Interprovincial
Program Guide

Motor Vehicle Body Repairer (Metal and Paint)

2012

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Foreword

The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this Interprovincial Program Guide (IPG) as the national curriculum for the occupation of Motor Vehicle Body Repairer (Metal and Paint).

Jurisdictions have long recognized the benefit of pooling resources in the development and maintenance of apprenticeship training standards. A successful example of this is the Interprovincial Standards Red Seal Program itself. Essential to the establishment of standards is the development of suitable training systems and programs which enable tradespeople to acquire certification based on these standards. While certification is the responsibility of Apprenticeship administrators throughout Canada, the development and delivery of technical training is the responsibility of jurisdictions.

In 1999, work to develop common training for apprenticeship programs within the Atlantic Provinces began. To date, 22 Curriculum Standards have been developed through the Atlantic Standards Partnership (ASP) project to assist programming staff and instructors in the design and delivery of technical training. Similarly, the CCDA embarked on a process for the development of national IPGs for the Boilermaker, Carpenter and Sprinkler System Installer trades. At its January 2005 strategic planning session, the CCDA identified developing common training standards as one of the key activities in moving towards a more cohesive apprenticeship system.

With the support of Human Resources and Skills Development Canada (HRSDC), several provinces and territories have partnered to build on the ASP and the CCDA processes to further develop IPGs to be used across the country. This partnership will create efficiencies in time and resources and promote consistency in training and apprentice mobility.

Acknowledgements

The CCDA and the IPG Committee wishes to acknowledge the contributions of the following industry and instructional representatives who participated in the original development of this document in 2007.

Brian Druken	Newfoundland and Labrador
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Mark Klimchuk	Manitoba
David Allen Lake	Nova Scotia
Dennis Shorter	British Columbia
Tate Westerman	British Columbia
Clarence Winsor	Newfoundland and Labrador

In addition to the representatives above, various federal, provincial and territorial representatives contributed to the development of this document including the host province of Prince Edward Island.

In 2011, a review, update and jurisdictional validation of this IPG were completed to ensure adequate coverage of the occupation as outlined in the 2010 National Occupational Analysis (NOA).

As this program guide will be amended periodically, comments or suggestions for improvement should be directed to:

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User Guide

According to the Canadian Apprenticeship Forum, the IPG is: "a list of validated technical training outcomes, based upon those sub-tasks identified as common core in the NOA, and validated by industry in the provinces and territories as incorporating the essential tasks, knowledge and skills associated with a given trade."

Learning outcomes contained in the IPG represent the minimum common core content for the development of jurisdictional training standards and outlines. IPGs are developed based on the NOAs and extensive industry consultation. The IPG is intended to assist program development staff in the design of jurisdictional plans of training. Each jurisdiction has the flexibility to add additional content.

The IPG was deliberately constructed for ease of use and flexibility of structure in order to adapt to all delivery requirements. It details units of training, unit outcomes and objectives. It does not impose a delivery model or teaching format.

Jurisdictions and/or training providers will select and develop delivery materials and techniques that accommodate a variety of learning styles and delivery patterns. The IPG does not dictate study materials, textbooks or learning activities to be used in delivery.

The IPG document includes a recommended leveling structure to facilitate mobility for apprentices moving from one jurisdiction to another. Because of differences in jurisdictional regulations and program durations, levels are offered as suggestions only.

Structure

The IPG is divided into units. The unit codes are used as a means of identification and are not intended to convey the order of delivery. Prerequisites have not been detailed. Each unit consists of *Learning Outcomes* and *Objectives and Content.*

The *Learning Outcomes* are the specific performances that must be evaluated. Wording of the learning outcomes, "Demonstrate knowledge of…", acknowledges the broad spectrum of ways in which knowledge can be shown. It is at the discretion of each jurisdiction to determine the manner in which learning outcomes are evaluated; theoretically, practically or a combination of both.

The *Objectives and Content* for the unit details the information to be covered in order to achieve the performances specified in the *Learning Outcomes*. These objectives can be either theoretical or practical in nature, based on the requirements identified through the industry consultation process. The learning activities used to cover the objectives are at the discretion of the jurisdiction; however, practically worded objective statements have been used where industry indicated a need for the apprentices to receive exposure to performing the task or skill outlined while attending technical training. For example, this exposure could be done through instructor demonstration or individual or group performance of the skill or task. This practical training will help to reinforce the theoretical component of the technical training.

Detailed content for each objective has not been developed. Where detail is required for clarity, content has been provided. The content listed within the IPG document is **not** intended to represent an inclusive list; rather, it is included to illustrate the intended direction for the objective. Content may be added or extended in jurisdictional training plans as required.

Jurisdictions are free to deliver the IPG units one at a time or concurrently, provided that all *Learning Outcomes* are met. The IPG does not indicate the amount of time to be spent on a particular unit as the length of time required to deliver the *Learning Outcomes* successfully will depend upon the learning activities and teaching methods used.

IPG Glossary of Terms

These definitions are intended as a guide to how language is used in the IPGs.

ADJUST	To put in good working order; regulate; bring to a proper state or position.
APPLICATION	The use to which something is put and/or the circumstance in which you would use it.
CHARACTERISTIC	A feature that helps to identify, tell apart, or describe recognizably; a distinguishing mark or trait.
COMPONENT	A part that can be separated from or attached to a system; a segment or unit.
DEFINE	To state the meaning of (a word, phrase, etc.).
DESCRIBE	To give a verbal account of; tell about in detail.
DIAGNOSE	To analyze or identify a problem or malfunction.
EXPLAIN	To make plain or clear; illustrate; rationalize.
IDENTIFY	To point out or name objectives or types.
INTERPRET	To translate information from observation, charts, tables, graphs, and written material.
MAINTAIN	To keep in a condition of good repair or efficiency.
METHOD	A means or manner of doing something that has procedures attached to it.
OPERATE	How an object works; to control or direct the functioning of.
PROCEDURE	A prescribed series of steps taken to accomplish an end.

PURPOSE	The reason for which something exists or is done, made or used.
SERVICE	Routine inspection and replacement of worn or deteriorating parts.
TECHNIQUE	Within a procedure, the manner in which technical skills are applied.
TEST	v. To subject to a procedure that ascertains effectiveness, value, proper function, or other quality. n. A way of examining something to determine its characteristics or properties, or to determine whether or not it is working correctly.
TROUBLESHOOT	To follow a systematic procedure to identify and locate a problem or malfunction and its cause.

Essential Skills Profiles

Essential Skills are the skills needed for work, learning and life. They provide the foundation for learning all the other skills that enable people to evolve within their jobs and adapt to workplace change.

Over the past several years, the Government of Canada has conducted research examining the skills people use at work. From this research, Essential Skills Profiles have been developed for various occupations.

