Apprenticeship and Industry Training

Auto Body Technician

Curriculum Guide

010 (2022)

Alberta

Apprenticeship and Industry Training

ALBERTA ADVANCED EDUCATION

Auto Body Technician: apprenticeship education program curriculum guide

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Auto Body Technician
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CURRICULUM GUIDE

Apprenticeship

Apprenticeship is post-secondary education with a difference. Apprenticeship begins with finding a sponsor. Sponsors guide apprentices, and support on-the-job learning through provision of mentorship. Approximately 80 per cent of an apprentice's time is spent on the job under the supervision of a certified journeyperson or qualified tradesperson. The other 20 per cent involves technical training provided at, or through, a post-secondary institution (PSI) – usually a college or technical institute.

To receive their post-secondary credential, apprentices must learn theory and skills, and they must pass examinations. Criteria for the program—including the content and delivery of technical training—are developed and updated by the Registrar.

The graduate of the Auto Body Prepper apprenticeship education training program is an individual who will be able to:

- be proficient in all phases of auto body prepping
- use hand tools and powered equipment
- relate to the work of other tradespeople in the automotive industry
- apply primers, primer surfacers and corrosion proofing materials

The graduate of the Auto Body Refinisher apprenticeship education training program is an individual who will be able to:

- be proficient in all phases of auto body refinishing
- use hand tools and powered equipment
- relate to the work of other tradespeople in the automotive industry
- apply primers, primer surfacers and corrosion proofing materials
- refinish motor vehicles

The graduate of the Auto Body Repairer apprenticeship education training program is an individual who will be able to:

- be proficient in all phases of auto body repair
- use hand tools and powered equipment
- relate to the work of other tradespeople in the automotive industry
- straighten and align frames and unitized structures
- apply primers, primer surfacers and corrosion proofing materials
- repair, replace and align chassis components
- repair and replace vehicle support systems
- repair and replace structural and non-structural motor vehicle sections

The graduate of the Auto Body Technician apprenticeship education training program is an individual who will be able to:

- be proficient in all phases of auto body refinishing and repair
- use hand tools and powered equipment
- relate to the work of other tradespeople in the automotive industry
- apply primers, primer surfacers and corrosion proofing materials
- paint motor vehicles
- straighten and align frames and unitized structures
- repair, replace and align chassis components
- repair and replace vehicle support systems
- repair and replace structural and non-structural motor vehicle sections

Apprenticeship and Industry Training System

Alberta's apprenticeship programs are supported by industry stakeholders that ensures a highly skilled, internationally competitive workforce in the province. The Registrar establishes the educational standards and provides direction to the system supported by industry and the PSI's. The Ministry of Advanced Education provides the legislative framework and administrative support for the apprenticeship and industry training system.

Special thanks are offered to the following industry members who contributed to the development of the standard:

Mr. M. Yeo.....Calgary
Mr. M. Demas.....Bowden
Mr. P. Ouellette .....Bonnyville
Mr. T. Robertson .....Edmonton
Mr. T. Taniguchi .....Lethbridge
Mr. S. Giordano.....Sherwood Park
Mr. B. Hart.....Airdrie
Mr. D. Litzenberger .....Stony Plain
Mr. G. Nishiguchi.....Coaldale

Alberta Government

Alberta Advanced Education works with industry, sponsor and employee organizations and technical training providers to:

- facilitate industry's development and maintenance of training and certification standards
- provide registration and counselling services to apprentices and sponsors
- coordinate technical training in collaboration with training providers
- certify apprentices and others who meet industry standards

Apprentice Safety

Safe working procedures and conditions, incident/injury prevention, and the preservation of health are of primary importance in apprenticeship programs in Alberta. These responsibilities are shared and require the joint efforts of government, sponsors, employees, apprentices and the public. Therefore, it is imperative that all parties are aware of circumstances that may lead to injury or harm.

Safe learning experiences and healthy environments can be created by controlling the variables and behaviours that may contribute to or cause an incident or injury. By practicing a safe and healthy attitude, everyone can enjoy the benefit of an incident and injury free environment.

Occupational Health and Safety

Persons engaged in, or supporting an individual in an experiential learning environment are often exposed to more worksite hazards than in other forms of traditional post-secondary education and therefore should be familiar with and apply the Occupational Health and Safety Act, Regulations and Code when dealing with personal safety and the special safety rules that apply to all daily tasks.

Occupational Health and Safety-OHS (a division of Alberta Labour and Immigration) conducts periodic inspections of workplaces to ensure that safety regulations for industry are being observed.

