe drill sizes and speed requirements
    c. Describe types and uses of reaming tools
    d. Safely and effectively operate power drilling equipment (hammer and portable drill)
    e. Select and use cutting fluids
    f. Identify and select clamping devices
    g. Maintain drilling equipment

13. Cut metals (power)
    a. Safely and effectively use power operated saws, friction cut-off equipment and shears
    b. Maintain metal cutting power tools
    c. Identify and use abrasives

14. Grind and finish metals
    a. Explain the purpose of cutting power tools
    b. Describe types and explain applications of:
        i. portable and stationary grinders
        ii. grinding wheels
        iii. grinding discs
        iv. grinder dressers
        v. rotary wire brushes
    c. Install grinding wheel disc and brush
    d. Adjust tool rest
    e. Dress grinding wheel
    f. Safely and effectively operate stationary and portable grinders
    g. Maintain equipment

15. Use and maintain compressed air system
    a. Describe types of compressors and components
    b. Demonstrate safety precautions when using and maintaining compressors
    c. Identify components of air controller (transformer)
    d. Use and maintain air controller (transformer)
    e. Use and maintain air and fluid hoses

16. Use and maintain shop equipment
    a. jacks

b. shop cranes
c. chain hoists
d. steam cleaner
e. solvent cleaning tanks

NAME & NUMBER AB1210 - Non-Integral Components I

DESCRIPTION

This course in Motor Vehicle Body Repairer (Metal & Paint)repair requires the use of basic tools and equipment. It involves removing, replacing and adjusting non-integral components. It includes information on hoods, trunk covers, doors, bolt-on panels and tailgates.

MAJOR TOPICS/TASKS

Replace and adjust hinges; Replace and adjust latches and strikers; Exterior Trim; Adjust moveable glass; Replace door shell and components; Replace and adjust sheet metal bolt-on panels; Service tailgates

PURPOSE / AIMS

1. To develop the skills and knowledge required for maintaining and repairing non-integral automobile components
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection

PREREQUISITES AB1400 - Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

COURSE DURATION 75hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair and Refinishing

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

DATE DEVELOPED March 1998

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Replace and adjust hinges
    a. Describe types of hinges and explain methods of removal and installation
    b. Remove hinges from hinge pillars and check pins and bushings
    c. Replace pins and bushings if necessary
    d. Replace door on vehicle and align

2. Replace and adjust latches and strikers
   a. Describe the types of latches and strikers
   b. Remove latch and check working components
   c. Remove striker plate
   d. Replace latch and adjust striker plate

3. Exterior Trim

4. Adjust moveable glass
   a. sliding
   b. swinging

5. Replace door shell and components
   a. Describe different types of doors and components
   b. Remove and disassemble door
   c. Replace door shell and all internal parts
   d. Replace and adjust door in vehicle

6. Replace and adjust sheet metal bolt-on panels
   a. Describe the types of bolt-on panels
   b. Remove bolt-on panels
   c. Replace and adjust bolt-on panels

7. Service tailgates
   a. Describe the components and explain the operation of tailgates
   b. Check, lubricate and adjust components
   c. Adjust tailgate

NAME & NUMBER AB1211 - Non-Integral Components II

DESCRIPTION

This course in Motor Vehicle Body Repairer (Metal & Paint)repair requires the use of tools and equipment. It involves removing, replacing and adjusting non-integral components and eliminating leaks, wind noises, rattles and squeaks.

MAJOR TOPICS/TASKS

Replace interior trim panels; Replace and adjust seat assemblies; Replace carpet and seat belt assemblies; Remove and replace head liners; Locate and repair leaks; Locate and repair rattles and squeaks; Locate and eliminate wind noises

PURPOSE / AIMS

1. To develop the skills and knowledge required for advanced maintenance and repair of non-integral automobile components
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection

PREREQUISITES AB1210 - Non-Integral Components I

COURSE DURATION 75hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair & Finishing

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

DATE DEVELOPED March 1998

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Replace interior trim panels
   a. Describe the types of trim, fastening devices and panels
   b. Prepare panel for installation
   c. Check fasteners for condition and alignment
   d. Install panel and hardware

2. Replace and adjust seat assemblies
   a. Describe the types of seats and explain aligning techniques and tools used
   b. Use protective covers on seat upholstery

c. Remove and replace rear seat
d. Remove and replace front seat
e. Lubricate and check alignment of front seat track mechanism

3. Replace carpet and seat belt assemblies
   a. Describe types of carpet and seat belt assemblies
   b. Remove interfering parts to make carpet accessible for removal
   c. Replace carpet
   d. Replace seat belts
   e. Replace removed parts to complete installation

4. Remove and replace head liners
   a. Describe types of head liners and explain methods of attachment
   b. Remove interior mouldings, courtesy lights as required
   c. Remove head liner
   d. Install head liner
   e. Install moulding, courtesy lights as applicable

5. Locate and repair leaks
   a. Explain likely sources of leaks and their repair
   b. Apply water to suspected area with water hose
   c. Repair leak:
      i. reseal fixed glass
      ii. adjust doors on weather stripping
      iii. re-test with water

6. Locate and repair rattles and squeaks
   a. Explain the cause of rattles and squeaks
   b. Describe procedure for locating rattles and squeaks
   c. Perform visual inspection of vehicle for possible rattles or squeaks
   d. Road test vehicle, with assistant, over rough road
   e. After locating problem proceed with appropriate repairs using sealing compounds, tightening bolts or weld repair when necessary

7. Locate and eliminate wind noises
   a. Explain reasons for wind noises and methods of repair
   b. Road test car

   c. Localize area of noise:
      i. body leaks
      ii. wind over mouldings, etc
   d. Mask suspected areas and retest:
      i. body leaks by pressurizing
      ii. outside noises by road test

e. Repair:
    i. windows, vents adjusted or new weather stripping
    ii. outside sources tightened or sealed
f. Check validity or repair

8. Explain manufactures procedures for disarming an airbag system

NAME & NUMBER AB1140 - Glass

DESCRIPTION

This Motor Vehicle Body Repairer (Metal & Paint)repair course requires the use of basic tools and equipment. It involves removing, replacing and adjusting glass. It includes information on types of glass and mountings, and replacement techniques.

MAJOR TOPICS/TASKS

Replace fixed glass (rubber mounted); Replace fixed glass (adhesive mounted); Install moveable glass

PURPOSE / AIMS

1. To develop the skills and knowledge required for maintaining and replacing glass
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection.