For more information regarding Essential Skills and to access Essential Skills Profiles for specific occupations, visit HRSDC's Essential Skills website at:

http://www.hrsdc.gc.ca/eng/workplaceskills/LES/profiles/profiles.shtml

Profile Chart

OCCUPATIONAL SKILLS			
ABR-100 Safety	ABR-105 Trade Related Documents	ABR-110 Communication	ABR-115 Tools and Equipment
ABR-120 Fasteners and Adhesives	ABR-125 Vehicle Construction	ABR-130 Post-Repair Vehicle Inspection	ABR-140 Cutting and Heating
ABR-145 Gas Metal Arc Welding (GMAW [MIG])	ABR-155 Squeeze-Type Resistance Spot Welding (STRSW)	ABR-205 Detailing	ABR-210 Upholstery, Trim and Hardware
ABR-270 Damage Analysis and Estimating Costs			
BODY AND STRUCTURAL COMPONENT REPAIR			
ABR-135 Metallurgy	ABR-160 Metal Working I (Mild Steel)	ABR-165 Body Fillers and Abrasives	ABR-175 Surface Preparation (Cleaning, Stripping and Masking)
ABR-180 Non-Metal Repair	ABR-220 Structural Components	ABR-225 Non-Structural Outer Body Panels	ABR-255 Damage Analysis of Conventional Frames and Unitized Bodies
ABR-260 Unitized Body Repairs	ABR-265 Conventional Frame Repairs	ABR-280 Metal Working II (Aluminum)	
REFINISHING			
ABR-170 Corrosion Protection	ABR-195 Undercoats	ABR-200 Refinishing I	ABR-275 Refinishing II
MECHANICAL AND ELECTRICAL COMPONENTS			
ABR-215 Restraint Systems	ABR-230 Electrical Fundamentals	ABR-235 Batteries	ABR-240 Electrical and Electronic Repairs
ABR-245 Mechanical Systems and Components	ABR-250 Steering, Suspension and Braking Systems		
GLASS			
ABR-185 Stationary Glass	ABR-190 Moveable Glass and Hardware		

Recommended Level Structure

LEVEL 1					
Unit Code	**Title**	**Page**	**Unit Code**	**Title**	**Page**
ABR-100	Safety	18	ABR-145	Gas Metal Arc Welding (GMAW [MIG])	26
ABR-105	Trade Related Documents	19	ABR-160	Metal Working I (Mild Steel)	28
ABR-110	Communication	20	ABR-165	Body Fillers and Abrasives	30
ABR-115	Tools and Equipment	21	ABR-175	Surface Preparation (Cleaning, Stripping and Masking)	31
ABR-120	Fasteners and Adhesives	22	ABR-205	Detailing	33
ABR-125	Vehicle Construction	23	ABR-210	Upholstery, Trim and Hardware	34
ABR-135	Metallurgy	24	ABR-235	Batteries	35
ABR-140	Cutting and Heating	25			
LEVEL 2					
Unit Code	**Title**	**Page**	**Unit Code**	**Title**	**Page**
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ABR-180	Non-Metal Repair	40	ABR-200	Refinishing I	47
ABR-185	Stationary Glass	41	ABR-230	Electrical Fundamentals	48
ABR-190	Moveable Glass and Hardware	43	ABR-280	Metal Working II (Aluminum)	49
LEVEL 3					
Unit Code	**Title**	**Page**	**Unit Code**	**Title**	**Page**
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ABR-215	Restraint Systems	53	ABR-245	Mechanical Systems and Components	59
ABR-220	Structural Components	54	ABR-255	Damage Analysis of Conventional Frames and Unitized Bodies	61
ABR-225	Non-Structural Outer Body Panels	56	ABR-275	Refinishing II	62
LEVEL 4					
Unit Code	**Title**	**Page**	**Unit Code**	**Title**	**Page**
ABR-130	Post-Repair Vehicle Inspection	66	ABR-265	Conventional Frame Repairs	71
ABR-250	Steering, Suspension and Braking Systems	67	ABR-270	Damage Analysis and Estimating Costs	73
ABR-260	Unitized Body Repairs	69			

2010 NOA Sub-task to IPG Unit Comparison

NOA Sub-task		IPG Unit	
Task 1 – Uses documentation.			
1.01	Uses manufacturer's specifications and repair procedures.	ABR-115	Tools and Equipment
		ABR-230	Electrical Fundamentals
		ABR-255	Damage Analysis of Frames and Unitized Bodies
1.02	Interprets estimates.	ABR-105	Trade Related Documents
1.03	Uses work orders.	ABR-105	Trade Related Documents
1.04	Interprets safety and environmental regulations.	ABR-100	Safety
Task 2 – Uses and maintains tools and equipment.			
2.01	Maintains hand tools.	ABR-115	Tools and Equipment
2.02	Maintains power tools.	ABR-115	Tools and Equipment
2.03	Maintains welding equipment.	ABR-115	Tools and Equipment
		ABR-140	Cutting and Heating
		ABR-145	Gas Metal Arc Welding (GMAW [MIG])
		ABR-155	Squeeze-Type Resistance Spot Welding (STRSW)
		ABR-180	Non-Metal Repair
2.04	Maintains frame and unibody repair equipment.	ABR-115	Tools and Equipment
		ABR-265	Conventional Frame Repairs
2.05	Uses lifting equipment.	ABR-115	Tools and Equipment
2.06	Maintains measuring equipment.	ABR-115	Tools and Equipment
		ABR-255	Damage Analysis of Frames and Unitized Bodies
2.07	Maintains refinishing tools and equipment.	ABR-115	Tools and Equipment
		ABR-195	Undercoats
		ABR-200	Refinishing I
2.08	Uses personal protective equipment (PPE).	ABR-100	Safety
Task 3 – Organizes work.			
3.01	Follows safety procedures for alternate-fuel vehicles.	ABR-100	Safety
		ABR-220	Structural Components
		ABR-225	Non-Structural Outer Body Panels
		ABR-230	Electrical Fundamentals
		ABR-235	Batteries
		ABR-240	Electrical and Electronic Repairs
		ABR-275	Refinishing II

NOA Sub-task		IPG Unit	
3.02	Prepares damage estimate.	ABR-105	Trade Related Documents.
		ABR-270	Damage Analysis and Estimating Costs
3.03	Organizes replacement parts and materials.	ABR-105	Trade Related Documents
3.04	Communicates with others.	ABR-110	Communication
		ABR-270	Damage Analysis and Estimating Costs
3.05	Prepares work area.	ABR-100	Safety
3.06	Maintains safe work environment.	ABR-100	Safety
Task 4 – Applies corrosion protection material.			
4.01	Applies weld through primer.	ABR-170	Corrosion Protection
		ABR-195	Undercoats
4.02	Applies corrosion protection for electrical components.	ABR-170	Corrosion Protection
4.03	Applies corrosion inhibitors and sealers.	ABR-170	Corrosion Protection
		ABR-260	Unitized Body Repairs
Task 5 – Repairs and replaces trim, body seals and gaskets.			
5.01	Removes trim, body seals and gaskets.	ABR-120	Fasteners and Adhesives
		ABR-210	Upholstery, Trim and Hardware
5.02	Repairs trim.	ABR-210	Upholstery, Trim and Hardware
5.03	Installs trim, body seals and gaskets.	ABR-120	Fasteners and Adhesives
Task 6 – Performs final check.			
6.01	Inspects vehicle visually.	ABR-255	Damage Analysis of Conventional Frames and Unitized Bodies
		ABR-130	Post-Repair Vehicle Inspection
6.02	Performs final operational check.	ABR-130	Post-Repair Vehicle Inspection
Task 7 – Prepares for repairs and replacement of structural components.			
7.01	Performs vehicle setup.	ABR-260	Unitized Body Repairs
		ABR-265	Conventional Frame Repairs
7.02	Removes components for access.	ABR-120	Fasteners and Adhesives
		ABR-260	Unitized Body Repairs
		ABR-265	Conventional Frame Repairs
7.03	Identifies extent of damage.	ABR-255	Damage Analysis of Conventional Frames and Unitized Bodies
		ABR-260	Unitized Body Repairs
		ABR-265	Conventional Frame Repairs
		ABR-130	Post-Repair Vehicle Inspection