Additional information is available at www.alberta.ca/occupational-health-safety.aspx

Technical Training

Apprenticeship technical training is delivered by the PSI's throughout Alberta. The PSI's are committed to delivering the technical training component of Alberta apprenticeship programs in a safe, efficient and effective manner. All PSI's place a strong emphasis on safety that complements safe workplace practices towards the development of a culture of safety for all professions.

The PSI's work with industry and Alberta Advanced Education to enhance access and responsiveness to industry needs through the delivery of the technical training component of apprenticeship programs across the province. They develop curriculum from the curriculum guides established by the Registrar in consultation with the PSI's and industry and provide the technical training to apprentices.

The following PSI's deliver Auto Body Technician trade apprenticeship technical training:

Northern Alberta Institute of Technology
Southern Alberta Institute of Technology

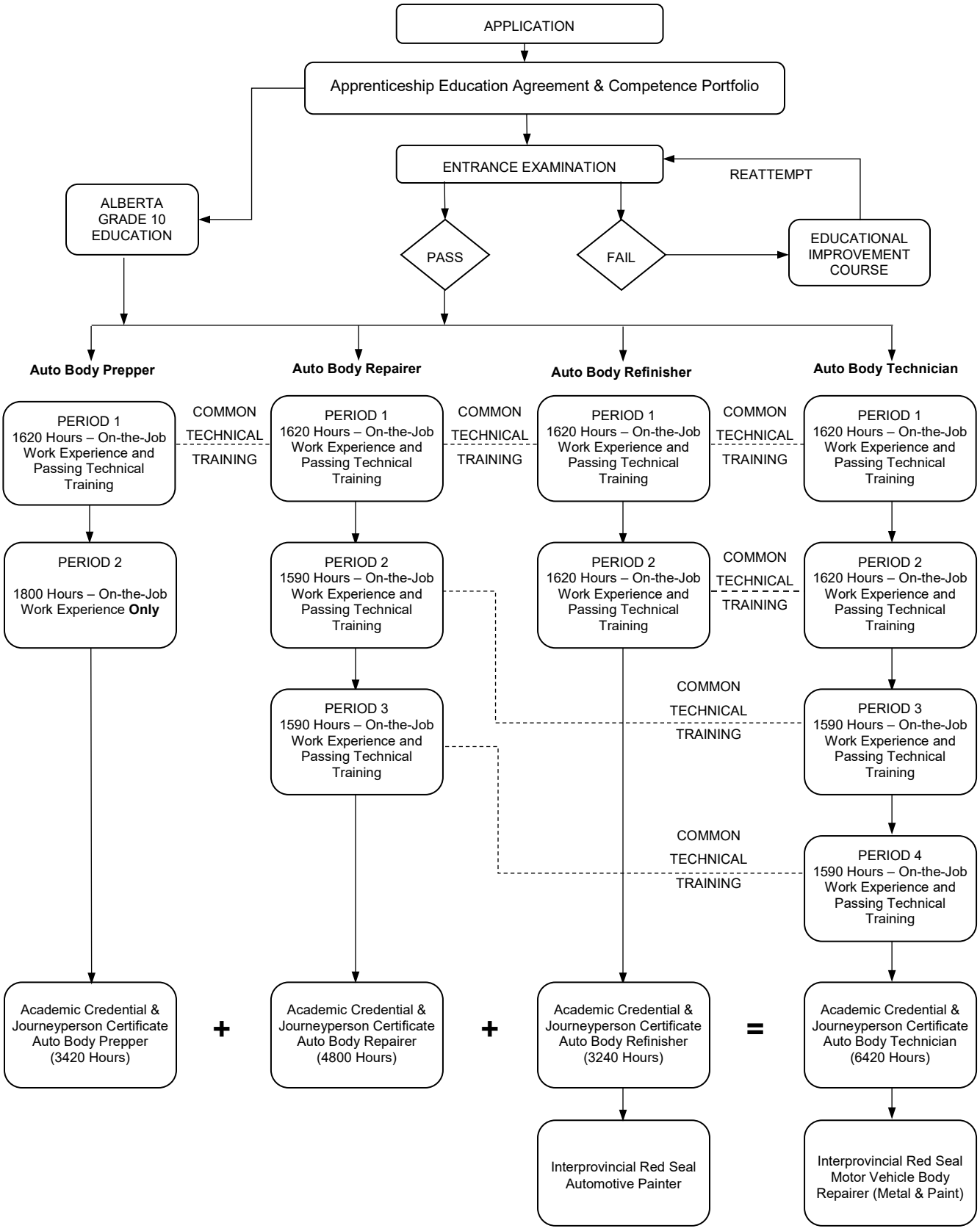
Procedures for Recommending Revisions to the Curriculum Guide