PREREQUISITES AB1400 - Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

COURSE DURATION 60 hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair & Finishing

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

DATE DEVELOPED February 1994

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Replace fixed glass (rubber mounted)
    a. Describe types of fixed glass and explain the replacement procedure for the rubber mounted type
    b. Prepare vehicle:
        i. protect interior and exterior of vehicle
        ii. remove mouldings and wipers if applicable
        iii. disconnect window defrost if applicable
    c. Loosen weatherstrip around glass with non-metallic tool
    d. Remove glass from opening
    e. Clean to check opening for damage

f. Install glass:
   i. place weatherstrip on glass
   ii. insert pull strings into flange groove
g. Seal for leaks
h. Install mouldings and wipers if applicable
i. Connect window defrost if applicable

2. Replace fixed glass (adhesive mounted)
   a. Describe types of fixed glass and types of adhesive
   b. Explain the replacement procedure for the adhesive mounted glass
   c. Prepare vehicle:
      i. protect interior and exterior of vehicle
      ii. remove mouldings and wipers if applicable
      iii. disconnect defrost if applicable
   d. Select appropriate method of installation:
      i. long method
      ii. short method
   e. Cut adhesive using:
      i. tempered wire
      ii. knife
   f. Remove glass
   g. Apply adhesive:
      i. urethane caulking
      ii. butyl tape
   h. Install glass
   i. Check for leaks
   j. Install moulding and wipers and connect defrost if applicable

3. Install moveable glass
   a. Describe types of movable glass and explain replacement procedures
   b. Remove inner door trim and hardware
   c. Remove glass:
      i. glued-in channel
      ii. bolted to regulator
   d. Lubricate regulator mechanism, if necessary
   e. Install glass

NAME & NUMBER AB1320 - Corrosion

DESCRIPTION

This course is intended to provide students with the skills and knowledge required to identify corrosion and restore corrosion protection. It involves applications of corrosion protection products, and care and use of equipment required for corrosion protection.

MAJOR TOPICS/TASKS

What is Corrosion; Causes for Loss of Factory Protection; Anti-Corrosion Materials; Corrosion Surface Preparation; Corrosion Treatment Areas; Exterior Accessories; Acid Rain Damage/ Industrial Fallout; Restoring Corrosion Protection to Paint Finish

PURPOSE / AIMS

1. To develop the skills and knowledge required to identify and define corrosion and apply corrosion protection.
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection

PREREQUISITES None

COURSE DURATION 45 hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair and Refinishing

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

DATE DEVELOPED February 1999

COURSE OUTLINE / LEARNING OBJECTIVES:

1. What is Corrosion
   a. Identify corrosion
   b. Define corrosion in steel
   c. Describe factors involving rust formation

2. Causes for Loss of Factory Protection
   a. Identify paint film failure
   b. Explain collision damage and protection
   c. Explain repair process for factory protection

3. Anti-Corrosion Materials
   a. Identify anti-corrosion compounds
   b. Apply body sealer or sealant
   c. Apply anti-rust agents

4. Corrosion Surface Preparation
   a. Clean surface to remove contaminants
   b. Apply metal conditioner
   c. Apply conversion coatings

5. Corrosion Treatment Areas
   a. Identify enclosed interior surfaces
   b. Identify exposed interior surfaces
   c. Identify exposed joints
   d. Identify exposed exterior surfaces

6. Exterior Accessories
   a. Describe exterior accessories
   b. Identify dissimilar metal components
   c. Drill mounting holes in new parts
   d. Apply corrosion protection to mounting holes

7. Acid Rain Damage/ Industrial Fallout
   a. Identify acid rain/ industrial fallout
   b. Identify paint damage
   c. Remove acid rain damage from surface

8. Restoring Corrosion Protection to Paint Finish
   a. Describe steps for cleaning and neutralizing outer paint surface
   b. Clean with wax and grease remover
   c. Apply hand polishing compound to surface
   d. Buff polish with polishing pad
   e. Apply surface protection

NAME & NUMBER AB1220 - Surface Preparation

DESCRIPTION

This course in Motor Vehicle Body Repairer (Metal & Paint)repair requires the use of basic tools, equipment, materials and supplies. It involves cleaning, sanding, masking, conditioning, undercoating, preparing the finish and painting. It includes information on surface preparation methods and techniques, types of paints and finishes, and problems encountered.

MAJOR TOPICS/TASKS

Describe paints; Mask off areas; Strip paint; Remove grease and dirt from surfaces; Prepare paint booth; Apply undercoats; Fine sand and feather edge repairs; Prepare spray equipment for painting; Condition metal for priming; Prepare finish for paints

PURPOSE / AIMS

1. To develop the skills and knowledge required for metal and plastic surface preparation
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection.

PREREQUISITES AB1400 - Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

COURSE DURATION 120 hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair and Finishing

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

DATE DEVELOPED March 1998

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Describe paints
   a. Describe the types of paints
   b. Explain base coat/clear coat finishes

2. Mask off areas
   a. Describe masking techniques
   b. Determine and identify areas to be masked

c. Clean component to be masked
d. Apply paper and masking tape to designated areas

3. Strip paint
   a. Describe stripping methods
   b. Identify area to be stripped and method to be used
   c. Apply chemical stripper
   d. Remove stripped paint and wash surface with solvent
   e. Use sand blasting equipment

4. Remove grease and dirt from surfaces
   a. Describe cleaning solvents, methods used and need to remove
   b. Wash car with water to remove water soluble contaminants
   c. Apply solvent and clean surface

5. Prepare paint booth
   a. Explain the need for cleanliness in paint booth
   b. Wash floors, check filters, lighting and exhaust systems
   c. Drain air line system

6. Apply undercoats
   a. Describe types of undercoats and explain the purpose of each
   b. Examine old finish to determine type and condition
   c. Prepare surface
   d. Prepare undercoats
   e. Apply undercoats

7. Fine sand and feather edge repairs
   a. Explain the need for feather-edging
   b. Describe the types of abrasives
   c. Identify the area and need for feather-edging
   d. Sand surfaces using hand and power techniques

8. Prepare spray equipment for painting
   a. Describe the types of spray guns and components
   b. Check air pressure and drain transformer
   c. Fill spray cup and set up gun for spraying
   d. Clean gun and cup after spraying

9. Condition metal for priming
   a. Describe metals and types of conditioners required
   b. Condition metal for priming
   c. Prepare conditioner (different types)
   d. Apply metal conditioner to surface
   e. Wipe surface with a clean cloth

10. Prepare finish for paints
    a. Describe materials and procedures for preparing finish
    b. Blow dust from moulding, etc.
    c. Wash surfaces with solvent
    d. Tack surfaces

NAME & NUMBER AB1230 - Paint I

DESCRIPTION

This Motor Vehicle Body Repairer (Metal & Paint)repair course requires the use of tools, equipment, materials and supplies. It involves preparing, cleaning, tacking, and applying sealer and top coat. It includes information on polishing compounds, types of paints and lacquers, application techniques, base coat/clear coat finishes, solvents, additives, hardeners and stripes and decals.