NOA Sub-task		IPG Unit	
Task 8 – Repairs and replaces structural components.			
8.01	Straightens structural components.	ABR-135	Metallurgy
		ABR-260	Unitized Body Repairs
		ABR-265	Conventional Frame Repairs
8.02	Removes structural components.	ABR-260	Unitized Body Repairs
		ABR-265	Conventional Frame Repairs
8.03	Installs structural components.	ABR-120	Fasteners and Adhesives
		ABR-260	Unitized Body Repairs
		ABR-265	Conventional Frame Repairs
Task 9 – Repairs panels.			
9.01	Prepares panels for repair.	ABR-160	Metal Working I (Mild Steel)
		ABR-280	Metal Working II (Aluminum)
		ABR-220	Structural Components
		ABR-225	Non-Structural Outer Body Panels
		ABR-180	Non-Metal Repair
		ABR-145	Gas Metal Arc Welding (GMAW [MIG])
		ABR-180	Non-Metal Repair
9.02	Reshapes panels.	ABR-160	Metal Working I (Mild Steel)
		ABR-280	Metal Working II (Aluminum)
		ABR-180	Non-Metal Repair
		ABR-220	Structural Components
		ABR-225	Non-Structural Outer Body Panels
9.03	Aligns panels.	ABR-220	Structural Components
		ABR-225	Non-Structural Outer Body Panels
9.04	Applies repair materials.	ABR-160	Metal Working I (Mild Steel)
		ABR-280	Metal Working II (Aluminum)
		ABR-165	Body Fillers and Abrasives
		ABR-180	Non-Metal Repair
9.05	Shapes repair materials.	ABR-160	Metal Working I (Mild Steel)
		ABR-280	Metal Working II (Aluminum)
		ABR-165	Body Fillers and Abrasives
		ABR-180	Non-Metal Repair
Task 10 – Replaces panels.			
10.01	Removes panels.	ABR-220	Structural Components
		ABR-225	Non-Structural Outer Body Panels
10.02	Installs panels.	ABR-120	Fasteners and Adhesives
		ABR-220	Structural Components
		ABR-225	Non-Structural Outer Body Panels

NOA Sub-task		IPG Unit	
Task 11 – Replaces structural glass.			
11.01	Removes structural glass.	ABR-185	Stationary Glass
11.02	Installs structural glass.	ABR-185	Stationary Glass
11.03	Repairs laminated glass. (NOT COMMON CORE)	ABR-185	Stationary Glass
Task 12 – Replaces non-structural glass.			
12.01	Removes non-structural glass.	ABR-120	Fasteners and Adhesives
		ABR-190	Moveable Glass and Hardware
12.02	Installs non-structural glass.	ABR-120	Fasteners and Adhesives
		ABR-190	Moveable Glass and Hardware
Task 13 – Repairs and replaces mechanical components.			
13.01	Removes mechanical components.	ABR-120	Fasteners and Adhesives
		ABR-245	Mechanical Systems and Components
		ABR-250	Steering, Suspension and Braking Systems
13.02	Cleans mechanical components.	ABR-245	Mechanical Systems and Components
13.03	Straightens mechanical components.	ABR-245	Mechanical Systems and Components
13.04	Installs mechanical components.	ABR-120	Fasteners and Adhesives
		ABR-245	Mechanical Systems and Components
		ABR-250	Steering, Suspension and Braking Systems
Task 14 – Repairs and replaces electrical components.			
14.01	Repairs damaged wires and exterior coverings.	ABR-230	Electrical Fundamentals
		ABR-240	Electrical and Electronic Repairs
14.02	Cleans corroded components and connections.	ABR-235	Batteries
		ABR-240	Electrical and Electronic Repairs
14.03	Removes damaged electrical components.	ABR-235	Batteries
		ABR-240	Electrical and Electronic Repairs
14.04	Installs electrical components.	ABR-235	Batteries
		ABR-230	Electrical Fundamentals
		ABR-240	Electrical and Electronic Repairs
Task 15 – Repairs and replaces interior components.			
15.01	Removes interior components.	ABR-120	Fasteners and Adhesives
		ABR-210	Upholstery, Trim and Hardware
15.02	Repairs interior components.	ABR-210	Upholstery, Trim and Hardware
15.03	Installs interior components.	ABR-120	Fasteners and Adhesives
		ABR-210	Upholstery, Trim and Hardware

NOA Sub-task		IPG Unit	
Task 16 – Replaces seat belt restraint systems.			
16.01	Removes seat belt restraint systems.	ABR-215	Restraint Systems
16.02	Installs seat belt restraint systems.	ABR-215	Restraint Systems
Task 17 – Replaces air bag systems.			
17.01	Removes air bags and related components.	ABR-215	Restraint Systems
17.02	Installs air bags and related components.	ABR-215	Restraint Systems
Task 18 – Prepares surfaces.			
18.01	Decontaminates area.	ABR-170	Corrosion Protection
		ABR-175	Surface Preparation (Cleaning, Stripping and Masking)
		ABR-180	Non-Metal Repair
		ABR-195	Undercoats
18.02	Sands surfaces.	ABR-165	Body Fillers and Abrasives
		ABR-175	Surface Preparation (Cleaning, Stripping and Masking)
		ABR-195	Undercoats
18.03	Masks off surrounding area.	ABR-195	Undercoats
Task 19 – Prepares and applies refinishing materials.			
19.01	Mixes refinishing materials.	ABR-195	Undercoats
		ABR-275	Refinishing II
19.02	Performs final wash and tack.	ABR-195	Undercoats
		ABR-200	Refinishing I
19.03	Applies material to surface.	ABR-195	Undercoats
		ABR-275	Refinishing II
19.04	Removes masking.	ABR-195	Undercoats
		ABR-175	Surface Preparation (Cleaning, Stripping and Masking)
Task 20 – Details exterior.			
20.01	Removes overspray.	ABR-200	Refinishing I
20.02	Polishes vehicle.	ABR-200	Refinishing I
		ABR-205	Detailing
20.03	Washes vehicle.	ABR-200	Refinishing I
		ABR-205	Detailing
Task 21 – Details interior.			
21.01	Cleans soft surfaces.	ABR-205	Detailing
21.02	Cleans hard surfaces.	ABR-205	Detailing