Any concerned individual or group in the province of Alberta may make recommendations for change by writing to:

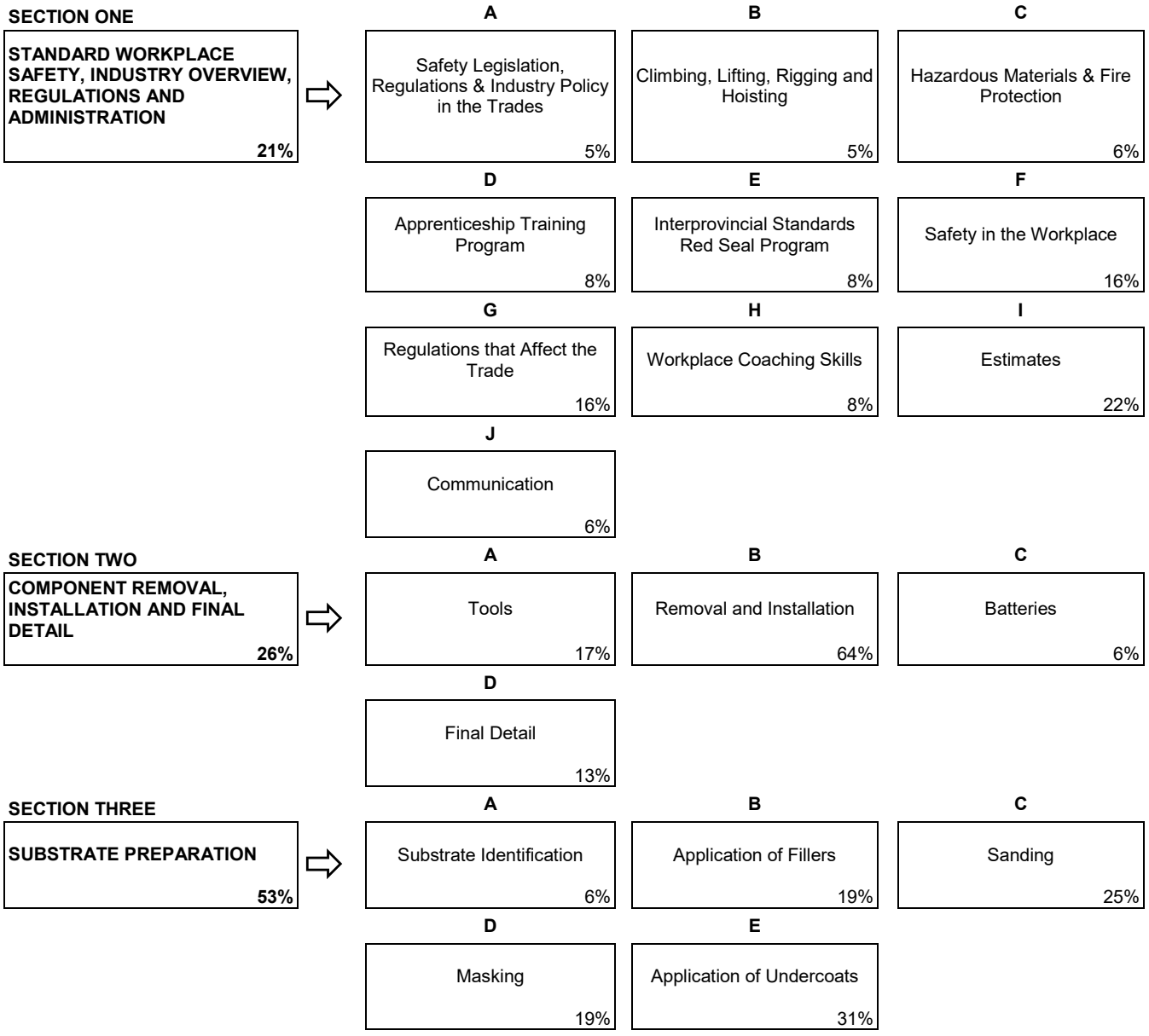
Registrar of Apprenticeship Programs
c/o Apprenticeship Delivery and Industry Support Services
Apprenticeship Delivery and Industry Support
Advanced Education
19th floor, Commerce Place
10155 102 Street NW
Edmonton AB T5J 4L5

It is requested that recommendations for change refer to specific areas and state references used.