MAJOR TOPICS/TASKS

Blend and spot paint surfaces; Perform final clean-up for customer delivery; Diagnose paint and spray equipment problems; Compound paint; Apply enamel paints; Apply lacquer paints; Apply base coat/clear coat finishes; Install stripe and decal kits

PURPOSE / AIMS

1. To develop the skills and knowledge required for painting motor vehicles
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection.

PREREQUISITES AB1400 - Motor Vehicle Body Repairer (Metal & Paint)Fundamentals
AB1220 - Surface Preparation

COURSE DURATION 60 hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair and Finishing

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

DATE DEVELOPED March 1998

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Blend and spot paint surfaces
    a. Explain why areas need spot painting
    b. Identify areas that require spot painting and blending through analysis and inspection
    c. Determine type of paint required
    d. Sand damaged area
e. Compound adjacent area

f. Paint and blend in area
g. Compound and polish for lacquer, clear coat to edge of panel for base coat/clear coat system

2. Perform final clean-up for customer delivery
   a. Explain why areas consistently require attention and cleaning after repairs and painting
   b. Identify areas that consistently require attention and cleaning after repairs and painting
   c. Remove all masking material
   d. Remove paint over-spray from glass, chrome and unpainted areas as necessary
   e. Clean all glass, chrome and unpainted areas
   f. Vacuum and clean inside of vehicle
   g. Determine that all mouldings, wheel covers, etc., are installed

3. Diagnose paint and spray equipment problems
   a. Describe the different types of paint problems and spray equipment problems
   b. Identify:
      i. paint problems
      ii. spray equipment problems
   c. Repair paint problem caused by improper preparation of surface and repaint
   d. Repair paint problem caused by poor spraying technique and repaint
   e. Clean or adjust equipment to correct problem

4. Compound paint
   a. Describe polishing compounds and explain the need and application of same
   b. Apply compound and polish surfaces:
      i. by hand
      ii. by power

5. Apply enamel paints
   a. Describe types of enamel paint, additives, hardeners, and solvents
   b. Prepare surface for painting
   c. Dilute paints
   d. Add hardeners and other additives as required
   e. Apply paint to surface

6. Describe lacquer paints
   a. Describe the types of lacquer paints, additives and solvents
   b. Describe the procedures for application
   c. Describe surface preparation for painting

7. Apply base coat/clear coat finishes

a. Describe types of base coat/clear coat systems, solvents and additives
b. Identify vehicle that requires base coat/clear coat finish
c. Prepare surface for painting
d. Dilute base coat (colour)
e. Apply base coat (colour)
f. Apply clear coat

8. Install stripe and decal kits
   a. Describe the types of striping and decals available
   b. Use hot air gun and scraper blade to remove old stripe or decal
   c. Use solvent to remove adhesive traces
   d. Align and install new stripe or decal using masking tape or magnetic strip to help alignment

NAME & NUMBER AB1231 - Paint II

DESCRIPTION

This Motor Vehicle Body Repairer (Metal & Paint)repair course requires the use of tools, equipment, materials and supplies. It involves personal safety and health protection along with environmental awareness, colour variation and matching, painting plastics, industrial refinishing, tri-coats, express clears and troubleshooting.

MAJOR TOPICS/TASKS

Safety Procedures; Colour Variation; Colour Matching; Tri-Coat Colours; Painting Plastic Parts; Express Clear Coats; Industrial or Commercial Refinishing; Troubleshooting

PURPOSE / AIMS

1. To develop the skills and knowledge required for painting motor vehicles
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection

PREREQUISITES AB1230 - Paint I

COURSE DURATION 90 hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair and Finishing

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

DATE DEVELOPED February 1999

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Safety Procedures
   a. Follow shop safety practices and procedures
   b. Follow personal safety and health protection procedures
   c. Follow environmental protection procedures
   d. Follow fire protection procedures
   e. Acquire ASE Certification

2. Colour Variation
    a. Use OEM coloring
    b. Use spray equipment
    c. Use drying facilities
    d. Use refinish spray techniques
    e. Blend colours
    f. Use proper sanding grit and applications

3. Colour Matching
    a. Use test cards
    b. Use codes and their alternatives
    c. Use daylight or white light viewing
    d. Use value shading
    e. Follow manufacturer's recommendations
    f. Use gun setup techniques
    g. Apply colour matching

4. Tri-Coat Colours
    a. Use 3 Stage process
    b. Use Mica Pearl
    c. Use test cards
    d. Use spray equipment
    e. Apply Tri-Coat colours

5. Painting Plastic Parts
    a. Identify effects of static electricity
    b. Identify types of plastics
    c. Identify and use flexible paint additives
    d. Paint new plastic parts
    e. Repaint plastic parts

6. Express Clear Coats
    a. Determine drying time
    b. Identify and use additives
    c. Determine size of refinish area
    d. Apply express clear coats
    e. Determine delivery time

7. Industrial or Commercial Refinishing
    a. Identify types of vehicles
    b. Identify polyurethane and it's benefits
        i. 1 stage
        ii. 2 stage
    c. Identify types of equipment needed
    d. Apply materials
    e. Follow safety procedures

8. Troubleshooting
    a. Identify existing problems
    b. Identify “as-you-paint” problems
    c. Use solvents for flow out
    d. Sand colours
        i. Orange Peel
        ii. Over spray
        iii. Runs
    e. Use reverse masking for clear coats

NAME & NUMBER AB1130 - Metal Panel Repair

DESCRIPTION

This course in Motor Vehicle Body Repairer (Metal & Paint)repair requires the use of basic tools, equipment, materials and supplies. It involves analysis of damage, removal of obstructions and repairing the damage. It includes information on metal panel repair techniques, characteristics of metal, effects of heat on steel, and the types of damage and repairs required.

MAJOR TOPICS/TASKS

Use body hand tools; Unlock and shape metal to contour; Shrink metal; Pick and file metal; Fill damaged area with plastic filler; Tin and solder metal; Patch and reinforce metal

PURPOSE / AIMS

1. To develop the skills and knowledge required for maintaining and repairing metal panels
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection.