LEVEL 1

ABR-100 Safety

Learning Outcomes:

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

Objectives and Content:

1. Identify types of personal protective equipment (PPE) and clothing and describe their applications and limitations.

2. Describe the procedures used to care for and maintain PPE.

3. Identify hazards and describe safe work practices.
   - i) personal
   - ii) workplace
     - ventilation/fumes
     - electrical grounding
     - fire
     - chemical/gas
   - iii) environmental
     - discharge/spills

4. Identify and describe workplace safety and health regulations.
   - i) federal
     - Material Safety Data Sheets (MSDS)
     - Workplace Hazardous Material Information System (WHMIS)
   - ii) provincial/territorial
     - Occupational Health and Safety (OHS)
   - iii) municipal

5. Identify PPE and describe safe work practices for hybrid/alternate fuel vehicles.

ABR-105 Trade Related Documents

Learning Outcomes:

- Demonstrate knowledge of trade related documentation and its use.
- Demonstrate knowledge of preparing and interpreting trade documents.
- Demonstrate knowledge of organizing parts and materials.

Objectives and Content:

1. Identify sources of related information.

2. Identify and interpret information found on the vehicle.
   i) VIN
   ii) paint code
   iii) production date
   iv) make and model

3. Identify types of trade related documentation and describe their purpose, applications and procedures for use.
   i) manufacturers' specifications
   ii) codes and standards
   iii) work orders
   iv) equipment maintenance schedules
   v) equipment maintenance records
   vi) safety manuals and bulletins

4. Identify types of written reporting and describe their purpose and applications.
   i) time and material records
   ii) apprentice training logs
   iii) estimates

5. Describe procedures for organizing/storing replacement parts and materials.

ABR-110 Communication

Learning Outcomes:

- Demonstrate knowledge of effective communication practices.
- Demonstrate knowledge of communication devices, their purpose and operation.

Objectives and Content:

1. Describe the importance of effective verbal and non-verbal communication.
   i) apprentices
   ii) other tradespersons
   iii) colleagues
   iv) supervisors
   v) customers
   vi) suppliers/manufacturers

2. Identify types of communication devices and describe their purpose and operation.

ABR-115 Tools and Equipment

Learning Outcomes:

- Demonstrate knowledge of tools and equipment, their applications, maintenance and procedures for use.

Objectives and Content:

1. Identify types of hand tools and describe their applications and procedures for use.
   i) basic
   ii) trade specific

2. Identify types of basic measuring equipment and describe their applications and procedures for use.

3. Identify types of specialized measuring equipment and describe their applications.

4. Identify types of testing/diagnostic equipment and describe their applications.

5. Identify types of power tools and describe their applications and procedures for use.
   i) electric
   ii) hydraulic
   iii) pneumatic

6. Identify types of shop equipment and describe their applications.
   i) cleaning
   ii) lifting

7. Identify types of welding and cutting equipment and describe their applications.

8. Identify types of straightening equipment and describe their applications.

9. Identify types of refinishing and detailing tools and equipment and describe their applications.

10. Describe the procedures used to inspect and maintain tools and equipment.

ABR-120 Fasteners and Adhesives

Learning Outcomes:

- Demonstrate knowledge of fasteners and adhesives, their applications, procedures for use and safety considerations.

Objectives and Content:

1. Define terminology associated with fasteners and adhesives.

2. Identify hazards and describe safe work practices pertaining to fasteners and adhesives.
   i) personal
   ii) vehicle

3. Identify types of fasteners and describe their applications.

4. Describe the procedures to remove and install fasteners.

5. Identify types of adhesives used in fastening applications and describe their characteristics.

6. Identify the considerations when applying and removing adhesives.

ABR-125 Vehicle Construction

Learning Outcomes:

- Demonstrate knowledge of vehicle construction.
- Demonstrate knowledge of vehicle components.

Objectives and Content:

1. Define terminology associated with vehicle construction.

2. Identify types of vehicle construction and describe their characteristics.
   i) conventional frames
   ii) unitized bodies

3. Identify body sections and describe their components.

4. Identify structural and non-structural components and describe their characteristics and applications.

5. Identify types of materials used in vehicle construction and describe their characteristics and applications.

ABR-135 Metallurgy

Learning Outcomes:

- Demonstrate knowledge of metals and their characteristics.
- Demonstrate knowledge of metallurgic principles and their applications to control expansion, contraction and distortion.

Objectives and Content:

1. Define terminology associated with metallurgy.

2. Identify hazards and describe safe work practices pertaining to working metals.

3. Identify types of metals and describe their characteristics.

4. Identify procedures associated with working metals and describe their applications.
   i) forming
   ii) shearing
   iii) punching
   iv) drilling
   v) cutting
   vi) welding
   vii) heating
   viii) shrinking

5. Describe the effects metal working has on metallurgic properties.
   i) stress
   ii) contraction
   iii) expansion
   iv) distortion
   v) work hardening
   vi) shrinking

6. Describe the procedures to prevent or correct problems that occur when working metals.

ABR-140 Cutting and Heating

Learning Outcomes:

- Demonstrate knowledge of cutting and heating equipment, their applications, maintenance and procedures for use.

Objectives and Content:

1. Define terminology associated with cutting and heating.

2. Identify hazards and describe safe work practices pertaining to cutting and heating.
   i) personal
   ii) shop/facility
   iii) equipment
   iv) vehicle

3. Identify cutting and heating processes and describe their applications.

4. Identify equipment, components and accessories relating to cutting and heating processes and describe their characteristics and applications.
   i) oxy-fuel
   ii) plasma arc
   iii) induction heaters

5. Describe the procedures to set-up, maintain, and shut-down oxy-fuel equipment.

6. Describe the procedures to set-up, maintain, and shut-down plasma arc cutting equipment.

7. Describe the procedures used to cut with oxy-fuel equipment.

8. Describe the procedures used to cut with plasma arc cutting equipment.

9. Describe the procedures used to heat with oxy-fuel equipment.

ABR-145 Gas Metal Arc Welding (GMAW [MIG])

Learning Outcomes:

- Demonstrate knowledge of gas metal arc welding equipment, its applications, maintenance and procedures for use.
- Demonstrate knowledge of weld defects, their causes and the procedures to prevent and correct them.