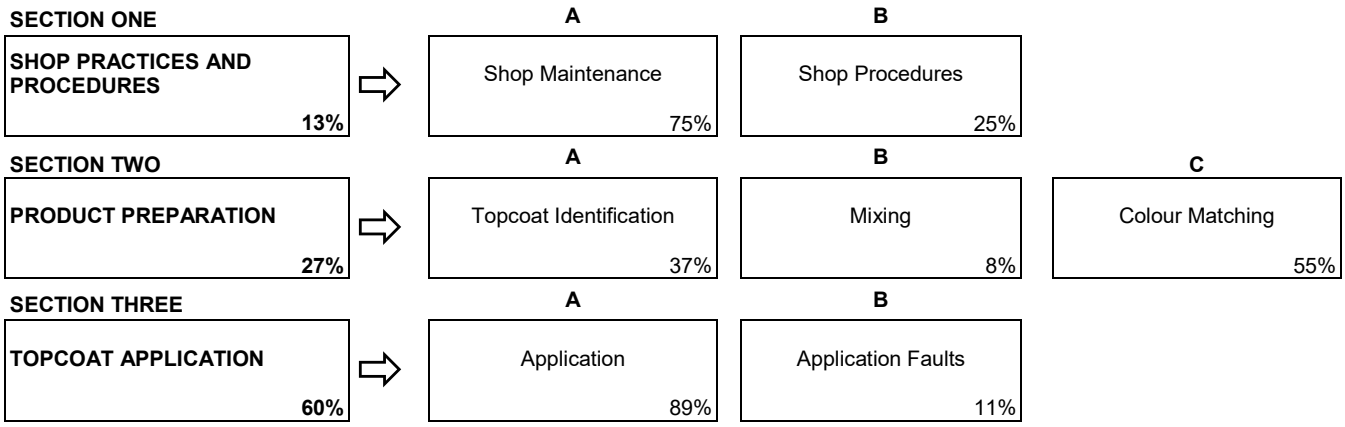
Apprenticeship Route toward Academic Credential



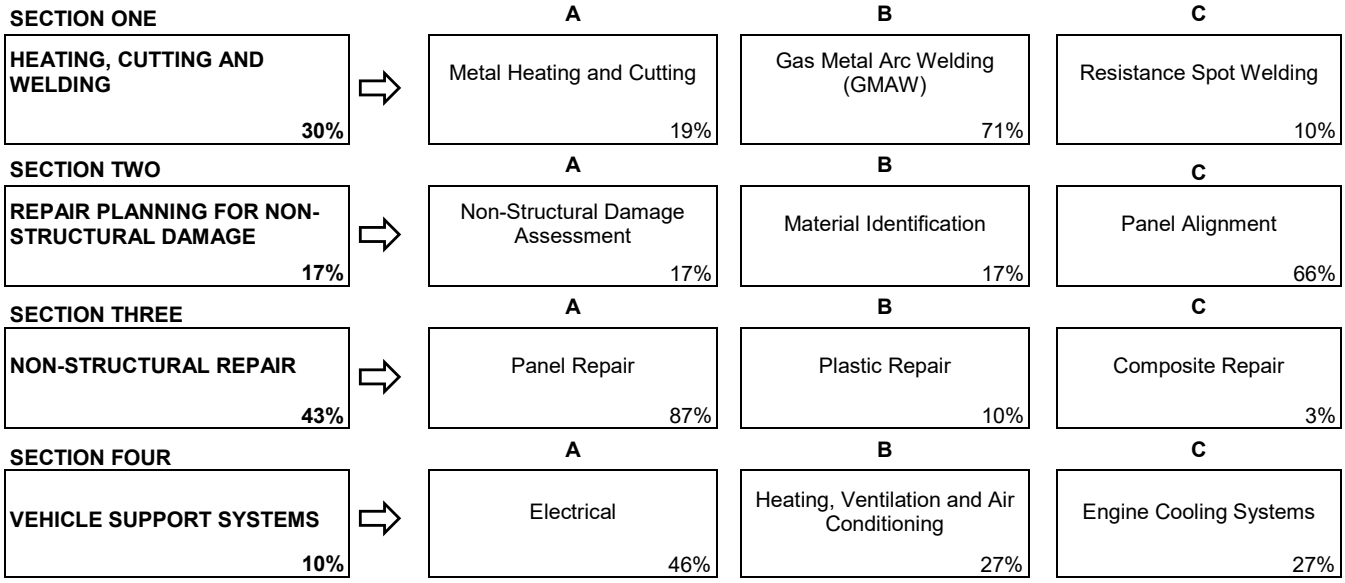
Auto Body Technician Training Profile
First Period (All Branches)
(6 Weeks 30 Hours per Week – Total of 180 Hours)