PREREQUISITES AB1400 - Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

COURSE DURATION 90 hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair and Finishing

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

DATE DEVELOPED February 1994

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Use body hand tools
   a. Explain the purpose of hammers, dollies, spoons, body files (all types), pry bars, sliding hammer, wire brush, sanding blocks, moulding tools and rivetting tools
   b. Use given tools
   c. Maintain tools

2. Unlock and shape metal to contour
    a. Describe the characteristics of sheet metal
    b. Apply unlocking and shaping techniques to:
        i. locate high and low spots
        ii. check curvature of metal

3. Shrink metal
    a. Explain the effects of heat on steel
    b. Explain direct and indirect damage
    c. Describe unlocking and shaping techniques
    d. Explain the reason for shrinking metal and describe the methods used
    e. Identify stretched metal.
    f. Prepare metal for shrinking
    g. Select tools required
    h. Apply shrinking methods to stretched metal
    i. Quench to control shrinking

4. Pick and file metal
    a. Explain the need to pick and file metal and explain the process
    b. File metal
    c. Pick metal to raise low spots
    d. Identify when area is to original contour

5. Fill damaged area with plastic filler
    a. Describe the types and applications of plastic fillers
    b. Prepare damaged area for filling
    c. Mix plastic filler
    d. Apply plastic filler
    e. Shape plastic filler to contour

6. Tin and solder metal
    a. Explain the purpose of solder filling
    b. Describe the properties of body solder
    c. Clean and prepare surface to be solder filled
    d. Tin area
    e. Apply solder filler
    f. Shape solder filler with paddle
    g. Use body file to shape material
    h. Use sandpaper to finish contour

7. Patch and reinforce metal
    a. Explain the need for patching or reinforcing metal and describe the types of patching installations
    b. Select material to be used
    c. Select installation method to be used:
        i. brazing

ii. fusion welding
iii. resistance spot welding
iv. gas metal arc welding
v. blind rivets

d. Preparations to install patch
e. Installation of patch
f. Sinking to enable filling to produce desired contour

NAME & NUMBER AB1340 - Structural Panel Repair

DESCRIPTION

This Motor Vehicle Body Repairer (Metal & Paint)repair course requires the use of basic tools, equipment, materials and supplies. It involves analysing damage, making measurements, removing damaged area of panel, and making repairs. It includes information on the construction of panels, bodies and frames; and replacement and alignment techniques.

MAJOR TOPICS/TASKS

Replace integral panels; Structural Glass; Structural Components; Repair structural panels.

PURPOSE / AIMS

1. To develop the skills and knowledge required for making structural repairs
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection.

PREREQUISITES AB1130 - Metal Panel Repair
AB1330 -Uni-Body and Frame Repair

COURSE DURATION 90 hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair and Finishing

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

DATE DEVELOPED March 1998

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Replace integral panels
    a. Describe the construction of various panels and explain replacement techniques
    b. Identify the need to replace integral panels:
        i. rust
        ii. collision
    c. Prepare vehicle
    d. Remove panel:
        i. by air chisel
        ii. by drilling spot welds

e. Straighten surrounding metal
f. Weld in replacement panel
g. Clean and prepare panel for refinishing:
    i. sealer on seams
    ii. rust proofing on undersides
    iii. primer on exterior exposed areas

2. Structural Glass
    a. Identify types of glass and their uses
        i. Laminated
        ii. Tempered
        iii. Glass Tints
        iv. Heated Glass
    b. Identify and use installation adhesives
        i. Types of adhesives
        ii. Strength of adhesives
        iii. Primers
        iv. OEM Recommendations
    c. Remove and install structural glass
        i. Liability
        ii. Methods of glass removal
        iii. Proper installation
        iv. Cure time
        v. Removal and installation of moldings

3. Structural Components
    a. Identify structural components and their uses
        i. Design for energy management
        ii. Reinforced areas
        iii. Structural integrity
        iv. Inner construction
        v. Outer sheet metal or SMC
        vi. Coining
        vii. Types of metal and where it is used
        viii. Corrosion protection

4. Repair structural panels.
    a. Analyse Damage
    b. Follow manufacturer's specifications
    c. Repair or replace panel
    d. Measure and align panel
    e. Sectioning
    f. Factory joins
    g. Welding and bonding
    h. Corrosion protection

NAME & NUMBER AB1150- Non-Metal Panel Repair

DESCRIPTION

This Motor Vehicle Body Repairer (Metal & Paint)repair course requires the use of basic tools, equipment, materials and supplies. It involves analysing damage, cleaning, preparing and repairing non-metal panels. It includes information on types of bondable plastics and bonding methods, repair techniques, and plastic and fibreglass fillers.

MAJOR TOPICS/TASKS

Describe non-metal materials and describe repair techniques; Perform plastic welding and bonding; Repair and fill fibreglass panels; Repair polyplastic compounds; Fill damaged area with plastic filler

PURPOSE / AIMS

1. To develop the skills and knowledge required for maintaining and repairing non-metal panels
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection.

PREREQUISITES AB1400 - Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

COURSE DURATION 90 hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair and Finishing

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

DATE DEVELOPED February 1994

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Describe non-metal materials and describe repair techniques

2. Perform plastic welding and bonding
   a. Describe the basic types of bondable plastics
   b. Explain plastic welding and bonding methods
   c. Prepare plastic for bonding
   d. Set up and use plastic welder
   e. Use bonding method

3. Repair and fill fibreglass panels
    a. Describe the methods of fibreglass repair
    b. Identify fibre glass damage
    c. Prepare panel for repairs
    d. Repair and fill small damage on fibre glass panel

4. Repair polyplastic compounds
    a. Repair thermosetting plastic
    b. Prepare and check alignment
    c. Prepare and apply adhesive
    d. Complete repair
    e. Check repair of components

5. Fill damaged area with plastic filler
    a. Describe the types and applications of plastic fillers
    b. Prepare damaged area for filling
    c. Mix plastic filler
    d. Apply plastic filler
    e. Shape plastic filler to contour

NAME & NUMBER MV1400 - Body Electrical Circuits

DESCRIPTION

This electromechanical course requires the use of basic tools, shop equipment and test equipment. It involves disassembling and reassembling body electrical circuits; and inspecting, testing and repairing/replacing component parts and making adjustments. It includes information on the operation of different types of body electrical circuits and component parts.

MAJOR TOPICS/TASKS

Describe electrical concepts; Repair and replace vehicle lights; Replace and align headlight assemblies; Replace park and tail light assemblies; Service windshield wiper systems; Test and replace heater motors; Remove and replace instrument panel; Test and replace gauges and warning indicators; Service and repair rear defogger and horn; Replace car radios; Replace and charge batteries; Repair body electrical circuits; Remove and replace engine wiring harness; Repair occupant restraint system

PURPOSE / AIMS

1. To develop the skills and knowledge required for maintaining and repairing body electrical circuits
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection.