Objectives and Content:

1. Define terminology associated with gas metal arc welding.

2. Identify hazards and describe safe work practices pertaining to gas metal arc welding.
   i) personal
   ii) equipment
   iii) vehicle
   iv) shop/facility

3. Describe gas metal arc welding and its applications.

4. Identify gas metal arc welding equipment and accessories and describe their characteristics and applications.

5. Describe the procedures to set-up, operate and shut-down gas metal arc welding equipment.

6. Describe the procedures used to perform basic maintenance and troubleshooting of gas metal arc welding equipment.

7. Identify types of welds performed using gas metal arc welding equipment.
   i) plug
   ii) continuous (fillet)
   iii) stitch
   iv) tack

8. Identify types of joint assembly and describe their characteristics and applications.
   i) lap joint
   ii) butt joint

9. Describe the procedures used to weld mild steel sheet metal using the gas metal arc welding process.

10. Identify types of weld defects and describe their causes.
   i) porosity
   ii) burn through
   iii) overlap
   iv) excess weld splatter

11. Describe the procedures used to prevent and correct weld defects.
   i) proper penetration of metal
   ii) appropriate penetration of the weld

ABR-160 Metal Working I (Mild Steel)

Learning Outcomes:

- Demonstrate knowledge of metal working procedures for sheet metal repair.

Objectives and Content:

1. Define terminology associated with working mild steel sheet metal.

2. Identify hazards and describe safe work practices pertaining to working mild steel sheet metal.
   i) personal
   ii) equipment
   iii) vehicle
   iv) shop/facility

3. Identify types of automotive sheet metal.

4. Identify types of damage to mild steel sheet metal.
   i) direct
   ii) indirect

5. Identify the considerations and requirements for performing metal work on mild steel sheet metal.
   i) tool selection
   ii) repair sequence
   iii) protection of adjacent panels
   iv) panel preparation
   v) corrosion protection

6. Identify types of panels and describe their associated repair procedures.
   i) accessible
      - hammer and dolly
      - shrinking (hot or cold)
   ii) limited access
      - prybar
      - pick
      - dent puller
      - pin-welder

7. Identify alternative methods of body panel repair.
   i) paintless dent repair

8. Describe the methods used to detect surface irregularities.

9. Describe the procedures used to rough out and align damaged mild steel sheet metal.

10. Describe the procedures used to prepare mild steel sheet metal for finishing.

ABR-165 Body Fillers and Abrasives

Learning Outcomes:

- Demonstrate knowledge of abrasives, their applications and procedures for use.
- Demonstrate knowledge of types of body fillers, their applications and procedures for use.

Objectives and Content:

1. Define terminology associated with body fillers and abrasives.

2. Identify hazards and describe safe work practices pertaining to body fillers and abrasives.

3. Identify types of abrasives and describe their characteristics and applications.

4. Describe the procedures and techniques for using abrasives.

5. Identify types of body fillers and describe their characteristics and applications.

6. Identify tools and equipment relating to body fillers and abrasives and describe their applications and procedures for use.

7. Describe the procedures used to mix body fillers.

8. Describe the procedures used to apply body fillers.

9. Describe the procedures and techniques for shaping and finishing body fillers.
   i) grit selection
   ii) tool selection
   iii) sanding techniques
   iv) detect surface irregularities
      - visual
      - guide coat
      - tactile (touch)

ABR-175 Surface Preparation (Cleaning, Stripping and Masking)

Learning Outcomes:

- Demonstrate knowledge of surface cleaning procedures.
- Demonstrate knowledge of surface preparation using abrasives.
- Demonstrate knowledge of stripping equipment and products, their applications, safety precautions and procedures for use.
- Demonstrate knowledge of masking techniques.

Objectives and Content:

1. Define terminology associated with surface preparation.

2. Identify hazards and describe safe work practices pertaining to surface preparation.
   i) personal
   ii) shop/facility
   iii) equipment
   iv) environmental

3. Identify products used to clean surfaces and describe their applications and procedures for use.

4. Identify substrate types and describe the procedures and considerations for evaluating their condition.

5. Identify topcoats and undercoats and describe the procedures and considerations for evaluating their condition.

6. Identify the methods used to strip topcoats and undercoats and describe their applications and associated safety or environmental considerations.
   i) chemical strippers
   ii) media blasting
   iii) mechanical

7. Describe the procedures used to strip paint.

8. Describe the procedures used to prepare surfaces using abrasives.

9. Identify the materials used in masking and describe their applications.

10. Describe the procedures and techniques used to mask surfaces.

11. Describe the procedures and techniques used to remove masking from surfaces.

ABR-205 Detailing

Learning Outcomes:

- Demonstrate knowledge of detailing equipment and products.
- Demonstrate knowledge of detailing practices and procedures.

Objectives and Content:

1. Define terminology associated with detailing.

2. Identify hazards and describe safe work practices pertaining to detailing.

3. Identify equipment used in detailing vehicle surfaces (interior) and describe their applications and procedures for use.

4. Identify products used in vehicle detailing and describe their related safety considerations.

5. Identify types of topcoat defects and describe their characteristics.

6. Describe the procedures used to remove overspray.

7. Describe the procedures used to clean vehicle surfaces (interior).

8. Describe the procedures used to wash vehicle exterior.

9. Describe the procedures used to clean un-painted plastic exterior components.

ABR-210 Upholstery, Trim and Hardware

Learning Outcomes:

- Demonstrate knowledge of types of trim, their applications and characteristics.
- Demonstrate knowledge of procedures to repair and replace upholstery, trim and hardware.
- Demonstrate knowledge of procedures to detect and repair noises and leaks attributed to trim and hardware.

Objectives and Content:

1. Define terminology associated with upholstery, trim and hardware.

2. Identify hazards and describe safe work practices pertaining to upholstery, trim and hardware.

3. Identify exterior trim and hardware and describe its characteristics.

4. Identify interior upholstery, trim and hardware and describe its characteristics.

5. Describe fasteners and adhesives relating to upholstery, trim and hardware.

6. Describe the procedures used to repair or replace exterior trim.

7. Describe the procedures used to remove and apply pin stripes and decals.

8. Describe the procedures used to inspect interior upholstery, trim and hardware for collision related damage.

9. Describe the procedures used to repair or replace interior trim.

10. Describe the procedures used to repair or replace upholstery.

11. Describe the procedures used to locate/detect and repair leaks and noises related to trim and hardware.

ABR-235 Batteries

Learning Outcomes:

- Demonstrate knowledge of batteries, their applications and operation.
- Demonstrate knowledge of procedures to test and charge batteries.
- Demonstrate knowledge of procedures to remove and replace batteries.

Objectives and Content:

1. Define terminology associated with batteries.

2. Identify hazards and describe safe work practices pertaining to batteries.
   i) PPE
   ii) conventional
      - handling
      - storage
      - disposal and recycling
   iii) hybrid/alternate fuel

3. Identify types of batteries and describe their purpose, location, construction, operation and ratings.
   i) lead acid
   ii) hybrid/alternate fuel

4. Describe the procedures used to test batteries.

5. Describe the procedures used to charge batteries.

6. Describe the procedures used to remove and replace batteries.

7. Identify the considerations relating to the removal and replacement of battery packs in hybrid/alternate fuel vehicles.
   i) OEM specifications
   ii) training/certification requirements

LEVEL 2

ABR-170 Corrosion Protection

Learning Outcomes:

- Demonstrate knowledge of corrosion, its causes and effects.
- Demonstrate knowledge of types of corrosion protection, their characteristics and applications.
- Demonstrate knowledge of the procedures used to restore corrosion protection.