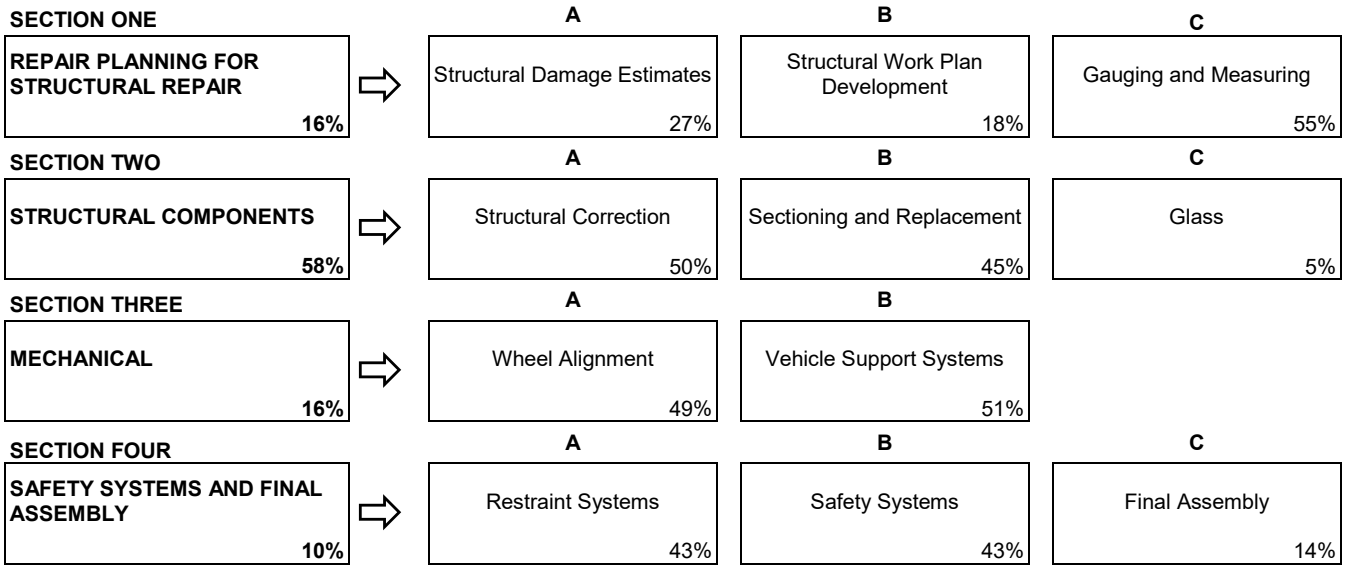
Second Period (Technician & Refinisher)
(6 Weeks 30 Hours per Week – Total of 180 Hours)



Third Period (Technician & Repairer)
(7 Weeks 30 Hours per Week – Total of 210 Hours)



Fourth Period (Technician & Repairer)
(7 Weeks 30 Hours per Week – Total of 210 Hours)



FIRST PERIOD TECHNICAL TRAINING
AUTO BODY TECHNICIAN TRADE
(ALL BRANCHES)
CURRICULUM GUIDE

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

SECTION ONE: ..... STANDARD WORKPLACE SAFETY 21%
INDUSTRY OVERVIEW, REGULATIONS AND ADMINISRATION

A. Safety Legislation, Regulations & Industry Policy in the Trades 5%

Outcome: ***Apply legislation, regulations and practices ensuring safe work in this trade.***

1. Demonstrate the application of the Occupational Health and Safety Act, Regulation and Code.
2. Describe the sponsor's and employee's role with Occupational Health and Safety (OH&S) regulations, Worksite Hazardous Materials Information Systems (WHMIS), fire regulations, Workers Compensation Board regulations and related advisory bodies and agencies.
3. Describe industry practices for hazard assessment and control procedures.
4. Describe the responsibilities of workers and sponsors to apply emergency procedures.
5. Describe tradesperson attitudes with respect to housekeeping, personal protective equipment and emergency procedures.
6. Describe the roles and responsibilities of sponsors and employees with the selection and use of personal protective equipment (PPE).
7. Maintain required PPE for tasks.
8. Use required PPE for tasks.

B. Climbing, Lifting, Rigging and Hoisting 5%

Outcome: ***Use industry standard practices for climbing, lifting, rigging and hoisting in this trade.***

1. Describe manual lifting procedures.
2. Describe rigging hardware and associated safety factors.
3. Select equipment for rigging loads.
4. Describe hoisting and load moving procedures.
5. Maintain personal protective equipment (PPE) for climbing, lifting and load moving equipment.
6. Use PPE for climbing, lifting and load moving equipment.