PREREQUISITES AB1400 - Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

COURSE DURATION 90 hrs

LEARNING RESOURCES

Ejavec, J. And Scharff, R., Automotive Technology, A Systems Approach; 2nd Edition, Nelson Canada. ISBN 0-8273-6724-4 (Text)

Ejavec, J. And Scharff, R. Automotive Technology, A Systems Approach; 2nd Edition. Nelson Canada. ISBN 0-8273-7588-3 (Workbook)

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

DATE DEVELOPED July 1996

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Describe electrical concepts
   a. electron theory
   b. basic circuits
   c. current
   d. voltage
   e. resistance
   f. Ohm's Law
   g. conductors
   h. insulators
   i. magnetism
   j. inductors
   k. capacitors
   l. transistors
   m. diodes

2. Repair and replace vehicle lights
   a. Describe types of lights and purposes
   b. Inspect lights
   c. Solder and tape wire splices
   d. Join wires with solder less connectors
   e. Replace bulbs and sealed beams
   f. Make circuit tests
   g. Replace fuses, terminals, circuit breakers and resistors

3. Replace and align headlight assemblies
   a. Describe types of headlight assemblies and explain the purpose for alignment
   b. Remove headlamp door, retainer, ring, seal beam, headlight pot and electric wires
   c. Check all hold in adjustment bolts, springs, etc., and replace if necessary
   d. Replace headlight assemblies
   e. Align headlights

4. Replace park and tail light assemblies
   a. Describe the types of park and tail light assemblies and methods of installation
   b. Remove tail and park light assemblies. Check fasteners
   c. Replace tail and park light assemblies
   d. Check light operation

5. Service windshield wiper systems
   a. Explain the operation of windshield wiper motors, transmission arms and blades
   b. Inspect windshield wiper assembly
   c. Remove snap on type arms
   d. Remove bolt on type arms
   e. Replace motor
   f. Replace switch
   g. Replace transmission arms
   h. Replace blade

i. Adjust wiper blade assembly
j. Inspect and replace windshield wiper washer pump and/or tank

6. Test and replace heater motors
   a. Locate and identify heater motor
   b. Test and replace motor
   c. Replace housing
   d. Replace switch
   e. Identify and specify the use of rear window defrosters

7. Remove and replace instrument panel
   a. Describe types and installation methods of instrument panels
   b. Disconnect battery and be aware of computer systems
   c. Drop steering wheel if required
   d. Remove lower plastic or metal panels to gain access (if applicable)
   e. Disconnect speedometer cable, wire harness
   f. Remove screws or nuts to permit removal of panel
   g. Replace panel, securing as required
   h. Reconnect speedometer wiring
   i. Refit steering wheel, access panels
   j. Reconnect battery
   k. Check that all instruments lights are working

8. Test and replace gauges and warning indicators
   a. Explain the operation of sending units, gauges and warning indicators
   b. Identify and isolate defective components
   c. Remove and replace fuel sending unit
   d. Remove and replace fuel gage
   e. Check circuit for open or short

9. Service and repair rear defogger and horn

10. Replace car radios
   a. Describe radio types and location in vehicle
   b. Remove dash panel, electrical connections, antenna lead and brackets
   c. Remove radio
   d. Install radio, replacing brackets, antenna lead and electrical connections
   e. Replace dash panel

11. Replace and charge batteries
   a. Describe the types and purposes of batteries
   b. Visually inspect batteries
   c. Remove and replace batteries

12 Repair body electrical circuits
   a Describe the operation body electrical circuits such as power seats, power

windows, etc.
- b. Remove and test power seats
- c Remove and test power windows
- d. Remove and replace power antennae
- e. Remove and replace power door locks
- f. Test and repair security systems
- g. Remove and replace keyless entry systems
- h. Remove and replace cruise control

13 Remove and replace engine wiring harness
- a Describe engine wiring harness
- b. Describe the use of the wiring harness
- c. Check harness for open circuit
- d Check harness for corrosion
- e. Repair wiring harness
- f. Repair connectors

14 Repair occupant restraint system
- a Describe the operation of the occupant restraint system.
- b. Describe the use of seat belt warning systems
- c. Replace seat belts
- d. Repair seat belt warning system
- e. Replace inflatable restraint system
- f. Replace inflatable restraint system sensors
- g. Test inflatable restraint system circuit
- h. Disable inflatable restraint system

NAME & NUMBER AB1410 - Mechanical Components

DESCRIPTION

Course provides training in inspection, removal, replacement and adjustment of mechanical systems required in Motor Vehicle Body Repairer (Metal & Paint)repair.

MAJOR TOPICS/TASKS

Vehicle Inspection and Damage Identification; Drive Train and Suspension Removal and Replacement; Drive Train and Suspension Collision Damage; Brake System Inspection; Interior Inspection after Collision Repairs; Restraint Systems; Front Wheel Alignment; Rear Wheel Alignment; Perform wheel alignment; Cooling and Air Conditioning Systems

PURPOSE / AIMS

1. To develop the skills and knowledge required for inspection, removal, replacement and adjustment of mechanical systems required in Motor Vehicle Body Repairer (Metal & Paint)repair
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations

PREREQUISITES AB1400 - Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

COURSE DURATION 90 hrs

LEARNING RESOURCES

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

DATE DEVELOPED February 1999

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Vehicle Inspection and Damage Identification
   a. Identify collision damage to vehicle
   b. Identify indirect damage
   c. Identify worn parts causing improper repair
   d. Identify liability
   e. Identify factory specifications
   f. Identify need for suspension and drive train alignment

2. Drive Train and Suspension Removal and Replacement
   a. Identify and describe function of

i. engine cradle
ii. engine mounts
iii. roll restrictors
iv. transmission cross-member
v. transmission mounts
vi. rear end trailing arms
vii. rear leaf springs
viii. rear coil springs
ix. tracking bar

3. Drive Train and Suspension Collision Damage
   a. Conduct visual inspection
   b. Check steering wheel
   c. Check tire wear
   d. Measure wheel base
   e. Check individual wheel position
   f. Check struts
   g. Check for previous worn parts
   h. Check wheel run out
   i. Check tracking
   j. Conduct 2 point 3 position check
   k. Check steering linkage

4. Brake System Inspection
   a. Explain what to look for
   b. Inspect brake drums and rotors
   c. Remove and replace brake parts
   d. Inspect anti-lock brakes
   e. Road test vehicle
   f. Identify manufacturer's specifications

5. Interior Inspection after Collision Repairs
   a. Consider
      i. Dash parts
      ii. Seats
      iii. Seat frames
      iv. Interior trim
      v. Steering columns
      vi. Lower steering shaft
      vii. Collapsible columns