Objectives and Content:

1. Define terminology associated with corrosion.

2. Interpret documentation pertaining to corrosion protection.
   i) OEM specifications

3. Identify hazards and describe safe work practices pertaining to corrosion and corrosion protection.

4. Identify the types of corrosion and describe their causes.
   i) oxidation
   ii) galvanic action

5. Identify environmental and atmospheric conditions that influence the rate of corrosion.

6. Identify the tools and equipment relating to corrosion protection and describe their applications and procedures for use.

7. Identify types of corrosion protection and describe their characteristics and applications.
   i) OEM application
   ii) undercoats and topcoats
   iii) anti-corrosion compounds

8. Identify corrosion protection materials used during repair procedures.
   i) undercoats (primers)
   ii) seam sealers
   iii) anti-corrosion compounds
   iv) fastener isolators

9. Describe the procedures used to inspect for corrosion related damage.

10. Describe the procedures used to restore corrosion protection to original equipment manufacturer (OEM) specifications.

ABR-180 Non-Metal Repair

Learning Outcomes:

- Demonstrate knowledge of non-metal materials and their applications.
- Demonstrate knowledge of non-metal repair procedures.

Objectives and Content:

1. Define terminology associated with non-metal repair.

2. Identify hazards and describe safe work practices pertaining to non-metal repairs.

3. Identify non-metal materials and describe their characteristics and applications.
   i) plastics
   ii) composites

4. Identify products and materials used in non-metal repair.
   i) ISO codes (International Organization for Standardization)
   ii) adhesives
   iii) back pads
   iv) plastic adhesion promoters

5. Describe the procedures used for non-metal repairs.
   i) plastics
   ii) composites

6. Identify plastic welding equipment and describe their associated set-up and shut-down procedures.

ABR-185 Stationary Glass

Learning Outcomes:

- Demonstrate knowledge of stationary glass, its characteristics and importance to vehicle structure.
- Demonstrate knowledge of the procedures to replace stationary glass to OEM standards.

Objectives and Content:

1. Define terminology associated with stationary glass.

2. Identify hazards and describe safe work practices pertaining to stationary glass.

3. Identify tools and equipment relating to stationary glass and describe their applications and procedures for use.

4. Explain the importance of stationary glass to the vehicle structure/integrity.

5. Identify types of stationary glass and describe their characteristics.

6. Identify stationary glass components and accessories and describe their purpose and applications.

7. Identify fastening methods for stationary glass and their associated components.
   i) mechanical
   ii) gasket mounted
   iii) bonded

8. Identify materials used for stationary glass replacement and describe their characteristics and procedures for use.

9. Describe the procedures used to determine if stationary glass can be repaired or if replacement is necessary.

10. Describe the procedures used to remove and install stationary glass and its related components.

11. Identify the types of leaks associated with stationary glass and describe the procedures used to detect and repair them.
    i) wind
    ii) water

ABR-190 Moveable Glass and Hardware

Learning Outcomes:

- Demonstrate knowledge of moveable glass and their characteristics.
- Demonstrate knowledge of hardware and attachments associated with moveable glass.
- Demonstrate knowledge of procedures to replace moveable glass and repair or replace its associated hardware and attachments.

Objectives and Content:

1. Define terminology associated with moveable glass and hardware.

2. Identify hazards and describe safe work practices pertaining to moveable glass and hardware.

3. Identify tools and equipment relating to moveable glass and describe their applications and procedures for use.

4 Identify types of moveable glass and describe their characteristics.

5. Identify moveable glass related hardware and describe their applications.
   i) motors
   ii) regulators
   iii) channels

6. Identify fastening methods for moveable glass and their associated components.
   i) mechanical
   ii) pressure fitted
   iii) bonded

7. Describe the procedures and considerations for inspecting moveable glass and its associated hardware.

8. Describe the procedures used to remove and install moveable glass.

9. Describe the procedures used to service and adjust moveable glass.

10. Identify the types of leaks associated with moveable glass and describe the procedures used to detect and repair them.
    i) wind
    ii) water
    iii) dust

ABR-195 Undercoats

Learning Outcomes:

- Demonstrate knowledge of undercoats, their applications, and procedures for use.
- Demonstrate knowledge of undercoat materials, their characteristics and mixing procedures.
- Demonstrate knowledge of equipment used in applying undercoats, their set-up, maintenance and procedures for use.

Objectives and Content:

1. Define terminology associated with undercoats.

2. Identify hazards and describe safe work practices pertaining to undercoats.
   i) personal
   ii) shop/facility
   iii) environmental

3. Interpret codes and regulations pertaining to the use of undercoats.

4. Identify types of undercoats, and describe their characteristics and applications.

5. Identify tools and equipment relating to undercoats and describe their applications and procedures for use.

6. Describe the procedures used to set-up, adjust, care for and maintain equipment used in applying undercoats.

7. Describe the procedures used to prepare substrate prior to applying undercoats.

8. Describe the procedures used for mixing undercoats.

9. Identify undercoat application techniques.

10. Describe the procedures used to apply undercoats.

11. Identify undercoat defects and describe their causes and the procedures used to prevent or correct them.

12. Describe the procedures used to prepare undercoats for topcoat.

ABR-200 Refinishing I

Learning Outcomes:

- Demonstrate knowledge of refinishing materials and their characteristics.
- Demonstrate knowledge of refinishing equipment, its applications, maintenance and procedures for use.

Objectives and Content:

1. Define terminology associated with refinishing.

2. Identify hazards and describe safe work practices pertaining to refinishing.
   i) personal
   ii) shop/facility
   iii) environment

3. Describe the surface preparation procedures used for refinishing.

4. Identify refinishing tools and equipment and describe their applications.

5. Describe the procedures used to set-up, operate, adjust, care for and maintain refinishing equipment.

6. Identify types of topcoat finishes and describe their characteristics.
   i) single-stage
   ii) multi-stage
      - solvent
      - water
   iii) clear

ABR-230 Electrical Fundamentals

Learning Outcomes:

- Demonstrate knowledge of electrical theory and its applications.
- Demonstrate knowledge of equipment and procedures used to test electrical and electronic components.
- Demonstrate knowledge of electrical schematics, their applications and interpretation.

Objectives and Content:

1. Explain basic electrical theory.

2. Define terminology associated with electrical and electronic components.

3. Identify hazards and describe safe work practices pertaining to electrical and electronic components.
   i) personal
   ii) vehicle
      - hybrid/alternate fuel

4. Identify basic electrical and electronic components and describe their applications and operation.

5. Identify instruments used to test electrical and electronic circuits and components and describe their applications and procedures for use.

6. Identify electrical schematics and describe their purpose and applications.

7. Describe the procedures used to interpret electrical schematics in the repair of electrical systems and electronic components.
   i) OEM specifications

8. Describe the procedures used to test electrical and electronic circuits and components.

ABR-280 Metal Working II (Aluminum)

Learning Outcomes:

- Demonstrate knowledge of metal working procedures for aluminum panel repair.