C. Hazardous Materials & Fire Protection 6%

Outcome: ***Apply industry standard practices for hazardous materials and fire protection in this trade.***

1. Describe roles, responsibilities, features and practices related to the Workplace Hazardous Materials Information System (WHMIS) program.
2. Describe three key elements of WHMIS.
3. Describe handling, storing and transporting procedures for hazardous material.
4. Describe venting procedures when working with hazardous materials.
5. Describe hazards, classes, procedures and equipment related to fire protection.

D. Apprenticeship Training Program 8%

Outcome: ***Manage an apprenticeship to earn journeyperson certification.***

1. Describe the contractual responsibilities of the apprentice, employer, sponsor and Alberta Apprenticeship and Industry Training.
2. Describe the purpose of the apprentice competency portfolio.
3. Describe the procedure for changing employers during an active apprenticeship.
4. Describe the purpose of the curriculum guide.
5. Describe the procedure for progressing through an apprenticeship.
6. Describe advancement opportunities in this trade.

E. Interprovincial Standards Red Seal Program 8%

Outcome: ***Use Red Seal products to challenge an Interprovincial examination.***

1. Identify Red Seal products used to develop Interprovincial examinations.
2. Use Red Seal products to prepare for an Interprovincial examination.

F. Safety in the Workplace 16%

Outcome: ***Demonstrate safety in an auto body shop.***

1. Describe types of personal hazards associated with the work assigned to an auto body technician (electrical tools, rotating machinery, comp. air, jacking and hoisting, exhaust gases, etc).
2. Use safety equipment and procedures when dealing with hazards associated with auto body work.
3. Control hazardous products used by auto body technicians.
4. Describe environmental hazards associated with the trade.
5. Use supplied air breathing systems.

G. Regulations that Affect the Trade 16%

Outcome: ***Follow work practices that adhere to the regulations of the Auto Body trade.***

1. Apply Workplace Health and Safety regulations.
2. Apply Occupational Health and Safety (OHS) regulations.
3. Apply Workplace Hazardous Materials Information System (WHMIS) regulations.
4. Apply fire regulations.
5. Apply Workers' Compensation Board (WCB) regulations.
6. Apply environmental regulations including volatile organic compounds (VOC) legislation.

H. Workplace Coaching Skills..... 8%

Outcome: ***Use coaching skills when training an apprentice.***

1. Describe the process for coaching an apprentice.

I. Estimates 22%

Outcome: Describe estimates and repair orders and develop a work plan.

1. Describe the requirements of an estimate.
2. Explain estimates and repair orders.
3. Explain the use of Original Equipment Manufacturer (OEM) service information.
4. Explain the use of aftermarket service information.
5. Develop a work plan.

J. Communication 6%

Outcome: Communicate with all parties involved.

1. Practice professional verbal and nonverbal communication between trade related contacts.
2. Interpret standard operating procedures.

SECTION TWO: ..... COMPONENT REMOVAL, INSTALLATION AND FINAL DETAIL 26%

A. Tools 17%

Outcome: Use auto body tools and equipment.

1. Identify hand tools.
2. Identify power tools.
3. Identify equipment.

B. Removal and Installation 64%

Outcome: Install non-structural body components.

1. Identify types of body components.
2. Identify the purpose of trim.
3. Identify restraint systems.
4. Describe methods of fastening.
5. Assess components for hidden damage.
6. Describe component storage procedures.
7. Remove bolt on components.
8. Describe body panel alignment of bolt on components.
9. Describe headlight alignment procedure.
10. Describe leak test procedure.
11. Install bolt on components.

C. Batteries 6%

Outcome: Service batteries.

1. Identify battery types.
2. Describe battery function.
3. Describe battery charging.

4. Describe battery boosting.

D. Final Detail..... 13%

Outcome: Perform final detail.

1. Describe detailing procedures.
2. Describe types of decals and striping.
3. Describe removal of decals and striping.
4. Describe installation of decals and striping.
5. Clean interior of vehicle.
6. Clean exterior of vehicle.

SECTION THREE: .....SUBSTRATE PREPARATION..... 53%

A. Substrate Identification..... 6%

Outcome: Identify types of paint finishes.

1. Identify substrate.
2. Identify condition of substrate.
3. Describe substrate preparation methods.

B. Application of Fillers 19%

Outcome: Apply fillers.

1. Describe surface preparation for filler.
2. Apply fillers.
3. Perform sanding of fillers.

C. Sanding..... 25%

Outcome: Prepare surface for coatings.