6. Restraint Systems
   a. Inspect, remove and replace active restraint systems as per manufacturer's specifications
      i. Manual
      ii. Lap and shoulder belts

iii. Anchor bolts
iv. O Rings

b. Inspect, remove and replace passive restraint systems as per manufacturer's specifications
   i. Automatic shoulder belts (non-motorized)
   ii. Motorized seat belts
   iii. Air bag systems
   iv. Seat belt tension systems

c. Inspect restraint systems for collision damage
   i. Belts worn in collision
   ii. Speed of vehicle
   iii. Belt frayed or cut
   iv. Mechanical parts of belt assembly
   v. Seat buckles
   vi. Seat belt anchors
   vii. Retractors
   viii. Tensioners

d. Test restraint system for operation

e. Inspect air bags
   i. Explain design of air bags
   ii. Describe deployment functions
   iii. Identify parts of air bag systems
   iv. Conduct visual inspection

f. Remove and replace air bags
   i. Follow manufacturer's recommendations
   ii. Test systems
   iii. Carry out safety measures

7. Front Wheel Alignment
   a. Measure angles
   b. Describe
      i. Camber
      ii. Caster
      iii. Toe
      iv. Steering axis inclination
      v. Set back

8. Rear Wheel Alignment
   a. Identify tire wearing angles for the rear wheels of a vehicle
   b. Identify adjustment procedures for different vehicle designs
   c. Properly adjust rear wheel alignment angles using manufacturer's specifications

9. Perform wheel alignment
   a. Calibrate and use a wheel alignment machine
   b. Follow procedure for wheel alignment
   c. Complete a wheel alignment as per specifications

d. Determine if wheel alignment was completed successfully

10. Cooling and Air Conditioning Systems
    a. Describe the parts and functions of cooling and air conditioning systems
    2. Explain the proper recovery and disposal of refrigerants and coolants
    3. Explain the proper removal and installation of air conditioning and cooling system components

NAME & NUMBER AB1180 - Estimating and Appraisal

DESCRIPTION

This Motor Vehicle Body Repairer (Metal & Paint)repair course requires the use of specifications, manuals and estimate forms. It involves estimating parts and labour and calculating cost. It includes information on estimation techniques.

MAJOR TOPICS/TASKS

Describe types of estimation techniques; Extent of Damage; Repairable Parts; Repair Time; Irreparable parts and Replacement Cost; Shop Materials; Sub-Letting Work; Calculating Total Repair Costs.

PURPOSE / AIMS

1. To develop the skills and knowledge required for diagnosing damage and preparing a repair estimate
2. To develop the skills to use service information effectively

PREREQUISITES All other Motor Vehicle Body Repairer (Metal & Paint)Courses

COURSE DURATION 45 hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair and Refinishing

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

DATE DEVELOPED February 1994

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Describe types of estimation techniques
2. Extent of Damage
3. Repairable Parts
4. Repair Time
5. Irreparable parts and Replacement Cost
6. Shop Materials

7. Sub-Letting Work

8. Calculating Total Repair Costs.

NAME & NUMBER MV1240 - Steering and Suspension Systems

DESCRIPTION

This course is intended to provide the student with information that will assist them in understanding suspension and steering systems. It will show the relationship of the suspension system to handling, braking, steering and vehicle control. Topics will include wheels and tires, suspension systems, and components, steering components, steering system controls, power steering and diagnosis and testing.

MAJOR TOPICS/TASKS

Lubricants; Tires and Wheels; Wheel Bearings; Suspension Components; Steering Linkage; Manual Steering Systems; Power Steering Systems; Tilt and Telescopic Steering; Towing Service

PURPOSE / AIMS

This course includes theory and practical applications related to the components required for vehicle stability and steering control. Students will...

1. develop the skills and knowledge to maintain and repair medium duty steering and suspension system.
2. develop the skills to research and use service information effectively.
3. operate safely specialty tools related to steering and suspension systems.

PREREQUISITES AB1400- Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

COURSE DURATION 75hrs

LEARNING RESOURCES

Ejavec. J. And Scharff. R, Automotive Technology, A Systems Approach; 2nd Edition Nelson Canada. ISBN 0-8273-6724-4 (Text)

Ejavec. J and Scharff. R, Automotive Technology, A Systems Approach; 2nd Edition. Nelson Canada. ISBN 0-8273-7588-3 (Workbook)

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

DATE DEVELOPED October 1997

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Lubricants

a. Identify specific types of chassis lubricants.
b. Identify specific types of wheel bearing grease.
c. Identify power steering fluids.

2. Tires and Wheels
   a. Identify tube and tubeless tires.
   b. Describe different types of tire construction.
   c. Inspect and repair tires.
   d. Remove and replace tires.
   e. Identify tire ratings and designations.
   f. Identify different types of wheel construction.
   g. Remove and replace a wheel on a vehicle.
   h. Complete a tire and wheel run-out check.
   i. Explain the difference between static and dynamic balance.
   j. Properly balance a wheel and tire assembly.

3. Wheel Bearings
   a. Inspect, clean and re-pack wheel bearings.
   b. Replace and adjust wheel bearings to specification.
   c. Inspect and replace wheel bearing seals.
   d. Identify nut locking devices.
   e. Identify and explain hub unit type bearings.

4. Suspension Components
   a. Describe the types, purposes and replacement procedures of shocks.
      i. Conventional
      ii. Gas charged
      iii. Air
      iv. Electronically controlled
   b. Describe the types and operation of Macpherson Strut systems.
   c. Inspect and replace ball joints.
      i. Conventional
      ii. Wear indicator type
   d. Identify different suspension systems.
      i. Independent
      ii. Semi-independent
      iii. Short-long arm
      iv. Double wishbone
   e. Identify, replace and adjust control arms, stabilizer bars, strut rods and track bars.

   f. Identify, replace and explain the purpose for different types of springs.
      i. Coil
      ii. Torsion bar
      iii. Single leaf (mono)
      iv. Multileaf
      v. Air spring

vi. Fibre composite

5. Steering Linkage
   a. Explain the theory of a parallelogram linkage arrangement.
   b. Identify, replace and explain the operation of the components of a parallelogram system.
      i. Pitman arm
      ii. Idler arm
      iii. Links
      iv. Tie-rods
   c. Describe the similarities and differences between parallelogram and rack and pinion steering linkages.
   d. Explain the purpose and replacement procedure for steering dampers.
   e. Service steering linkage systems.

6. Manual Steering Systems
   a. Describe the function and operation of a manual steering.
   b. Inspect, service and adjust manual steering gear boxes.
   c. Explain the difference between rack and pinion versus recirculating ball gear boxes.