Objectives and Content:

1. Define terminology associated with aluminum panel repair.

2. Identify hazards and describe safe work practices pertaining to aluminum panel repair.
   i) personal
   ii) equipment
   iii) vehicle
   iv) shop/facility

3. Identify the series of aluminum.

4. Identify types of damage to aluminum panels.
   i) direct
   ii) indirect

5. Identify considerations and requirements for performing metal work on aluminum panels.
   i) tool selection
   ii) repair sequence
   iii) protection of adjacent panels
   iv) panel preparation
   v) corrosion protection

6. Identify types of panels and describe their associated repair procedures.
   i) accessible
      - hammer and dolly
      - shrinking (hot or cold)
   ii) limited access
      - prybar
      - pick
      - dent puller

7. Describe the procedures used to rough out and align damaged aluminum panels.

8. Describe the procedures used to prepare aluminum panels for finishing.

LEVEL 3

ABR-155 Squeeze-Type Resistance Spot Welding (STRSW)

Learning Outcomes:

- Demonstrate knowledge of squeeze-type resistance spot welding and its applications.
- Demonstrate knowledge of squeeze-type resistance spot welding procedures.

Objectives and Content:

1. Define terminology associated with squeeze- type resistance spot welding (STRSW).

2. Identify hazards and describe safe work practices pertaining to squeeze-type resistance spot welding.
   i) personal
   ii) equipment
   iii) vehicle
   iv) shop/facility

3. Describe squeeze-type resistance spot welding and their applications.

ABR-215 Restraint Systems

Learning Outcomes:

- Demonstrate knowledge of restraint systems, their components and operation.
- Demonstrate knowledge of procedures used to replace restraint systems.

Objectives and Content:

1. Define terminology associated with restraint systems.

2. Identify hazards and describe safe work practices pertaining to restraint systems.
   i) handling
   ii) storage
   iii) disposal

3. Identify types of restraint systems and describe their location, components and operation.
   i) active
   ii) passive

4. Interpret documentation pertaining to restraint systems.
   i) service manuals
   ii) OEM specifications

5. Describe the procedures used to install, inspect, and remove seat belt restraint systems and their related components.

6. Describe the procedures used to install, inspect, and remove air bags and their related components.

7. Describe the procedures used to perform operational check of restraint systems.

ABR-220 Structural Components

Learning Outcomes:

- Demonstrate knowledge of the procedures and techniques used to repair and replace structural components.
- Demonstrate knowledge of procedures and techniques used to adjust and align structural components.

Objectives and Content:

1. Define terminology associated with structural components.

2. Identify hazards and describe safe work practices pertaining to repairing or replacing structural components.

3. Identify structural components and describe their characteristics.

4. Describe the procedures used to inspect and maintain structural components.
   i) corrosion
   ii) collision

5. Identify tools and equipment relating to structural components and describe their applications and procedures for use.

6. Describe the procedures and techniques used to repair structural components.
   i) OEM specifications
   ii) industry accepted standards

7. Describe the procedures used to remove and re-install structural components.

8. Describe the procedures used to replace structural components.
   i) full replacement
   ii) sectioning

9. Describe the procedures used to adjust and align structural components.

10. Describe the procedures and techniques used to protect electrical and electronic systems and components during repair.
    i) hybrid/alternate fuel vehicles
    ii) conventional vehicles

ABR-225 Non-Structural Outer Body Panels

Learning Outcomes:

- Demonstrate knowledge of non-structural outer body panel repair and replacement procedures.
- Demonstrate knowledge of procedures used to align and adjust non-structural outer body panels.

Objectives and Content:

1. Define terminology associated with non-structural outer body panels.

2. Identify hazards and describe safe work practices pertaining to repairing and replacing non-structural outer body panels.

3. Identify non-structural outer body panels and their characteristics.

4. Identify tools and equipment relating to non-structural outer body panels and describe their applications and the procedures used to repair or replace them.

5. Describe the procedures used to repair non-structural outer body panels.
   i) OEM specifications
   ii) industry accepted standards

6. Describe the procedures used to remove and re-install non-structural outer body panels.

7. Describe the procedures used to replace non-structural outer body panels.
   i) full replacement
   ii) sectioning

8. Describe the procedures used to adjust and align non-structural outer body panels.
   i) fit
   ii) function

9. Describe the procedures and techniques used to protect electrical and electronic systems and components during repair.
   i) hybrid/alternate fuel vehicles
   ii) conventional vehicles

ABR-240 Electrical and Electronic Repairs

Learning Outcomes:

- Demonstrate knowledge of procedures to determine damage to electrical and electronic systems and components.
- Demonstrate knowledge of procedures for diagnosing electrical and electronic systems and components.
- Demonstrate knowledge of procedures to repair and replace electrical and electronic components.
- Demonstrate knowledge of safety procedures while diagnosing and repairing electrical and electronic components.

Objectives and Content:

1. Identify electrical systems, electronic systems and accessories.
   i) vehicle management systems
   ii) electrical generation and distribution systems
   iii) lighting systems
   iv) personal comfort systems
   v) hybrid/electric propulsion systems

2. Identify tools and equipment relating to electrical and electronic repairs and adjustments and describe their applications and procedures for use.

3. Describe the procedures used to protect electrical and electronic systems during repairs.
   i) hybrid/alternate fuel vehicles
   ii) conventional vehicles

4. Describe electrical and electronic damage associated with collisions.

5. Describe the procedures used to diagnose electrical or electronic systems and their associated components.

6. Identify the procedures used to repair, adjust and replace electrical and electronic systems and components.

7. Describe the procedures used to restore corrosion protection to electrical components.

ABR-245 Mechanical Systems and Components

Learning Outcomes:

- Demonstrate knowledge of procedures used for inspecting mechanical systems and components.
- Demonstrate knowledge of procedures used to determine damage to mechanical systems and components.
- Demonstrate knowledge of procedures used to repair and replace mechanical systems and components.

Objectives and Content:

1. Define terminology associated with mechanical systems and components.

2. Identify hazards and describe safe work practices pertaining to servicing mechanical systems and components.
   i) personal
   ii) shop/facility
   iii) equipment
   iv) environmental

3. Identify mechanical components.
   i) drive train
   ii) exhaust system
   iii) fuel system
   iv) heating/cooling system

4. Interpret regulations and documentation relating to servicing mechanical systems.
   i) jurisdictional regulations
   ii) federal regulations

5. Identify tools and equipment relating to mechanical systems and components and describe their applications and procedures for use.

6. Describe the procedures used to inspect mechanical systems for collision related damage.

7. Describe the procedures used to remove and re-install mechanical components in order to perform collision repairs.

8. Describe the procedures used to clean, repair and replace mechanical system components.

9. Describe the procedures used to perform operational check of mechanical systems and components.

ABR-255 Damage Analysis of Conventional Frames and Unitized Bodies

Learning Outcomes:

- Demonstrate knowledge of procedures used to analyze damage to conventional frames and unitized bodies.