1. Describe undercoat preparation methods.
2. Perform sanding for undercoats.
3. Describe topcoat preparation methods.
4. Perform sanding for topcoats.

D. Masking 19%

Outcome: Mask a vehicle.

1. Describe methods and materials used for masking.
2. Mask a repair area for undercoat application.
3. Mask a repair area for topcoat application.

E. Application of Undercoats..... 31%

Outcome: Apply undercoats.

1. Describe undercoats.

2. Prepare undercoat materials.
3. Perform operating procedures for refinishing equipment.
4. Perform maintenance procedures for refinishing equipment.
5. Apply undercoats.

SECOND PERIOD TECHNICAL TRAINING
AUTO BODY TECHNICIAN TRADE (TECHNICIAN & REFINISHER)
CURRICULUM GUIDE

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

SECTION ONE: SHOP PRACTICES AND PROCEDURES 13%

A. Shop Maintenance 75%

Outcome: Maintain refinishing operations.

1. Describe spray environment set-up.
2. Describe air supply systems.
3. Describe record keeping procedures.
4. Describe the management of materials inventory.
5. Describe the management of waste materials.
6. Identify mixing room requirements.
7. Maintain mixing room.
8. Maintain spray environment.
9. Maintain refinishing equipment.

B. Shop Procedures 25%

Outcome: Prepare refinish work plan.

1. Explain a refinish supplement.
2. Explain a refinish estimate.
3. Identify refinish work required.
4. Develop refinish schedule.

SECTION TWO: PRODUCT PREPARATION 27%

A. Topcoat Identification 37%

Outcome: Identify required topcoat.

1. Identify existing substrates.
2. Describe topcoat considerations for complete panel refinish.
3. Describe topcoat considerations for spot repair.
4. Select a formula that corresponds to a paint code.

B. Mixing 8%

Outcome: Mix product.

1. Describe additive considerations.
2. Mix paint according to specifications.
3. Correct an over-pour situation when mixing paint.

C. Colour Matching 55%

Outcome: Create a blendable match.

1. Explain colour theory.
2. Identify a colour mismatch.
3. Adjust colour using gun technique.
4. Adjust colour by tinting.

SECTION THREE: .....TOPCOAT APPLICATION 60%

A. Application 89%

Outcome: Apply topcoat.

1. Describe topcoat application.
2. Describe blending techniques and applications.
3. Prepare the refinisher for topcoat application.
4. Prepare the workpiece for topcoat application.
5. Prepare spray equipment for topcoat application.
6. Perform topcoat application.
7. Perform multi-stage blend repair.

B. Paint Faults 11%

Outcome: Correct paint faults.

1. Identify paint faults.
2. Repair paint faults.

THIRD PERIOD TECHNICAL TRAINING
AUTO BODY TECHNICIAN TRADE (TECHNICIAN & REPAIRER)
CURRICULUM GUIDE

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

SECTION ONE:.....WELDING, HEATING AND CUTTING..... 30%

A. Metal Heating and Cutting 19%

Outcome: Use metal heating and cutting equipment.

1. Describe the characteristics of oxygen and acetylene.
2. Describe set up of oxygen and acetylene equipment.
3. Describe fusion welding processes.
4. Describe non-fusion welding processes.
5. Describe plasma cutting principles.
6. Perform heating operations.
7. Perform cutting operations.

B. Gas Metal Arc Welding (GMAW) 71%

Outcome: Perform auto body GMAW.

1. Set up GMAW equipment.
2. Maintain GMAW equipment.
3. Identify weld faults.
4. Perform filet welds on lap joints in all positions.
5. Perform groove welds on butt joints in all positions.
6. Perform plug welds in all positions.

C. Resistance Spot Welding..... 10%

Outcome: Use resistance spot welders.

1. Set up resistance spot welding equipment.
2. Maintain resistance spot welding equipment.
3. Identify weld faults.
4. Perform resistance spot welds.

SECTION TWO:..... REPAIR PLANNING FOR NON-STRUCTURAL DAMAGE 17%

A. Non-Structural Damage Assessment 17%

Outcome: Verify extent of non-structural damage.

1. Visually inspect vehicle for direct and indirect damage.
2. Check for hidden damage on vehicle.
3. Identify non-structural damage.
4. Confirm damage to components.

5. Verify parts order for repair.
6. Explain repair estimate times.
7. Determine sequence of repair procedure.
8. Prepare work plan for non-structural repair.

B. Material Identification 17%

Outcome: ***Identify component material.***

1. Describe materials used in auto body construction.
2. Explain precautions when working with auto body construction materials.