7. Power Steering Systems
   a. Explain the operation of a power steering system.
   b. Inspect, service and adjust power steering gear boxes.
      i. Recirculating ball
      ii. Rack and pinion
   c. Perform a power steering system pressure check.
   d. Follow diagnostic charts and repair according to the manufacturer's specifications.
   e. Repair or replace power steering pumps.
   f. Check fluid levels and perform belt tension checks.
   g. Identify electronically controlled power steering systems.
   h. Identify four wheel steer.

8. Tilt and Telescopic Steering
   a. Service and repair tilt and telescoping steering following manufacture's specifications.

9. Towing Service
   a. Identify safety procedures for lift or straight towing a vehicle.

NAME & NUMBER AB1330 Uni-Body & Frame Repair

DESCRIPTION

Course provides training for uni-body and frame repairs.

MAJOR TOPICS/TASKS

Align body and frames; Repair and replace frame components; Manufacturers specifications.

PURPOSE / AIMS

1. To develop the skills and knowledge required for maintaining and repairing unibodies and frames
2. To develop the skills to use service information effectively
3. To practice safety in potentially harmful situations
4. To develop an appreciation for environmental protection

PREREQUISITES WD1130 GMAW Fundamentals
AB1130 Metal Panel Repair
AB1400 Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

COURSE DURATION 90 hrs

LEARNING RESOURCES

Motor Vehicle Body Repairer (Metal & Paint)Repair and Finishing

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

DATE DEVELOPED March 1998

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Align body and frames
   a. Describe types of body and frame construction
   b. Explain aligning techniques
   c. Identify misalignment and describe repair procedure
   d. Prepare for alignment using safety techniques
   e. Measure and check alignment
   f. Determine misalignment
   g. Use frame measuring devices
   h. Hook up straightening equipment

i. Align frame

2. Repair and replace frame components.
   a. Identify frame components and their use
      i. Design for energy management
      ii. Crush zones
      iii. Offsets and kickups
      iv. Reinforced areas
      v. Torque boxes
      vi. Engine and suspension mounting parts
   b. Repair and Replace Frame Component Procedures
      i. Factory specifications
      ii. Design of components
      iii. Kink vs. bend
      iv. Repair or replace
      v. Sectioning frame components
      vi. Proper welding procedures
   c. Restore corrosion protection
      i. Before welding
      ii. Sectioning
      iii. Full replacement

3. Manufacturers specifications.
   a. Identify need for manufacturer's specifications
      i. Liability
      ii. Collision
      iii. Corrosion
   b. Identify type of frame construction and design
      i. Unibody
      ii. B.F.O.
      iii. Impact absorption
   c. Identify type of metal and location on vehicle
      i. Remove or replace
      ii. Proper procedure
   d. Recommend corrosion protection

NAME & NUMBER WD1210 - Oxy-Fuel Cutting & Welding

DESCRIPTION

This OFW course requires the use of welding equipment and accessories, materials and supplies and safety equipment. It involves setting up OFW equipment; preparing, cutting and welding metal; and shutting down, disassembling and storing equipment. It includes information on safety requirements, cylinder pressures, combustion and flames, storage and transporting of cylinders, and types of regulators.

MAJOR TOPICS/TASKS

Set-up and use welding equipment (OFW); Set up and use cutting equipment; Fusion weld (OFW); Braze weld metals (OFW); Assemble metals using brazing process

PURPOSE / AIMS

1. To develop the skills and knowledge required for welding metal structures with respect to various codes and standards
2. To practice safety in potentially harmful situations

PREREQUISITES AB1400-Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

COURSE DURATION 60hrs

LEARNING RESOURCES

Hobart Series
Welding Skills
New Brunswick Modules

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

DATE DEVELOPED December 1993

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Set-up and use welding equipment (OFW)
   a. Describe oxy-fuel equipment and components
   b. Explain lighting procedures and describe types of flame
   c. Demonstrate safety precautions when handling this equipment
   d. Set up, adjust equipment and check for leaks
   e. Light torch and make flame adjustments
   f. Shut down equipment and place in designated location

2. Set up and use cutting equipment
    a. Explain cutting procedures and equipment used
    b. List metals that can be cut and metals that cannot be cut
    c. Set up and adjust the cutting equipment for the assigned project
    d. Cut mild steel 90º FREEHAND
    e. Cut mild steel 90º GUIDED
    f. Cut mild steel at a 30º BEVEL FREEHAND
    g. Cut mild steel at a 30º BEVEL GUIDED
    h. Cut regular and irregular shapes FREEHAND
    i. Cut off bolt and/or nut FREEHAND (optional)

3. Fusion weld (OFW)
    a. Explain the procedure used to weld in the flat position
    b. Explain the steps in oxy-fuel welding
    c. Describe the types of metals that are suitable for the welding process
    d. Explain the steps in oxy-fuel cutting
    e. Describe types of flames, pressures and tip sizes and the application of each
    f. Prepare metal for welding
    g. Set up and adjust welding equipment
    h. Run fusion welding beads
    i. Weld mild steel single vee butt joint
    j. Weld mild steel open-corner butt joint
    k. Weld mild steel lap joint
    l. Fuse weld sheet metal

4. Braze weld metals (OFW)
    a. Describe braze welding processes as applied to various metals including cast iron
    b. Explain the purpose of filler metals in the brazing process
    c. Describe type of flame adjustment for brazing
    d. Prepare metal
    e. Set up and adjust welding equipment
    f. Tack weld metal
    g. Braze weld tee joint (m.s. in flat position)
    h. Braze weld butt joint (m.s. in flat position)
    i. Prepare and bronze weld cast iron
    j. Perform silver brazing

5. Assemble metals using brazing process
    a. Operate oxy-fuel equipment to assemble metals using the brazing process
    b. Prepare joints for brazing:
        i. 3/4 copper tee with fittings
        ii. tee joint (1/8x4x4 flat bar, m.s.)
    c. Braze tee joint 1/8x1x4 copper to mild steel
    d. Braze stainless steel tee joint (1/8x1x4"s.s.)

NAME & NUMBER WD1130 - GMAW Fundamentals

DESCRIPTION

This GMAW course requires the use of safety equipment, GMAW equipment and accessories, and materials and supplies. It involves setting up GMAW equipment, preparing and welding the joint, shutting down the equipment and testing the joint. It includes information on types of shielding gasses, power supplies, types of wire, methods of transfer, welding techniques, codes and standards, and GMAW parameters.