Objectives and Content:

1. Define terminology associated with the damage analysis of conventional frames and unitized bodies.

2. Identify hazards and describe safe work practices pertaining to the damage analysis of conventional frames and unitized bodies.

3. Identify energy management zones in conventional frames and unitized bodies.

4. Identify tools and equipment relating to damage analysis of conventional frames and unitized bodies and describe their applications and procedures for use.

5. Describe the procedures and considerations used for analyzing damage to unitized bodies.

6. Describe the procedures and considerations used for analyzing damage to conventional frames.

ABR-275 Refinishing II

Learning Outcomes:

- Demonstrate knowledge of refinishing materials, their characteristics and applications.
- Demonstrate knowledge of the procedures used for mixing and applying topcoats.

Objectives and Content:

1. Explain colour theory.

2. Describe the procedures used for colour matching.

3. Identify the types of refinishing and describe their characteristics and applications.
   i) blend
   ii) panel
   iii) complete

4. Describe the procedures used to mix topcoats.
   i) determine required colour
   ii) interpret manufacturers' specifications
   iii) intermix required components
   iv) mix combined ingredients
   v) verify correct colour and consistency is achieved

5. Describe the procedures used to apply topcoats.
   i) interpret manufacturers' specifications
   ii) select equipment and accessories
   iii) apply topcoat per specifications

6. Describe the procedures used to refinish plastic parts.
   i) interior
   ii) exterior

7. Identify topcoat defects that occur during application and describe the procedures used to prevent and correct them.

8. Describe the procedures used to polish vehicle exterior.

9. Describe the procedures used to correct topcoat defects.
   i) colour sanding
   ii) buffing

LEVEL 4

ABR-130 Post-Repair Vehicle Inspection

Learning Outcomes:

- Demonstrate knowledge of the procedures used to perform a visual inspection.
- Demonstrate knowledge of vehicle component operation.

Objectives and Content:

1. Define terminology associated with post-repair vehicle inspection.

2. Identify hazards and describe safe work practices pertaining to post-repair vehicle inspection.

3. Identify the procedures used to perform a visual inspection of the vehicle.

4. Identify vehicle components requiring operational checks.

5. Describe the procedures used to perform vehicle component operational checks.

6. Identify the purpose and procedures for conducting a vehicle road test.

ABR-250 Steering, Suspension and Braking Systems

Learning Outcomes:

- Demonstrate knowledge of the procedures for inspecting steering, suspension and braking systems and components.
- Demonstrate knowledge of the procedures used to determine damage to steering, suspension and braking systems and components.
- Demonstrate knowledge of the procedures used to repair and replace steering, suspension and braking systems and components.

Objectives and Content:

1. Define terminology associated with steering, suspension and braking systems and their components.

2. Identify hazards and describe safe work practices pertaining to servicing steering, suspension and braking systems and their components.
   i) personal
   ii) shop/facility
   iii) environment
   iv) liability

3. Identify types of steering and suspension systems and their components.

4. Identify types of braking systems and their components.

5. Interpret regulations and documentation pertaining to servicing steering, suspension and braking systems.
   i) OEM specifications

6. Identify tools and equipment relating to steering, suspension and braking systems and describe their applications and procedures for use.

7. Describe the procedures used to identify damaged or worn steering and suspension system components.

8. Describe the procedures used to remove and re-install steering, suspension and braking components in order to perform collision repairs.

9. Describe the procedures used to service steering and suspension components.

10. Identify the alignment process and describe its importance in the repair of steering and suspension system components.

11. Describe the procedures used to analyze and replace braking system components.

12. Describe the procedures used to perform operational check of steering, suspension and braking system and components.

ABR-260 Unitized Body Repairs

Learning Outcomes:

- Demonstrate knowledge of equipment used to repair unitized bodies, their applications and procedures for use.
- Demonstrate knowledge of procedures used to repair unitized bodies.
- Demonstrate knowledge of anchoring and pulling techniques and procedures.
- Demonstrate knowledge of sectioning procedures for unitized bodies.

Objectives and Content:

1. Define terminology relating to repairing unitized bodies.

2. Identify hazards and describe safe work practices pertaining to straightening and repairing unitized bodies.
   i) personal
   ii) shop/facility
   iii) vehicle

3. Identify types of measuring equipment and describe their applications and procedures for use.

4. Identify types of damage and determine the appropriate repair procedures.

5. Identify types of welding equipment and accessories used for unitized body repairs and describe their applications and procedures for use.

6. Identify straightening equipment and describe their applications and procedures for use.

7. Identify anchoring and pulling techniques used for unitized body repair and describe their applications and procedures for use.

8. Describe the procedures used to repair unitized bodies.
   i) OEM specifications
   ii) industry accepted standards

iii) welding
- steel
- aluminum

iv) adhesive bonding

9. Explain technician liability and responsibility for proper repair.

10. Describe the procedures used to section unitized bodies.
i) OEM specifications
ii) industry accepted standards

ABR-265 Conventional Frame Repairs

Learning Outcomes:

- Demonstrate knowledge of equipment used to repair and align frames, their applications and procedures for use.
- Demonstrate knowledge of procedures used to repair and align frames.
- Demonstrate knowledge of sectioning procedures for frames.
- Demonstrate knowledge of anchoring and pulling techniques and procedures.

Objectives and Content:

1. Define terminology relating to repairing conventional frames.

2. Identify hazards and describe safe work practices pertaining to repairing and aligning conventional frames.
   i) personal
   ii) shop/facility
   iii) vehicle

3. Identify types of conventional frame construction and describe their characteristics.

4. Identify types of welding equipment and accessories used for conventional frame repair and describe their applications and procedures for use.

5. Identify types of measuring equipment and describe their applications and procedures for use.

6. Identify types of damage and determine the appropriate repair procedures.

7. Identify straightening equipment and describe its applications and procedures for use.

8. Identify anchoring techniques used for conventional frame repair and describe their applications and procedures for use.

9. Describe the procedures used to repair conventional frames.
   i) OEM specifications
   ii) industry accepted standards
   iii) welding
      - steel
      - aluminum

10. Describe the procedures used to section a conventional frame.
   i) OEM specifications
   ii) industry accepted standards

11. Explain technician liability and responsibility for proper repair.

12. Identify anchoring and pulling techniques used for conventional frame repair and describe their applications and procedures for use.

ABR-270 Damage Analysis and Estimating Costs

Learning Outcomes:

- Demonstrate knowledge of the procedures used to perform damage analysis.
- Demonstrate knowledge of the procedures used to prepare estimate documentation.

Objectives and Content:

1. Define terminology associated with damage analysis and estimate documentation.

2. Describe the importance of effective communication relating to preparing estimates.
   i) customers
   ii) co-workers
   iii) appraisers
   iv) insurance adjusters

3. Identify the sources of information used in the preparation of estimates.

4. Describe the procedures used to perform damage analysis.

5. Describe the procedures used to prepare estimate documentation.