C. Panel Alignment 66%

Outcome: ***Fit non-structural components.***

1. Describe bolt on component fitting sequence.
2. Perform panel alignment.

SECTION THREE: ..... NON-STRUCTURAL REPAIR 43%

A. Panel Repair 87%

Outcome: ***Perform non-structural metal repair.***

1. Describe types of metal damage.
2. Describe strategies for repairing metal damage.
3. Perform non-structural metal repair.

B. Plastic Repair 10%

Outcome: ***Perform plastic repair.***

1. Describe types of plastic damage.
2. Describe strategies for repairing plastic damage.
3. Perform non-structural plastic repair.

C. Composite Repair 3%

Outcome: ***Perform composite repair.***

1. Describe types of composite repair.
2. Describe strategies for composite repair.

SECTION FOUR: ..... VEHICLE SUPPORT SYSTEMS 10%

A. Electrical 46%

Outcome: ***Repair electrical systems.***

1. Explain direct current (dc) electrical theory.
2. Interpret electrical diagrams.
3. Describe electronic component handling.

4. Diagnose electrical systems.
5. Perform wire harness repairs.
6. Perform connector repairs.

B. Heating, Ventilation and Air Conditioning (HVAC)..... 27%

Outcome: ***Describe service procedures for air conditioning systems.***

1. Identify HVAC systems.
2. Identify HVAC components.
3. Describe removal of HVAC components.
4. Describe installation of HVAC components.
5. Describe HVAC system service procedures.

C. Engine Cooling Systems 27%

Outcome: ***Describe service procedures for an engine cooling system.***

1. Describe the operation of an engine cooling system.
2. Identify engine cooling system components.
3. Describe removal of engine cooling system components.
4. Describe installation of engine cooling system components.
5. Describe engine cooling system service procedures.

FOURTH PERIOD TECHNICAL TRAINING
AUTO BODY TECHNICIAN TRADE (TECHNICIAN & REPAIRER)
CURRICULUM GUIDE

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

SECTION ONE:.....REPAIR PLANNING FOR STRUCTURAL DAMAGE 16%

A. Structural Damage Estimates..... 27%

Outcome: Prepare estimate for structural damage.

1. Describe considerations for structural estimating.
2. Prepare estimate for structural damage.

B. Structural Work Plan Development 18%

Outcome: Prepare work plan for structural repair.

1. Determine sequence of repair.
2. Identify vehicle construction.
3. Prepare work plan for structural repair.

C. Gauging and Measuring..... 55%

Outcome: Compare measurements to equipment manufacturer specifications.

1. Explain measuring principals.
2. Identify structural damage types.
3. Use measuring equipment.

SECTION TWO:.....STRUCTURAL COMPONENTS..... 58%

A. Structural Correction 50%

Outcome: Perform structural alignment.

1. Identify anchoring procedures.
2. Describe pulling and pushing techniques.
3. Perform structural alignment.

B. Sectioning and Replacement 45%

Outcome: Replace structural components.

1. Identify component material.
2. Identify section locations.
3. Describe sectioning procedures.
4. Describe structural component replacement.
5. Perform a structural repair.
6. Perform a sectioning procedure.

C. Glass 5%

Outcome: Describe structural glass replacement.

1. Identify structural glass types.
2. Identify location of structural glass components.
3. Describe procedures for replacing structural glass.
4. Describe laminated glass repair procedure.

SECTION THREE: ..... MECHANICAL 16%

A. Wheel Alignment..... 49%

Outcome: Describe the principles of wheel alignment.

1. Identify steering and suspension components.
2. Describe wheel alignment angles.
3. Describe wheel alignment procedures.
4. Identify alignment faults.

B. Vehicle Support Systems 51%

Outcome: Install mechanical components.

1. Describe considerations for removal of mechanical components.
2. Inspect mechanical components.
3. Remove mechanical components.
4. Describe considerations for installation of mechanical components.
5. Install mechanical components.

SECTION FOUR: ..... SAFETY SYSTEMS AND FINAL ASSEMBLY 10%

A. Restraint Systems 43%

Outcome: Service vehicle restraint systems.

1. Describe restraint systems.
2. Identify damaged restraint system components.
3. Describe the replacement procedure of restraint system components.
4. Describe handling procedures for restraint components.

B. Safety Systems 43%

Outcome: Describe vehicle safety systems.

1. Identify external safety systems of a vehicle.
2. Describe repair precautions for external safety systems.

C. Final Assembly 14%

Outcome: Perform pre-delivery inspection.

1. Verify fit, finish and function of work plan related repair.

Apprenticeship and Industry Training

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