MAJOR TOPICS/TASKS

Describe the GMAW process methods; Disassemble and reassemble GMAW welding system; Fillet weld flat (GMAW); Fillet weld horizontal (GMAW); Butt weld flat (GMAW)

PURPOSE / AIMS

1. To develop the skills and knowledge required for welding metal structures with respect to various codes and standards
2. To practice safety in potentially harmful situations

PREREQUISITES AB1400-Motor Vehicle Body Repairer (Metal & Paint)Fundamentals

COURSE DURATION 45 hrs

LEARNING RESOURCES

Hobart Series
Welding Skills
New Brunswick Modules

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

DATE DEVELOPED February 1994

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Describe the GMAW process methods
   a. metal transfer
   b. power source constant current and potential
   c. polarity
   d. arc voltage
   e. slope and adjustment
   f. inductance

g. shielding gas and regulation
h. electrode wire
i. assembly of equipment
j. gun
k. feeder
l. welding variables and effects
m. electrode extension
n. welding voltage and current
o. travel speed
p. penetration
q. travel and work angles
r. manipulation
s. maintenance of tube
t. nozzle
u. cable
v. conduit pulsed arc machines

2. Disassemble and reassemble GMAW welding system

3. Fillet weld flat (GMAW)
   a. Describe shielding gas selection, drift and mixtures for steel, addition of carbon dioxide, electrode wires, wires for carbon steel, operating problems, work and travel angles, and gun manipulation
   b. Describe methods of establishing the arc and starting the weld, stopping the weld at the finishing end of the joint, shielding gas after or post weld flow, work and travel angles, and common faults
   c. Run stringer beads in a flat position on m.s. material
   d. Weld in a flat position (GMAW)
      i. "T" joint
      ii. lap joint

3. Fillet weld horizontal (GMAW)
   a. Run stringer beads in horizontal position m.s.
   b. Weld in horizontal position:
      i. "T" joint
      ii. lap joint

4. Butt weld flat (GMAW)
   a. Describe flat position butt welds, joint design fit up, defects commonly encountered, gun manipulation, and work and travel angles
   b. Weld in flat position:
      I. square butt joint
      ii. single vee butt joint
   c. Perform guided bend test on coupons

NAME AND NUMBER: AB1500 - Position Welding (GMAW) for Motor Vehicle Body Repairer (Metal & Paint) Repair

DESCRIPTION:

This GMAW course requires the use of safety equipment, GMAW equipment and accessories for welding light metals (110 volt MIG welder), and materials and supplies. It involves setting up GMAW equipment, preparing and welding the joint, shutting down the equipment and testing the weld. It includes information on types of welding machines, types of shielding gas, power supplies, types of wire, codes and standards, welding techniques, methods of transfer and GMAW parameters.

MAJOR TOPICS / TASKS:

Fillet weld vertical; Fillet weld overhead; Butt weld horizontal; Butt weld vertical; Butt weld overhead

PURPOSE / AIMS

1. To develop the skills and knowledge required for welding light metal structures with respect to various codes and standards.

2. To practice safety in potentially harmful situations.

PREREQUISITES: WD1130 Gas Metal Arc Welding Fund.

COURSE DURATION: 45 hrs

LEARNING RESOURCES:

Hobart Series
Welding Skills
New Brunswick Modules

EVALUATION:

Theory and practical applications require a pass mark of 70%

DATE DEVELOPED:

February 2000

COURSE OUTLINE / LEARNING OBJECTIVES:

1. Fillet weld light metals vertical (GMAW)
   a. Describe the GMAW process used on the vertical position such as work and

travel angle, gun manipulation, defects commonly encountered and effects of welding variables
- b. Run stringer beads in vertical position on m.s.
- c. Weld in vertical position
  - i. "T" joint
  - ii. Lap joint

2. Fillet weld light metals overhead (GMAW)
   - a. Describe the overhead position, the necessary position, the necessary safety, positioning of the joint, common defects encountered, gun manipulation, effects of welding variables on weld characteristics
   - b. Run stringer beads on overhead position
   - c. Weld in the overhead position
     - i. "T" joint
     - ii. Lap joint

3. Butt weld light metals horizontal (GMAW)
   - a. Describe horizontal butt welds, joint design, joint fit up, common defects, work and travel angles, gun manipulation, welding variables and characteristics
   - b. Weld butt joint:
     - i. Square butt joint
     - ii. Singles "V" joint
   - c. Perform guided bend test

4. Butt weld light vertical (GMAW)
   - a. Describe the vertical position butt weld joint design and fit up, common defects, work and travel angles, gun manipulation effects of welding variables and characteristics
   - b. Weld in vertical position:
     - i. Square butt
     - ii. Single vee
   - c. Perform guided bend test

5. Butt weld light metals overhead (GMAW)
   - a. Describe the butt weld in the overhead position, joint design and fit up, common defects, work and travel angles, gun manipulation, effects of welding variables and characteristics
   - b. Weld butt joint
     - i. Square butt joint
     - ii. Single "V" joint
   - c. Perform guided bend test

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.

EVALUATION

Required Pass Mark 70%

DEVELOPMENT HISTORY:

Date Developed:

Date Revised: 1999 05 03

COURSE NAME & 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 behaviours
- 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 NAME & NUMBER: Quality Assurance / Quality Control 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 / Subtasks (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 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 hrs

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. 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. 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. 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 NAME & 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.
   h. Explain the procedure to delay discussion of motions.
   i. 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 / Subtasks (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

Course Name & Number: Job Search Techniques SD1710

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

COURSE NAME & 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

National Red Seal 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 Red Seal Examination.

REQUIRED WORK EXPERIENCES:

Set up oxy-fuel welding equipment; prepare, cut, and weld metal; shut down and store equipment.

Set up gas metal arc welding equipment; prepare and weld metal; shut down equipment and test weld.

Clean, sand, mask, condition, undercoat, finish, and paint metal surfaces.

Remove, replace, and adjust non-integral components to eliminate leaks, wind noises, rattles, and squeaks.

Analyze damage, remove obstructions, and repair damage in metal panels.

Remove, replace, and adjust hardware and trim components.

Analyze damage, measure, remove damaged panel areas, and make repairs to structural components.

Paint metal surfaces by preparing, cleaning, tacking, and applying sealer and topcoat.

Remove, replace, and adjust glass.

Analyze damage, clean, prepare, and repair non-metal panels.

Estimate cost of repairs including parts and labour costs.

Disassemble, reassemble, inspect, test, repair/replace components, and adjust light and medium duty cooling systems.

Disassemble, reassemble, inspect, test, repair/replace components, and adjust body electrical circuits.

Remove and replace struts, shocks, and brake components in order to carry out structural and panel repairs.

Carry out detailing and finessing on metal and non-metal surfaces according to customers' wishes.